No.

カンボディア
中等理数科教員養成・訓練計画
事前調査団報告書

平成11年5月

国 際 協 力 事 業 団
社 会 開 発 協 力 部

社 協 一
J R
99－012

序　　文

1993年に発足した新生カンボディア王国は、過去20年間の内戦における多大な人材の損失、経済基盤崩壊という「負債」を負いつつ、市場経済への移行期の中で国家復興の努力を重ねてきた。同国では特に知識階級の人的損失が著しく、国家再建の礎となる教育の現場で教員の質的・量的改善を図ることが国の緊急課題になっている。

こうした状況からカンボディア政府は、同国の中学・高校の理数科教育機能を拡充するため、中等理数科教員の養成・訓練を充実したいとして、我が国にプロジェクト方式技術協力を求めてきた。

これを受けて国際協力事業団は、先に基礎調査団により協力の必要性を確認したが、今般は1999年（平成11年）3月28日から4月9日まで、名古屋大学教授 若林満氏を団長とする事前調査団を現地に派遣した。同調査団は、プロジェクトがカンボディアのニーズに則した妥当な計画であることを確認のうえ、同国高等師範学校で3年間にわたって「中等理数科教員養成・訓練計画」の技術協力を行うことに合意し、協力基本計画の骨子等を取りまとめたミニッツに、署名を取り交わした。

同調査団によれば、本プロジェクトにより我が国は、国際的な援助活動に先駆けてカンボディアにおける理数科教育のリーディングドナー役を果たすことが期待される。

本報告書は、同調査団の調査・協議結果を取りまとめたもので、今後のプロジェクトの展開に広く活用されることを願うものである。ここに、調査団の各位をはじめ、調査にご協力いただいた外務省、文部省、在カンボディア日本大使館など、内外関係各機関の方々に深く謝意を表するとともに、今後とも一層のご支援をお願いする次第である。

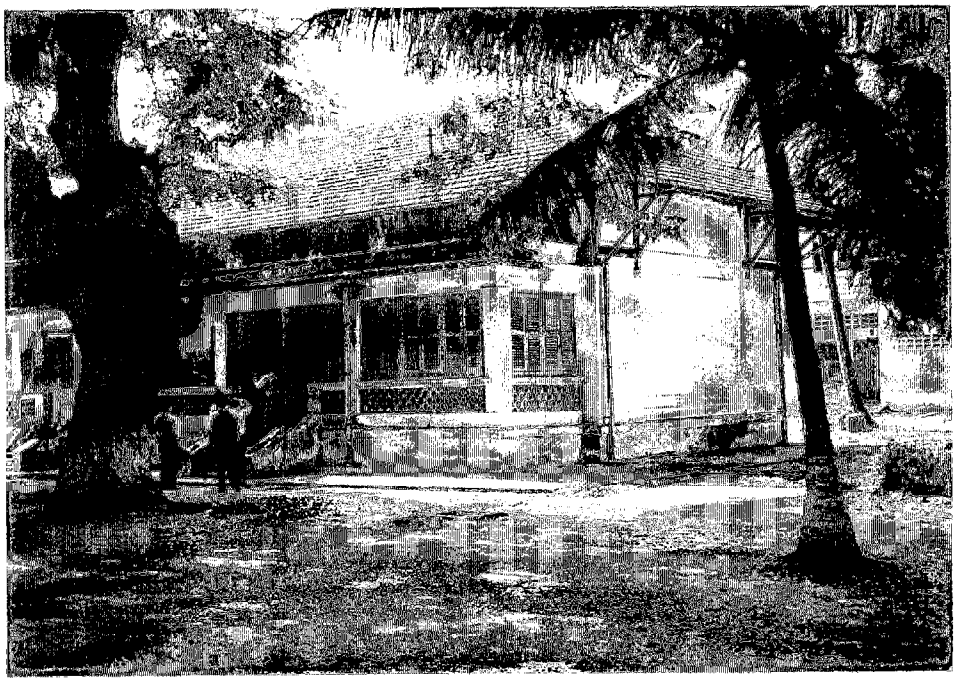
平成11年5月

国際協力事業団
理事　泉　　堅二郎

調査団メンバー（左から、金森団員、横関団員、
若林団長、梅宮団員、大塚団員、小谷団員）

高等師範学校（ＦＯＰ）敷地

高等師範学校（ＦＯＰ）での協議

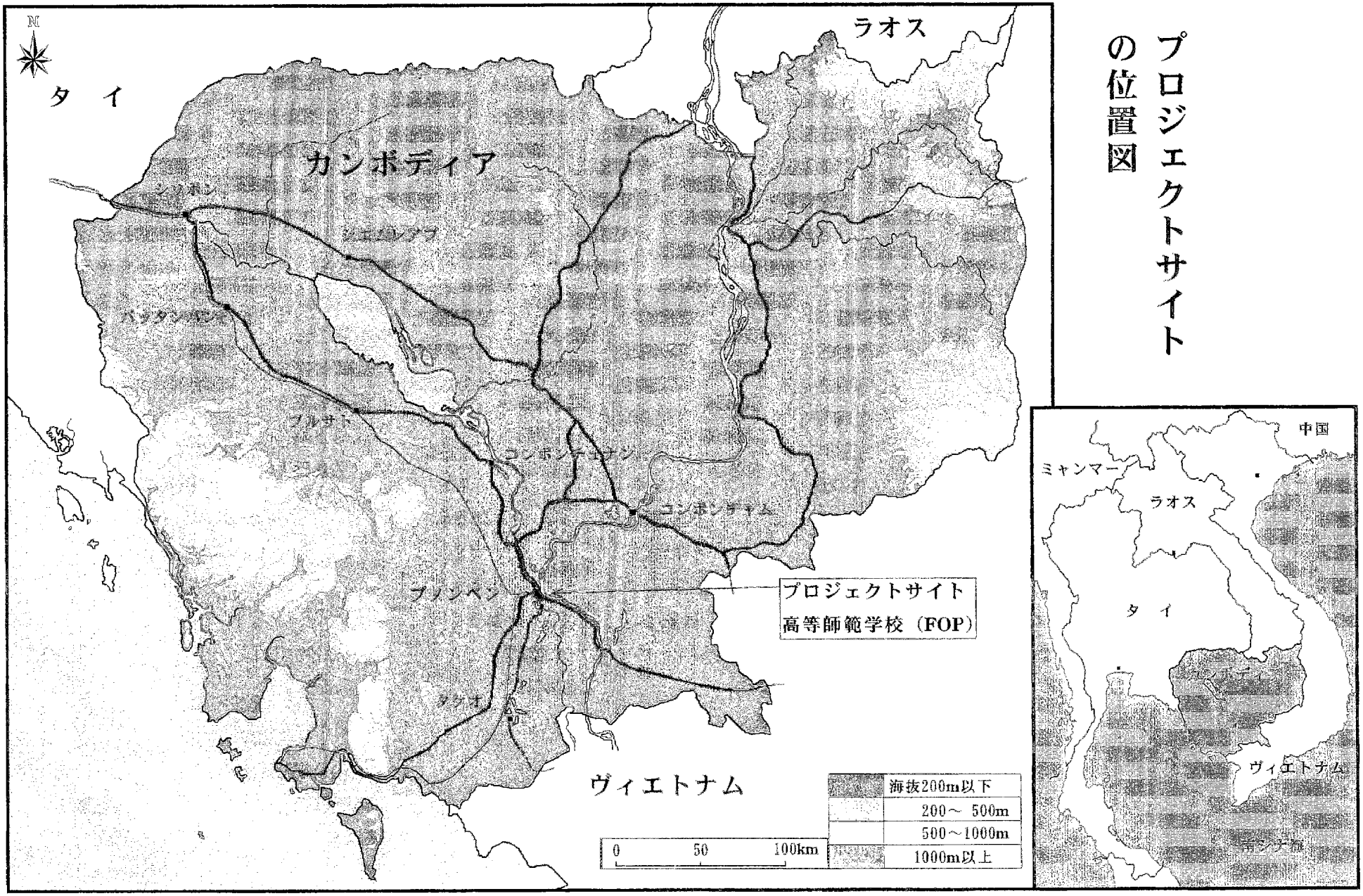


高等師範学校（ＦＯＰ）内講義棟
（写真に写っている右端の部屋が日本人専門家用
オフィスの候補となっている。）

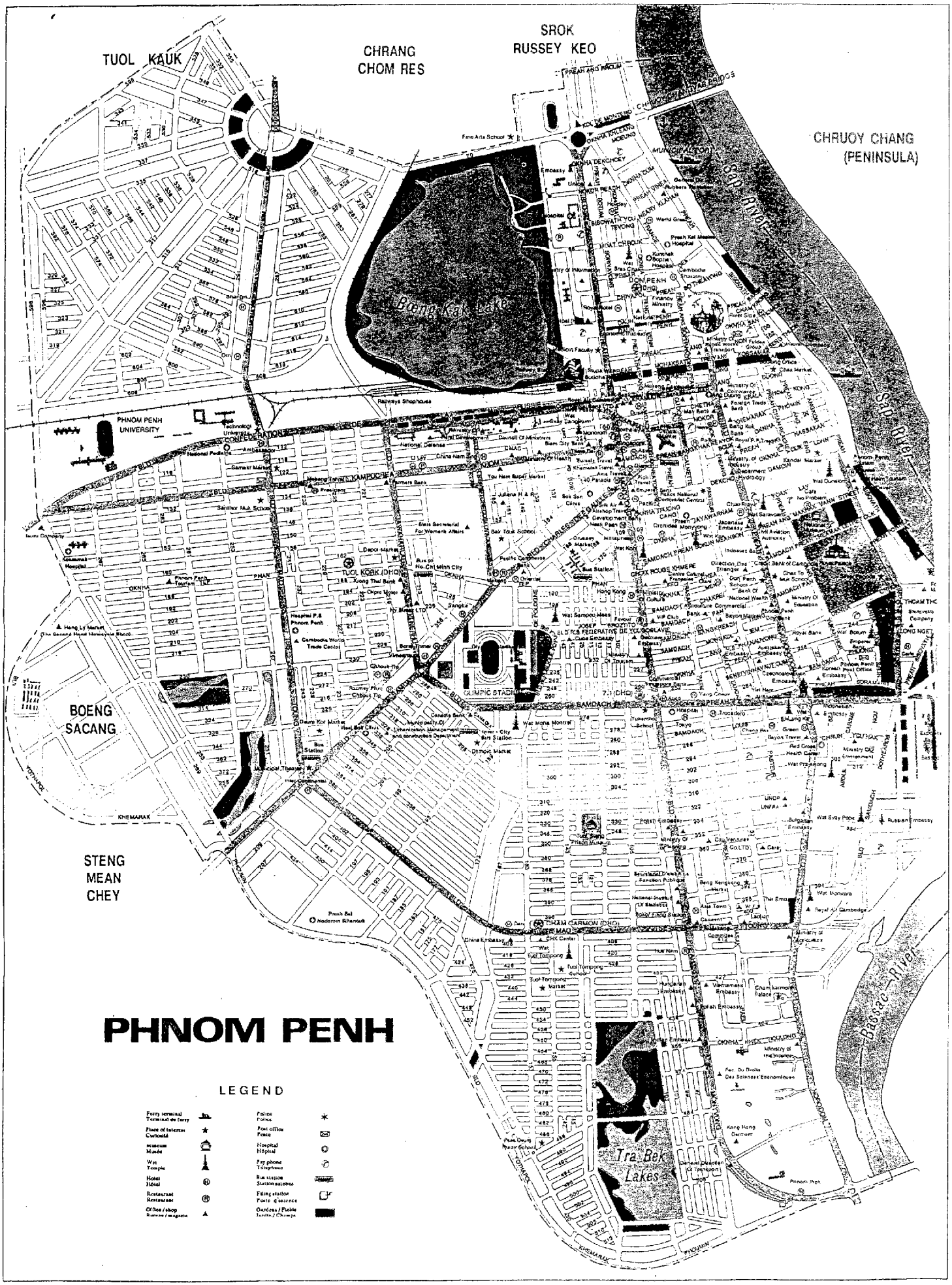
Prea Sisovath 高校授業風景

Samaki 中学校・高校訪問

プロジェクトサイトの位置図



プノンペン市地図


TUOL KAUK
CHRANG CHOM RES
SROK RUSSEY KEO
CHRUOY CHANG (PENINSULA)
Boeng Kak Lake
PHNOM PENH UNIVERSITY
BOENG SACANG
STENG MEAN CHEY
Tra Bek Lakes
Bassac River
PHNOM PENH
LEGEND

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第１章　事前調査団の派遣

１－１　調査団派遣の経緯と目的

1993年９月に発足した新生カンボディア王国政府は、過去20年間の内戦による多大な人材損失、経済基盤の崩壊の「負債」を背負い、市場経済への移行期の中で国家復興をめざして努力を重ねている。

特に、内戦による知識階級層の人的損失は著しく、国家再建の重要な礎となる教育の現場における教員の質的、量的改善は国家的な緊急課題となっている。このため、1994年に教育改革の一環として教員の資格要件についても改定を行い、それまで王立プノンペン大学の教員養成学部を卒業することで得られていた高校教員免許については、同大学卒業後さらに１年、高等師範学校で教員過程の履修を義務づけ、より質の高い教員の養成をめざしている。これにより、それまで小学校視学官及び中学・高校の技術視学官の養成、小・中・高の校長の現職教育等を担っていた高等師範学校に新たに高校教員養成（Pre-service Training）の機能が付加された。さらに同校については、高校教員の現職研修（In-service Training）機能等を付加することも検討されている。しかしながら、現実的には高等師範学校の教育実施体制及び教育実施内容は十分なものでなく、系統だった教員育成が実施されてはいない状況である。特に、理数科教育に関しては、旧共産圏の影響を受けた理論重視の座学中心授業から、生徒が科学的な思考方法を身につけるための実験実習を通した実践的な授業への改善が必要となっている。

当事業団は、1994年のプロジェクト形成調査によりカンボディアの教育分野における現状と課題を調査し、1995年から1998年まで教育・青年・スポーツ省に個別専門家を派遣して教育分野での案件形成を行ってきた。

このような背景から、カンボディア政府は、同国の復興、開発の最大の隘路となっている人材不足を解消するための教育の改善に資するべく、高等師範学校の従来の理数科教育機能を特に拡充し、国立理数科教育センターを同校敷地内に設立したうえで、中等理数科教育に係る人材を広く養成することを目的とした技術協力を我が国に要請してきた。これを受け、1998年3月に基礎調査団が派遣され、当該分野における協力の必要性が確認されたが、一方で、実施機関となる教育・青年・スポーツ省、高等師範学校の当事者能力の低さが指摘されている。

この調査結果を受け、今般、以下の項目につき調査・協議を行い、プロジェクトの実施体制、プロジェクトの基本計画についてカンボディア側と協議・合意するため、事前調査団が派遣された。

(1) 総括的事項

1)　要請背景の再確認

2) 国家開発計画等における位置づけの確認

3) 理数科教育分野、教員養成分野の現状の確認

(2) プロジェクトの適正規模、内容の判断に必要な情報

1) 要請におけるプロジェクトの目標、成果、活動の確認、吟味

2) 実施機関の組織、活動内容、将来計画の確認

3) 予算措置と人員配置状況の確認

4) 施設、設備の整備状況と計画の確認

5) 国立理数科教育センター設立に係るフィージビリティー
（予算措置、人員配置計画等の確認）

6) 関連機関との関係（王立プノンペン大学等）の確認

(3) 当該分野における他の援助機関の協力概要及び関連

(4) 協力内容

1) プロジェクトコンセプトの確認

2) プロジェクト実施体制の確認

3) 日本側協力計画の検討

１－２ 調査団の構成

(1)	総括	若林 満	名古屋大学 教授
(2)	教育計画	横関 祐見子	ＪＩＣＡ 国際協力専門員
(3)	教育行政	大塚 豊	名古屋大学 教授
(4)	中等理科教育	金森 正臣	愛知教育大学 教授
(5)	中等数学教育	小谷 健司	愛知教育大学 助教授
(6)	協力企画	梅宮 直樹	ＪＩＣＡ社会開発協力部社会開発協力第一課 職員

１－３ 調査日程

1999 年（平成 11 年）３月 28 日（日）～４月９日（金）（13 日間）

日順	月日	時間	移動及び業務
1	3月28日（日）		横関、梅宮両団員移動（成田→ﾊﾞﾝｺｸ、ＪＬ-717）、ﾊﾞﾝｺｸ泊
			若林団長、大塚、金森、小谷各団員移動（名古屋→ﾊﾞﾝｺｸ、ＪＬ-645）、ﾊﾞﾝｺｸ泊
2	3月29日（月）		移動（バンコク8:35発→プノンペン9:50着、ＴＧ-696）
		14:00	ＪＩＣＡ事務所打合せ
		15:00	大使館表敬
3	3月30日（火）	10:00	外務国際協力省表敬
		14:30	カンボディア開発評議会表敬
		15:00	Prea Sisovath 高校訪問
		16:00	Chaktomuk 中学校訪問

日順	月日	時間	移動及び業務	
4	3月31日	9:00	高等師範学校（ＦＯＰ）訪問・協議	
	（水）	14:30	教育・青年・スポーツ省（ＭＯＥＹＳ）訪問・協議	
5	4月1日	9:00	ＭＯＥＹＳ大臣表敬	
	（木）	10:00	ＭＯＥＹＳ、ＦＯＰとの協議	
		14:30	王立プノンペン大学（ＲＵＰＰ）訪問・協議	
6	4月2日	8:00	ＰＡＳＥＣ（ＥＵProject）訪問・協議	
	（金）	10:30	ＵＮＥＳＣＯ訪問・協議（若林団長、小谷、梅宮両団員）、ＤfＩＤ訪問・協議（横関、金森、大塚各団員）	
		15:00	ＤＧＣＩＤ専門家（教育･青年･スポーツ省ｱﾄﾞﾊﾞｲｻﾞｰ）との協議	
		16:00	ＡＤＢ訪問・協議（若林団長）、ＭＯＥＹＳ、ＦＯＰとの協議	
7	4月3日	9:00	Tuol Ampil 中学校訪問	
	（土）	10:00	Samaki 中学校・高校（リセ）訪問	
		PM	資料整理・ミニッツ案の作成	
8	4月4日	終	資料整理・ミニッツ案の作成	
	（日）	日	資料整理・ミニッツ案の作成	
9	4月5日	AM	資料整理・ミニッツ案の作成	
	（月）	14:30	ＵＮＤＰ訪問・協議（若林団長、小谷、梅宮両団員）、World Bank 訪問・協議（横関、金森、大塚各団員）	
		18:00	本邦ＮＧＯとの会食	
10	4月6日	8:00	ＡusＡＩＤ訪問・協議	
	（火）	10:00	ＭＯＥＹＳ、ＦＯＰとのミニッツに係る協議	
		14:30	ＦＯＰサイト視察及び協議	大塚団員帰国
11	4月7日	AM	報告書作成	（→ﾊﾞﾝｺｸ→名古屋）
	（水）	14:00	ＪＩＣＡ事務所への報告	
		15:00	大使館への報告	
		16:00	ミニッツ署名・交換	
		18:30	調査団主催懇親会	
12	4月8日	AM	報告書作成	
	（木）	16:45	移動（プノンペン16:45発→ﾊﾞﾝｺｸ17:50着、ＴＧ699）、ﾊﾞﾝｺｸ泊	
13	4月9日		若林団長、金森、小谷両団員移動（ﾊﾞﾝｺｸ→名古屋、ＪＬ738）	
	（金）		横関、梅宮両団員移動（ﾊﾞﾝｺｸ→成田、ＪＬ708）	

１－４　主要面談者

［カンボディア側］

(1) Ministry of Foreign Affairs and International Cooperation（外務国際協力省）

Mr. Sereythonh　Chief of Section, in Charge of the North-Asia Affairs, Asia-Pacific Department

(2) Council for Development of Cambodia（カンボディア開発評議会）

Ms. Heng Sakun　Deputy Director, Bilateral Aid Coordination Dept., Japan-Asia Pacific-America

Mr. Im Sour　Management, Bilateral Aid Coordination Dept., Japan-Asia Pacific-America

(3) Ministry of Education, Youth and Sport（教育・青年・スポーツ省）

H.E. Tol Lah	Minister
H.E. Pok Than	Secretary of State
H.E.Im Sethy	Secretary of State
Mr. Nou Muth	Under Secretary of State
Dr. Nath Bunroeun	Director of Teacher Training Department
Mr. Leang Nguonly	Director of Secondary Education Department
Mr. Duy Peng	Director of Department of Planning
Mr. Seng Kan	Manager, Program Management & Monitoring office

(4) Faculty of Pedagogy (高等師範学校)

Dr. Thor Sor	Dean

(5) Royal University of Phnom Penh

Var Sim Samreth	Rector
Dr. Neth Barom	Vice-Rector

(6) UNESCO

Dr. Supote Prasertsri	Education Program Officer
Mr. Teruo Jinnai	Culture Program Officer
Mr. Hor. Rachna	Assistant, Standing Secretariat

(7) World Bank

Mr. Vin Mcnamara	Chief Technical Advisor
Mr. Ou Eng	Director of PPU

(8) AusAID

Dr. Geoffrey Coyne	Team Leader
Mr. Victor Keo	Advisor

(9) UNDP

Ms. Kaarina Immonen	Assistant Representitive

(10) ADB

Mr. Someth Suos	Resident Representative

(11) DfID

Mr. George Taylor

(12) EU

Mr. Loic Le Bourhis	Director of Programme
Mr. Beatrice Montariol	Assistant

(13) Lycee Preah Sisowath（プレシソワス中学・高校）

Mr. Seng Lime	President

(14) その他

Mr. Roaud Celette	フランス大使館付教育省アドバイザー

［日本側］

(1) 在カンボディア日本大使館

齋藤　正樹	特命全権大使
山本　啓司	公使

(2) ＪＩＣＡカンボディア事務所

松田　教男	所長
寺本　匡俊	所員

(3) 個別派遣専門家

清水　和樹	Ministry of Education, Youth and Sport (Advisor)
梅崎　路子	Council for Development of Cambodia (Aid Coordination & Management)

第２章　要　約

本・カンボディア中等理数科教員養成・訓練計画事前調査団は、カンボディア政府関係機関と同国高等師範学校をサイトとするプロジェクト方式技術協力について協議及び調査を行い、合意事項をミニッツに取りまとめて署名を取り交わした。調査の要旨は以下のとおりである。

(1) 総括と協力の必要性・妥当性

今回の調査で、カンボディア側は中等理数科の知識に裏打ちされた実務的・専門的能力をもつ人材の育成を強く希望していること、そのために中等理数科教育推進の中核となる組織と人材を必要としており、さしあたっては中等理数科教育のための教材・カリキュラム開発、指導書の充実、教員養成・訓練を求めていることが確認された。

この結果、まず高等師範学校の中等理数科にかかわる機能の拡充が優先目標であることが確認された。一方、要請にあった理数科教育センターの設立については、その組織や機能、人材の配置、財政措置についてカンボディア側に明確な計画がなく、実施機関となる高等師範学校の当事者能力も低いことから、当面はプロジェクトの目標とはなりにくいことが明らかになった。そこで双方は、高等師範学校の理数科教育の能力強化を目的とした３年間の協力を行い、それと並行してセンター設立計画も含めた理数科教員養成の将来構想について、プランづくりを進めることで合意した。

本技術協力による理数科教員養成・訓練計画は、上記のとおり理数科教員の訓練と理数科教育全体の条件整備計画の両者を含むものであり、カンボディア政府の人材育成に関する計画を支援するうえで、妥当であるといえる。

(2) 教育分野の開発計画の現状とプロジェクトの位置づけ

カンボディア教育・文化・スポーツ省は 1996 年から 2000 年までの基本的政策目標として、①９年制義務教育の完全普及と機能的識字のための機会拡大、②効果的な改革による教育の質の近代化、③教育・訓練と労働市場及び社会との連携強化、④青年・スポーツ活動の充実、の４点を掲げている。目下の教育分野の最重要課題は基礎教育の充実と捉えられ、本支援プロジェクトが想定する中等教員の資質・能力の向上は当面の開発計画の射程には入っていない。しかし、カンボディアの場合、教育予算のほぼすべてが人件費に充てられ、資本的支出や教育活動費・管理費等はもっぱら国際的な援助に依存している現実があり、ドナーからの経費投入の有無がそのまま教育開発計画における重点設定を左右する力学がある。また、近い将来、初等教育の基本的普及に伴い、教育開発目標の重点は必然的に上方に向けて修正される。他方、ポル・ポト政権下の教員の粛清・虐殺で生じた空白を埋めるために、多

くの者が十分な教育・訓練を受けないまま教壇に立ち、さらにその後は、中学、高校教員の不足を補うために、小学校教員、中学教員がそれぞれ上級学校に回されたことにより、中等教員の質の低さは現在でも深刻な問題となっている。中等教員、なかんずく理数科教員陣充実の必要性は、『中等理数科教育調査報告書』『理数科教育への投資に関するマスタープラン』（以上、1996 年刊）『カンボディア理数科教育の基本ライン研究』（1998 年 10 月）の中で、繰り返し強調されている。したがって、数年後にいっそう顕在化が予想される中等理数科教員の質的向上に対する需要を先取りし、これへの対応措置を講じることは重要な戦略的意義をもつ。

(3) 教員養成分野の現状と問題点

高等師範学校では大学卒業生を対象とした１年間の高校教員養成課程を実施している。同課程を修了した学生が高校教員や小中学校教員養成校（ＲＴＴＣ、ＰＴＴＣ）教官となることを考えると、高等師範学校はカンボディアの教員教育の頂点に立つ機関であると見ることができる。このため、当プロジェクトには、その役割の重要さに見合うだけのキャパシティを構築していくという課題がある。

カンボジアの教員養成の問題点は以下のようにまとめられる。

a．教員養成に係る政策：明確な政策の欠如が最大の問題である。現行の教員養成制度は必ずしも合理的ではなく、教員の需要と教員養成課程への入学者数の関係も不明である。多くの教員養成・現職教員研修にかかわる活動は援助機関主導となっており、オーナーシップの問題も大きい。

b．カリキュラムや教科書・教材：高校教育課程のカリキュラムや教科書は、まだ整備されていない。また教員養成課程の教育内容にも問題が多い。

c．教員養成に携わる人材：高等師範学校教官の採用は教育・青年・スポーツ省によって行われており、必ずしも教員教育に優れた者が選ばれているわけではない。大部分が元高校教員であり、知識経験ともに学生とあまり変わらないことの問題も指摘されている。

d．現職教員研修：現職教員研修の制度が整っておらず、教員養成と現職教員研修の関係についても明確な定義がない。現職教員は新しい知識や教授法について学ぶ機会が皆無に等しいといえる。

(4) 理科教育分野の現状と問題点

カンボディアの高等教育機関における理科教育は、その施設・人材等の観点から、知識伝達を中心としている。したがって、科学の本質である「自然界における法則性の発見とその

因果関係の解明」にはほど遠く、科学的合理性の伝達、科学的思考の教育は行われていない。これらの改善のためには、科学的思考過程を育てることができる実験を取り入れた教育を行う必要がある。

今後の理数科教員養成には、以下の問題点を考慮する必要があろう。

a．高等師範学校の置かれている環境

ア．大学までの教育でほとんど実験が行われていない可能性があり、実験器具の扱いなど、初歩段階から教育しなければならない。

イ．実験室、上水道、電気等の設備もなく、新しい建物の建設が必要である。

ウ．予算措置の状況から、高価な先端的実験よりも、科学的思考を養成するための身近な材料を使った実験を中心に教育を進める必要がある。

エ．教員が赴任した高校で十分活用できる内容を中心に教育する必要がある。

オ．高等師範学校には、図書もなく、参考資料が乏しい。したがって、理数科関係の資料や図書を整備し、自学自習できる環境を整える必要がある。

カ．高等師範学校の教官の質は低く、その背景も大学の学部における学習と高校での教師経験程度である。教官の質を高める必要がある。

b．高校の置かれている環境

ア．高校は、１学級60人程度の人数で構成されており、実験室も存在しない。したがって、教師の演示実験（知識の内容を理解させるために、生徒の目の前で行う実験）を中心にすることを考慮しなければならない。

イ．多くの高等学校には上水道、電気等の設備がない。したがって、これらの設備のない中で展開できる実験を考慮しなければならない。

(5) 数学教育分野の現状と問題点

カンボディアではまだ高校用教科書が作成されておらず、高校教員が市販の図書を元にノートを作成し、教えているのが現状である。中学校教科書、市販の図書及び高校教員のノートを見た限りでは、教えられている数学は極めて抽象的で具体性に乏しく、公式暗記的で論理性が乏しい。数学は身近な事象と密接に関連しつつ、公式や定理を論理的に導き出すものであることを認識させる教育に改善することが望まれる。

(6)　他の援助機関との関係

カンボディアで教育協力を行っている援助機関は多い。高等師範学校での活動及び中等理数科教育に関係する援助機関と援助内容は次のとおりである。

ａ．英国国際開発省（DfID）：ＦＯＰでの英語教育（ＣＡＭＳＥTⅡプロジェクト）

ｂ．フランス政府（ＤＧＣＩＤ）：ＦＯＰでのフランス語教育

ｃ．欧州連合（ＥＵ）：小学校教員養成及び現職教員研修、中学校実践的教育（ＰＡＳＥＣ）

ｄ．オーストラリア（AusＡＩＤ）：中等教育開発戦略を作成予定

ｅ．アジア開発銀行（ＡＤＢ）：中等教育開発戦略を作成予定

ｆ．国連教育科学文化機関（ＵＮＥＳＣＯ）：教科書開発

これら援助機関とは、今後の調査でも情報・意見交換を続けることが望ましい。また現在教育・青年・スポーツ省に派遣中の個別専門家による教育援助機関の月例連絡会議（ＥＤＵＣＡＭ）等への参加により、必要に応じて日本の協力について情報提供するとともに、他の援助機関の情報収集をすることができる。 プロジェクトの準備段階から、このような会議へ積極的に参加・貢献することにより、日本のプレゼンスを高めていくことが大切である。理数科教育センター設立構想は、カンボディア側のオーナーシップを尊重しつつ、他の援助機関の意見も参考にしながら進めることが大切であり、このような機会を通じて日本がカンボディア理数科教育へのリーディングドナー役を果たすことが望まれる。

(7) 施設建設

プロジェクト活動を実施するために、プロジェクト基盤整備費で小規模の施設を建設することが望まれる。

(8) 今後の取り組み方

カンボディア側から提出される計画を踏まえ、さらに詳細にカンボディア側と協議を行うため、実施協議調査団を派遣する前に短期調査の実施が望まれる。

また、長期・短期専門家の選定と支援、研修受入れ等を効率よく進めるため、国内に複数の大学・研究所等の協力機関による幅広い支援体制を確立することが望まれる。

第３章　プロジェクト実施のための合意事項

調査団はカンボディア側関係機関との協議を通して、以下の事項について合意した。

(1) プロジェクト協力の基本計画

1) 名称

要請書の名称であった Secondary Teacher Training Project in Science and Mathematics を Secondary School Teacher Training Project in Science and Mathematics と改めることで合意した。

2) 協力の方針及び内容について

カンボディア側からの要請については、1996年提出の本要請書では、高等師範学校を実施機関とし、その資質・能力向上（Capacity building）をプロジェクトの目標にしていたが、その後1997年に提出された追加要請書により、国立理数科教育センター（以下、理数科センター）を設立し、そのCapacity building を目標とする内容に変更された。

今回の調査を通して、要請通りカンボディア側が同センター設立の意思をもっていることは確認されたものの、センターの位置づけ、センターの設立に係る人員の配置計画、予算措置計画、活動内容等についての具体的かつ明確な計画は全くないこと、また、現時点での教育・青年・スポーツ省及び実施機関となる高等師範学校の人員、予算等の観点から見た当事者能力は極めて低く、新しい組織をつくり運営管理する能力は甚だ乏しいと判断されたことから、すぐにセンターを設立し、これに対する協力を行うことはしないことにつき先方の了解を得、以下のフレームワークでの協力につき、カンボディア側と合意した。

なお、本件プロジェクト終了後の継続的な協力実施の可能性については、プロジェクト終了時にその必要性、妥当性を検討し、それらが認められた場合には継続協力の可能性がある旨をカンボディア側に伝えた。

3) プロジェクト目標

高等師範学校の中等理数科教育に係る機能を拡充し、能力を向上させるとともに、中等理数科教育にかかわる人材を広く養成する中心的な組織を新たに設立する構想も考慮に入れた中等理数科教員養成・訓練の改善に係る計画を策定し、同計画を実行する準備が整備される。

4) 成果

a) 中等理数科教員養成・訓練の改善に係る将来計画が策定され、同計画を実行する準備が整備される。

b）高等師範学校の中等理数科教育に係る各種養成・研修コースの質が向上する。

c）理数科教育に係る啓蒙活動が活発化する。

5) 活動

a）中等理数科教員養成・訓練の改善に係る検討委員会を組織・運営する。（＊注１）

b）1996 年に実施された Science and Mathematics Education Secondary School Survey の調査内容をアップデート、補足するための各種実態調査を実施する。

c）理数科教員養成・訓練の問題点について検討する。

d）理数科教員養成・訓練の改善に係る計画を策定し、同計画を実行する準備が整備される。

e）プロジェクト活動のための各種作業部会（カリキュラム開発作業部会、等）を組織、運営する。

f）養成コースの現有カリキュラムの修正及び現職訓練コースのカリキュラムの開発を行う。

g）養成コースの現有シラバスの修正及び現職訓練コースのシラバスの開発を行う。

h）教育教材及び教育要領を開発する。

i）各種養成・研修コースを実施する。

j）各種養成・研修コースの評価・モニタリングを行う。

k）現場の教員、生徒を対象にしたセミナー、ワークショップ、展覧会を開催する。

l）ニュースレター、ジャーナルを発行する。

（注１） 同委員会は将来的にセンターを運営管理する人材を考慮に入れつつ、カンボディアの理数科教育を担う人材を広く教育省関係局、王立プノンペン大学、高等師範学校、地方教員養成校等から集めて構成することで合意した。

6) 協力の範囲

プロジェクトの対象とする養成･訓練コースは高等師範学校が現在有する中等理数科教育に係る以下の３つのコースとすることで合意した。なお、要請では、高等師範学校に新たに高校教員の In-service training（現職研修）の機能を付加し、これについてもプロジェクトの対象とすることがうたわれていた。しかしながら、現時点では高校のカリキュラム・シラバス・教科書がまだ作成されておらず、今年から３年間をかけて作成することが予定されており、教科書が作成されてから実施する方が効果的であるとの判断から今回の協力の対象からははずすこととした。

今回の協力の対象はこれら３つのコースに焦点を当てて高等師範学校の理数科教育に係る能力を向上し、これらが質的に充実した後に高等師範学校に高校教員の現職研修等の機能を付加し、機能のさらなる拡充をめざすこととする。

a）高校教員の Pre-service training （養成コース）

b）中学校・高校の視学官の In-service training （現職研修コース）

c）地方教員養成校の教官の In-service training （現職研修コース）

7) 協力期間

協力期間については、３年間とすることで合意した。

8) プロジェクトサイト

高等師範学校とすることで合意した。しかしながら、高等師範学校の施設規模は非常に限られており、「第２章要約」の（７）で述べたとおり、プロジェクト活動を実施するためにプロジェクト基盤整備費で小規模の施設を建設することが望まれる。同施設完成までの間については、現存施設の教室１部屋をプロジェクトオフィスとして提供すること、及びプロジェクト活動に必要なスペースについても必要に応じて準備することがカンボディア側により約束された。施設完成までは、計画作り、カリキュラム、シラバス開発等の活動が中心となることが想定され、プロジェクト基盤整備費により施設が完成した後に（おそらく２年目から）開発されたカリキュラム、シラバス等を使ったコースを実施することが想定される。

(2) 日本側の取るべき措置

日本側の取るべき措置として以下のものについて合意した。

1) 専門家の派遣

a）長期専門家

チーフアドバイザー（理科もしくは数学教育兼務）

業務調整員

理科もしくは数学教育の専門家

b）短期専門家

必要に応じて。

2) 必要な機材の供与

3) カウンターパートの本邦での研修

(3) カンボディア側の取るべき措置

カンボディア側の取るべき措置として以下のものについて合意した。

1) コロンボプランのもとでカンボディアで働く第三国専門家に認められるものと同等の特権、免除等を日本人専門家及びその家族にも認める。

2) カウンターパート及び運営のための人材のサービス、日本人専門家及びプロジェクトの

活動に必要なオフィススペース、土地及び施設設備、日本からの供与機材以外に必要となる機材等の供与を行う。

3) 供与機材の設置、維持管理費及びカンボディア国内での運搬にかかる費用、カンボディア国内で機材にかかる税、プロジェクト活動に必要なランニングコストの支出を行う。

(4) プロジェクト実施体制

プロジェクトの実施体制について以下のとおり合意した。

1) プロジェクトの運営に係る最高意思決定組織として、日本・カンボディア双方の以下のメンバーから合同運営委員会を組織する。

a) カンボディア側

教育・青年・スポーツ省関係局（教員養成局、普通中等教育局、教育学研究局、計画局及び経理局）、カンボディア開発評議会、王立プノンペン大学及び高等師範学校の代表

b) 日本側

日本人専門家チーム及びＪＩＣＡカンボディア事務所の代表

2) 教育・青年・スポーツ省次官を合同調整委員会の議長とし、また、同次官はプロジェクトダイレクターとしてプロジェクトの運営・実施に係る総責任をもつ。

3) 教育・青年・スポーツ省教員養成局長はプロジェクトマネージャーとしてプロジェクトの運営管理に係る責任をもつ。

4) 高等師範学校の校長は副プロジェクトマネージャーとしてプロジェクトマネージャーを支援する。

(5) プロジェクト開始に先立ってカンボディア側が取るべき措置

プロジェクト開始に先立ってカンボディア側が取るべき措置について、以下の計画案を準備し、1999年８月末までにＪＩＣＡカンボディア事務所を通して日本側に示すことにつきカンボディア側の了解を得た。

1) 暫定実施計画案として、プロジェクト活動に係る３年間の詳細計画

2) 専門家及びプロジェクト活動に必要なオフィス、施設、土地に係る計画

3) 以下の項目を含む理数科センター設立に係る可能な限り具体的な計画

a) 組織

b) 人員配置（人数及び人材リソース）

c) 予算措置（額及びリソース）

d) 期待される機能及び活動、機能及び活動の観点から見た高等師範学校との関係

e) センターの位置づけ

第４章　要請の背景及び内容

1993年９月に発足した新生カンボディア王国政府は、過去20年間の内戦による多大な人材損失、経済基盤の崩壊の「負債」を背負い、市場経済への移行期の中で国家復興をめざして努力を重ねている。

特に、内戦による知識階級層の人的損失は著しく、国家の再建の重要な礎となる教育の現場においての教員の質的、量的改善は国家的な緊急課題となっている。このため、1994年に教育改革の一環として教員の資格要件についても改定を行い、それまで王立プノンペン大学の教員養成学部を卒業することで得られていた高校教員免許については、同大学卒業後さらに１年、高等師範学校で教員課程の履修を義務づけ、より質の高い教員の養成をめざしている。これにより、それまで小学校視学官及び中学・高校の技術視学官の養成、小・中・高の校長の現職教育等を担っていた高等師範学校に新たに高校教員養成（Pre-service Training）の機能が付加された。さらに同校については、高校教員の現職研修（In-service Training）機能等を付加することも検討されている。しかしながら、現実的には高等師範学校の教育実施体制及び教育実施内容は貧弱の限りであり、系統だった教員育成が実施されてはいない状況である。特に、理数科教育に関しては、旧共産圏の影響を受けた理論重視の座学中心授業から、生徒が科学的な思考方法を身につけるための実験実習を通した実践的な授業への改善が必要となっている。

当事業団は、1994年のプロジェクト形成調査によりカンボディアの教育分野における現状と課題を調査し、1995年から1998年まで教育・青年・スポーツ省に個別専門家を派遣して教育分野での案件形成を行ってきた。

このような背景から、カンボディア政府は、同国の復興、開発の最大の隘路となっている人材不足を解消するための教育の改善に資するべく、中等理数科分野における技術協力を要請してきた。要請書は1996年提出の本要請書、1997年提出の追加要請書の２つの要請書から成っている。本要請書では、高等師範学校を実施機関とし、その資質・能力向上（Capacity building）をプロジェクトの目標にしていたが、その後1997年に提出された追加要請書により、国立理数科教育センターを設立し、そのCapacity building を目標とする内容に変更されている。

２つの要請書を併せて勘案した場合の要請の概要は以下のとおりである。

(1) 監督省庁：教育・青年・スポーツ省

(2) 実施機関：

前述のとおり、本要請書では、高等師範学校を実施機関としていたが、追加要請書により、国立理数科教育センターを設立し、同センターを実施機関とする内容に変更されている。

要請書によると、国立理数科教育センターは、「高等師範学校の理数科教育機能を強化するために、国立研究所、一般教育局、教員養成局及び高等師範学校の４者の協力の下に半独立機関で

ある理数科センターを設立する」と想定されている。

(3) マスタープランの大枠

1) 目標

国立理数科教育センターの設立及びその Capacity building

2) 活動

ａ．各種養成コース・研修のカリキュラム及び教材の開発

ｂ．高校教員の養成コース

ｃ．高校教員の現職研修

ア）モデルスクール校の教員の研修

イ）一般校の教員の研修

ｄ．地方教員養成校の指導員の研修

ｅ．技術視学官の研修

ｆ．教授法及び教材開発のための研修の実施

ｇ．セミナー及びワークショップの開催

（カリキュラム開発、理科展覧会、等）

ｈ．理科ジャーナルの発行

(4) 日本側投入内容

1) 長期専門家（６人）

リーダー、業務調整、数学、物理、化学、生物

2) 短期専門家

カリキュラム開発、コンピューター教育、調達システム計画、移動式研修、等

3) カウンターパートの日本における研修

各分野年３名程度

4) 機材

実験機材、理数科教材、理数科教科書、参考書、コンピューター、印刷機材、等

第５章　教育分野の開発計画の現状とプロジェクトの位置づけ

５－１　教育開発計画の概要と発展目標

(1) 基本政策目標

カンボディア政府は「社会・経済開発の鍵となるのは人的資源の開発である」との認識をもっており、1997 年以降の５年間にわたり、教育予算を着実に増大させて、西暦 2000 年までに国家予算に占める教育予算の比率を15%にすることを計画している。ちなみに、現在のところ、教育予算の３分の２は基礎教育経費に充てられている。

教育・青年・スポーツ省の予測では、1997 年からの５年間に毎年５～６％の学齢児童の増加が見込まれ、西暦 2000 年には 36 万人が小学校に入学すると予測されている。こうした在籍者の増大の結果として、現在でも既に起こっている有資格の教育行政官・教員、教室をはじめとする施設、教材・教具などの不足という人的・物的資源の不足状況が更に深刻度を増すことが考えられている。教室不足を物語る数字として、若干の州では、１教室当たり 100 人を越す児童･生徒が学んでいるケースもあるとされる。特に都市部では教室の不足から１学級当たりの児童数が平均で 70.5 人にものぼる。

ポル・ポト政権崩壊後の 1979 年以降、同政権によって引き起こされた徹底した教育破壊からの立ち直りを図り、教育を再建するための種々の方策が講じられてきた。ポル・ポト政権下の教育破壊を象徴する出来事として、無数の教員が粛清・虐殺されたが、これによって生じた空白を埋めるために、「高い教育を受けた者は教育をそれほど受けていない者を教えなければならないし、それほど教育を受けていない者は全く教育を受けていない者を教えなければならない」という言葉で要約される教員補充政策がとられた。この結果、それまでに多少でも教育を受けたことのある者が十分な訓練を受けることなく大量に教壇に立つことになった。また、その後も中学教員の不足を補うために小学校教員が中学に回され、高校教員の不足を補うために中学教員が高校に回されるといった措置がとられたため、中等教員の質の低さは大きな問題となっている。

カンボディア憲法の規定では、「すべての国民が９年間の良質の基礎教育を受けること」を保証されている。これに関連して、教育・青年・スポーツ省は 1996 年から 2000 年までの基本的政策目標として、以下の４点を掲げている。

1)　９年制義務教育を完全普及させ、機能的識字のための機会を発展させる
2)　効果的な改革を通じて教育の質を近代化し改善する
3)　教育・訓練を労働市場及び社会と結びつける
4)　青年・スポーツに関する下位部門を復興し発展させる

こうした政策目標のうち基礎教育部分は特に重要視されており、1996/97 学年度に六･三･

三制の新しい教育制度が導入されたのに次いで、カンボディアの教育システムを西暦2000年までに国際的な水準に到達させるため、いくつかの具体的数値目標を教育・青年・スポーツ省は提示している。それらは次のようなものである。

ａ．初等教育の純就学率を最低90%に引き上げる。

ｂ．就学における男女格差を是正し、女児の前期中等教育就学率を45%とする。

ｃ．国の教育予算にとって大きな負担となっている小学校における留年率を10%以下に抑える。

ｄ．小学校における中退率を３%以下に抑える。

ｅ．小学校卒業率を85%まで高める。

これらの数値目標のうち、留年率や中退率の引き下げに触れられたのは、そうした問題が極めて深刻であることの表れである。留年率は高く、とりわけ第１学年では41.2%にのぼる。また1997/98年度のドロップアウト率は第１学年、第２学年、第３学年でそれぞれ11.9%、15.25%、14.9%であり、これら中退者が非識字者となる恐れがある。高い留年率や中退率が生まれる原因として、古いカリキュラムでは授業時数が１日４時限で年32～33週であったのに対して、現在は１時限45分の授業が１日６時限、年38週と規定されているにもかかわらず、実際には規定の授業時数が守られていない場合が多いことが指摘されている。

(2) 重点施策

上記の諸目標を実現するための重点施策として、以下の諸点が考えられている。

1) 学齢児童・生徒が地域や民族にかかわりなく平等な機会が受けられるよう、現在小学校の約50%が第６学年まで開設できない状況を改め、すべての小学校を６年制とする。

2) 原級留置率や中退率を引き下げるために、教員の再訓練、授業時数の増加、適切な教科書及び教員のための手引きの整備、現代的な教育手段の活用、視学チームの組織化、学習成績評価方法の改善、地域住民の教育への積極参加などの措置を講じる。

3) 既存の校舎の修復と新校舎の建設で、各学校群（cluster）の中の中核校に少なくとも中学校を付設する。

4) 後期中等教育、高等教育、職業・技術教育などを充実し、基礎教育修了後の教育機会を拡充するとともに、青年がより上級段階の教育機関での学習機会を得られるようにする。あわせて彼らの関心や資質に合わせて技術訓練が受けられるようにする。

5) あらゆるレベルで教育行政の効率を高めるための手段を講じる。中央及び州レベルでの現代的機器の導入を図り、基本文書の作成と活用を中央及び州レベルですすめるとともに、人員の合理化と行政の地方分権化を実施する。

6) 機能的識字クラスなどを設置し、積極的な識字対策を講じるとともに、フォーマル及び

ノンフォーマルな手段を通じて青年・スポーツ活動を復興させる。

５－２　教育開発計画のなかでの中等教員の資質・能力の向上

ここに見られるように、カンボディアの教育開発計画の中では、現在から１、２年の間は基礎教育、特に初等教育の完全実施が最重要課題と捉えられているといってよく、本プロジェクトのターゲットとなる中等教員の資質・能力の向上（Capacity building）は国全体としての教育開発計画の射程には入っていないようにも思われる。しかし、カンボディアの場合、教育予算のほとんどすべてが人件費に向けられ、建物・施設の整備のための資本的支出や消費的支出のうちの教育活動費・管理費等に相当する諸経費といった個別の事業経費は、もっぱら国際的な支援機関・団体（ドナー）からの援助に依存している現実がある。したがって、ドナーからの経費投入の有無がそのまま教育分野の開発計画における重点の設定を左右することになる。換言すれば、現在の教育開発計画における初等教育ないし基礎教育への傾斜はドナーの経費投入状況の反映に他ならず、逆に、我が国が後期中等あるいは高等教育関連の支援プロジェクトを実施する意図をもつとすれば、カンボディアの教育開発計画の中で後期中等あるいは高等教育に比重のかかった計画が策定されることになるという力学があることに注目しなければならない。

加えて、初等教育の基本的普及の実現が見込まれる数年先には、教育開発目標の重点が初等レベルから上方修正され、前期中等教育、さらに後期中等教育レベルへと移ってくることは想像に難くない。その時点では、有資格かつ高い資質をもった中等教員の整備が大きな意味をもってくるのであり、あらかじめその事態を見越して、必要な措置を講じることは極めて重要な戦略的意義を有する。なかんずく、中等教員の中でも理数科教員陣を充実させることの意義は、次に取り上げる当該分野に焦点をしぼったいくつかの調査報告書の中で近年繰り返し述べられてきている。

(1) 『中等理数科教育調査報告書』(Science and Mathematics Education Secondary School Survey、1996 年 4 月刊)

教育・青年・スポーツ省内のプログラム運営管理局（ＰMMU：Programe Management and Monitoring Unit)によって作成された本報告書の中で指摘された中等理数科教育が抱える問題点は、次のように要約することができる。

1) 教員の学歴の低さ（教科別に見た前期中等教育修了者の占める比率は、生物 41%、化学 36%、数学 42%、物理 38%）と訓練不足、教員養成カレッジ（ＴＴＣ）修了者の比率の低さ（教科別に見たＴＴＣ修了者の占める比率は、生物 30%、化学 26%、数学 31%、物理 28%)。さらに教員のうち王立プノンペン大学出身者及び高等師範学校（ＦＯＰ）卒業者はほとんどプノンペン市内及びその周辺に集中していること。

2) 教職経験の不足（教科別に見た 10 年以上の教職経験者の比率は、生物 26%、化学 16%、数学 20%、物理 20%）。

3) 授業時間数の少なさ（理数科教員の週当たり平均授業時数は 13 時間で、８時間といった省もある）。

4) 教科書不足（37%の学校に教科書がなく、33%の学校では２人以上の生徒が１冊の教科書を共同使用）。

こうした現実の問題点を踏まえて、本報告書では、教員養成教育、現職研修のいずれも強化される必要があることが強調され、また、教材・施設及び備品整備の必要性が唱えられており、とりあえず一部のモデル校での教育改善が提案された。

(2) 『理数科教育への投資に関するマスタープラン』（Investment Master Plan：Framework on Science and Mathematics Education、1996 年 5 月刊）

『中等理数科教育調査報告書』から時期的にわずかに遅れて公表された本マスタープランでは、「十分な訓練を受けた科学者や技術者を絶えず供給することは、カンボディアが経済発展をとげ、東南アジア地域ならびに国際社会での競争力をつける鍵となる。このためには理数科教育のあらゆる面での充実が不可欠である」との認識が示された。そのうえで、上記の報告書の基礎となった調査結果に立脚し、①理数科でのカリキュラム改善、関連設備・備品の整備とならんで教員訓練が不可欠であること、②教育・青年・スポーツ省はモデルスクール・アプローチの活用が適当と考えていること、③モデルスクール・アプローチを効果的なものにするためには国立理数科教育センターが不可欠であること、などを内容とする基本的投資プランが明らかにされたのである。このなかで言及された国立理数科教育センターは、教員の質向上のための指導的機関としてのみならず、新しい理数科教育の技法やリソースの開発センターとして機能することが期待されている。

(3)『カンボディア理数科教育の基本ライン研究』（Base Line Study：Science and Mathematics Education、Cambodia、1998 年 10 月刊）

上述した 1996 年４月の調査報告書の作業を継承する形で公表された本報告書では、以下の３点が提案されている。

1) 理数科教育に関する総目標といったものは現在のところ存在しない。したがって、理数科教育に関する総合的指針を策定する必要があり、理数科教育マスタープランの策定が必要である。

2) 生徒中心の教授・学習の概念に関して一致した見解が存在しないので、教育・青年・スポーツ省及び関係者の間で検討会を開催する必要がある。

3)　ドナー側の認識とカンボディアの現実とのギャップがあり、そのことが重複や不足を生んでいる。また、生徒側のニーズよりも教師のニーズに重点がおかれている。これを改めるために、教育・青年・スポーツ省による実態把握と結果の公表、微視的・巨視的な観点からの問題の検討、生徒中心的教育への全面的転換を行うべきである。

以上見てきたように、本プロジェクトの支援対象である中等教員、とりわけ理数科教員の資質・能力の向上は、関連必要経費の欠如が主たる理由と考えられるが、目下のところ必ずしもカンボディア全体の教育開発計画の重点項目とはなっていない。しかしながら、上掲の各種報告書のなかで、関連の実態調査及び問題点の把握が着実に積み上げられてきていると見ることができる。加えて、初等教育の普及に伴い、次には数年後に中等理数科教員の質的向上に対する需要が今以上に顕在化すると予想されることから、そうした需要にむしろ先取り的に対応する措置を講じておくことは重要な意味をもつと思われる。

第６章　協力分野の現状と問題点

６－１　理数科教育分野の現状と問題点、協力にあたっての留意点

６－１－１　理科教育分野

文化は、自然環境によって異なり、大別すると荒れ地に発展した放牧文化、肥沃な河川の流域に発達した農耕文化がある。それぞれの国にはそれぞれの国の文化があり、それらは自然環境にマッチして発展し、歴史的に変遷してきたものである。それぞれの文化は、持続的発展を視野に入れて考えると、効率的・合理的視野とは異なる結果が導き出される可能性がある。

熱帯降雨地帯のメコンデルタに発達したクメール文化は、日本文化と農耕・仏教・多神教などの共通性をもちながら温帯の日本文化とはかなり異なっている。熱帯地域に特有な混沌とした非合理性を内包しながら、全体性としてはこの地域での持続性をもっていると理解することができる。理数科教育の科学的思考は、近代西洋科学を基礎としており、その明快な論理と効率性は、荒れ地に発達した放牧文化から発展してきた考え方である。これはしばしば農耕文化などの混沌とした全体性の在来文化を破壊する場合がある。これらの点に十分配慮し、カンボディア人の判断を尊重しながら教育援助を進める必要がある。

特に重要な点は、西洋科学の合理性・効率性が、しばしば在来文化の自然との調和を無理解のまま破壊する可能性がある点である。熱帯降雨地帯の農耕文化は、自然の抗しがたい変化に対応して、合理的には理解しがたい混沌とした部分をもっているが、それらは全体性・非合理性・持続性によって理解すると、おぼろげながら意味合いが理解可能となる。日本においては、西洋近代科学を導入して約150年の間に、その効率性や合理性に目を奪われ、全体性や持続性の視点を欠いた結果として、日本で発展した文化のある部分を理解し得なくなった。それらの結果として、宗教心の欠落、社会的ストレスの増大、環境問題、離婚の増大、学級崩壊などを起こしていると見ることができる。

カンボディアの高等教育機関における理科教育は、その施設は貧弱であり、実験などはほとんど行われていない。高等師範学校（ＦＯＰ）における教官、中・高等学校の教師もこのような教育の中で育っており、人材・施設等の現状から、実験などはほとんど行われない知識伝達型の授業が中心である。また、中・高等学校における施設も脆弱で、多人数教育（１クラス60人程度、狭い教室、狭い机に寿司詰め状態）で行っており、更に施設数と生徒数の関係から時間的に住み分けた午前・午後クラスに分かれている。

したがって、科学の本質である「自然界における法則性の発見とその因果関係の解明」にはほど遠く、科学的合理性の伝達、科学的思考の教育は行われていない。これらの改善のためには、科学的思考過程を育てることができる実験を取り入れた教育を行う必要がある。

カンボディアの経済は、現状においても将来においても、基幹産業として農業が重要であ

る。このような状況を踏まえて、農業従事者の教育を考えながら行う必要があろう。

高等師範学校の卒業生が、地方の教員養成校教官や視学官になっている現状も考えると、農業の科学的理解、生活科学の思考、病気・エイズ・寄生虫などの教育も重要な内容と考えられる。

現状から考えると、今後の理科教員養成には以下の問題点を考慮する必要があろう。

(1) 高等師範学校の現状と問題点

1) 理科教育の基本である、科学的思考を教育することに重点を置く必要がある。

科学とは、「自然の中の法則の発見とその因果関係の解明の過程である」。現在のカンボディアの教育は、教科書もなく、教師が自分のノートの知識を黒板に書いて学生に教えている。すなわち、科学をした結果としての知識を伝達しているだけで、科学的思考を教えているとは考えられない。

科学的思考を養うためには、実験を行い、試行錯誤して法則性を発見し、なぜ法則が成立するのか因果関係を解明する必要がある。すなわち、実験を行い結果を考察する授業が不可欠である。しかしながら現状では、実験のための施設と設備、それを行う人材の資質ともに十分とは言い難い。まずこれらの点について、設備を充実し、人材の資質を向上する必要がある。

2) 高等師範学校における教官の質は低く、その背景も大学の学部での学習と高校での教師経験程度である。師範学校の教官の質を高める必要がある。

高等師範学校の教官の経歴から明らかなように、師範学校の卒業以後、特別な研究歴や研修歴はもっていない。すなわち、高等師範学校の教官であっても、大学・高等師範学校で学んだこと以外は、何もないのが現状である。カンボディアにおいては、教官になってからの研修制度はなく、自主研究グループも存在しない。なおかつ現状では、教官の給料が十分でないため、時間外には副収入としての課外授業や副業に従事している。すなわち、教官になってからの教育のための資質の向上はほとんどないという状態である。高等師範学校の教官として、師範学校卒業者の優秀な者はすぐ、あるいは数年の教育経験をもって教官に就任したとしても、教育される側とする側との差はあまりないのが現状である。なおかつ、「大学で習ったことが最高のものであるから、それ以上のものは教えようがない」(ある高等師範学校の教官の発言)ことから明らかなように、現状では資質の向上については望めない状態にある。

以上のことを考慮すると、まず最初に行わなければならないことは、高等師範学校の教官の資質の向上の計画である。それには、大学卒業後あるいは師範学校卒業後の勉強形態を改善し、より向上できる場と資材を提供する必要がある。

また、フランス援助機関の担当者によると、毎年100人程度の留学生を受け入れているが、カンボディアの大学のレベルはかなり低いとの意見もある。

このような人材養成には時間と多大な労力を必要とする。最初に中心になり得る有能な人材を捜し出し養成を行い、次いで第2段目としてその人材を中心に高等師範学校の教官の教育を行う必要があろう。学生への教育はこの第2段目から並行して行うのが、教育方法の開発も含めて有効と考えられる。

最初に行う中心的人材養成には、日本に招へいして、現在行われている実際の教育を見る研修が重要である。あるいは第三国、フィリピンなどの研修も視野に入れるべきであろう。並行して、カンボディアにおいて、短期あるいは長期の専門家による養成が必要になろう。

3) 高等師範学校の教育課程の検討と改善を必要とする。

現行の授業予定では、各教科とも104時間の教授法と156時間の知識強化（教科内容学）に分かれている。教授法にあっては、教授法、教授理論、教授計画、評価、中学までの概要などが含まれている。教科内容については、ある教官の発言を借りれば、大学で学んだこと以外には知識をもち合わせていないので、大学で学習したことの復習にならざるを得ない状態にある。特に授業時間数も多いことから、これらについて十分な教育内容を盛り、その内容を教え得る教官を養成する必要がある。

この目的の達成のためには、第1段階として教育内容の検討とその改訂、第2段階として改定内容を教官へ教育、第3段階として教官自身の研究により授業内容を充実させる必要がある。

4) 高等師範学校の教官の背景からすると、大学までの教育で、ほとんど実験を経験していない可能性がある。

高等師範学校の教官に対する再教育は、実験器具の扱い、実験手法などは初歩段階から行わなければならない可能性が高い。社会的状況からすると、日本の中学校に設置されている実験器具の多くすら、見たこともないものも多くある可能性がある。使用手法、使用原理、実験の目的等から丹念に伝える必要があろう。教官が十分に習熟しないと、学生への伝達は困難であり、誤って伝えられる可能性がある。誤って伝えられた場合に、周囲に訂正できる経験者が存在しないため、無価値な情報がそのままに伝達される可能性が高い。

初めての実験者は、誤って器具を壊す場合や薬品等が無駄になる可能性も高い。通常よりも多くのランニングコストや時間等を準備する必要もあろう。

5) 実験室、上水道、電気等の設備もなく、新たに建物から建設しなければならない。

社会資本が十分に整備されていない現状を考慮し、電気使用量、水道使用量等は極力

抑えるように設計する必要があろう。また、停電や断水等に備えてソーラーパネル等を利用した自前のエネルギーの最低限確保も考慮する必要があろう。

実験室等の設置においては、常に高温多湿であるカンボディアの自然的環境を考慮する必要がある。風雨、高温、多湿、強い太陽光は、施設や機械・器具・薬品類の維持管理に大きな影響を与える。実験室の構造、設置設備等は、高温や多湿に大きく影響するので、教室・実験室などの設計段階から注意する必要がある。上下水道、電気等諸設備についても、同様な配慮が必要である。

実験室等施設・設備については、カンボディアの実情を考慮し、引き渡し時に当国によって管理技術、資金等の面で維持管理のできる範囲を考慮して計画する必要がある。イギリス、フランス等が行っている英語教育センター、フランス語教育センターなどの維持管理手法を参考とすることが有効であろう。

6) カンボディアの予算措置等の状況から、高価な先端的実験よりも、科学的思考を養成するための、身近な材料を使った実験を中心に教育を進める必要がある。

カンボディアにおいては、教員の給料さえも十分な状況ではない。高等師範学校、高等学校、中学校の建物はあっても、実験室、水道、電気等の設備はほとんどない。このような状況にあっては、高等学校、中学校への展開の段階では、高価な先端的実験を行うよりも、身近な材料を使った、現実的実験内容を開拓し、伝達する必要がある。これには、World Education (ＮＧＯ)が行っている、学校等の水田を利用した観察や調査の実践から学ぶ方法が参考になろう。

しかしながら、高等師範学校の教官の教育については、準備でき得る限り高い水準の内容にする必要がある。少なくとも、国の最高教育機関の教官は、高い水準の教育を受けておく必要があり、国力が回復した場合には、並行して教育のレベルを上げる必要がある。また、十分な教育により、教育現場への展開の応用も身につけることが可能になろう。最高指導者である高等師範学校の教官は、科学的思考を十分にトレーニングする必要がある。また、中学・高校の教員になった卒業生に対し、教育現場の相談に乗れるように十分な力を養う必要がある。同時に、理科の教育にあっては、その本質である科学的思考の伝達が重要である。

7) 高等学校の現状から、赴任校で十分に活用できる内容を開発できる能力を養う必要がある。

高等師範学校の教育内容として、高等学校に教師として就任した卒業生が、すぐに行えるような内容についても、教育しておく必要があろう。そのためには、高等師範学校の教官に対しては、高等学校で展開できる身近な問題を中心とした教育内容を開発できる能力も教育しておく必要がある。カンボディアは低地から山岳地帯までさまざまな環

境があり、高等学校のある場所の自然は変化に富んでいる。それぞれの環境の変化に応じて、教育内容を変化させる柔軟さを視野に入れた教育をしておく必要がある。

8) 高等師範学校には、図書もなく、参考資料が乏しい。したがって、理数科関係の資料や図書を整備し、自学自習できる環境を整える必要がある。

現在のところ高等師範学校には、専用の図書室等は見あたらない。授業で行える内容には限界があり、日本においても多くの大学では図書等自習資料を揃えることによって、学生の自学自習を助けている。またこのようなことが卒業後の発展を助ける役目も担っている。さらに、卒業後も資料のあり場所やその内容等が分かっていることによって、その後の発展が期待される。授業では伝達できない内容についても資料を揃えることができるから、科学の広がりについての理解・普及のためにも至急に図書等資料を整える必要がある。

9) 高等師範学校の理科教員養成のためには、最低限実験室や図書室を新しく増築・整備する必要がある。

理科教育分野にあっては高等師範学校の教官の資質向上や学生の教育のためには、実験室と図書室が不可欠であるにもかかわらず現在全く存在しない。実験室は、物理分野・化学分野・生物分野でそれぞれ形態や機能が異なり、かつ扱う薬品等の相違から実験装置の寿命が著しく短くなったりする。例えば、生物の顕微鏡は、化学反応の塩酸や硫化物によって錆び、操作が困難になる。同様なことは物理の実験装置においても起こる。また、授業準備のための実験装置の組立、終了後の収納などに時間がかかり、実験室を分離する必要がある。以上のことを考慮すると最低３実験室が必要であろう。将来的には、教官の研究実験にこの実験室を利用する可能性もあり得る。

図書室については、単に図書資料の収集閲覧だけではなく、授業資料の作成、卒業生のレベルアップのための資料の作成、インターネットによる資料の収集など、多機能をもった部屋が望まれる。

(2) 高等師範学校の卒業生が就職する高等学校の現状

1) 多くの高等学校は、１学級60人程度の人数で編成されており、実験室も存在しない。

現在の状況からすれば、卒業生が高等学校の教師になった場合には、教師の演示実験（知識の内容を理解させるために、生徒の目の前で行う実験）を中心に授業をすることを考慮しなければならない。

このような現状も考慮して、高等師範学校の教師養成の教育課程を検討する必要があろう。

2) 多くの高等学校には、上水道、電気等の設備がない。したがって、これらの設備がな

いなかで展開できる実験を考慮しなければならない。

高等師範学校教官の養成には、高等学校等の置かれている現状を正しく認識し、最初の段階では、施設や設備のないなかでもでき得る限りの科学教育を行えるよう計画しなければならない。かつ、経済状況の変化に伴って教育内容を高度化することのできる知識や経験も伝達しておく必要がある。

６－１－２　数学教育分野

カンボディアではまだ高等学校用教科書が作成されておらず、高等学校教員が市販の図書を元にノートを作成し、教えているのが現状である。中学校教科書、市販の図書及び高校教員のノートを見た限りでは、教えられている数学は極めて抽象的で具体性に乏しく、公式暗記教育で論理性に乏しい。

以下、具体的な事柄を指摘しておく。

中学校の教科書及び高等学校の実際の授業を見てまず気になったのが、集合の記号の乱用である。数学を集合を基礎として教えることは一昔前の日本でも行われていたことであるが、教育的に失敗であったことははっきりしている。やさしい内容をむやみに記号化して、教員や生徒を無用に混乱させる必要はない。実際、調査団が見た高等学校教員は、集合の記号を使いながら、それを理解していない様子であった。

また、三角関数を教える際、三角関数の表を全く使用していないようであった。平方根を教える際も同じなのであろう。三角関数のとる数値を知らずに三角関数を学ぶなどナンセンスである。また、三角関数は測量から生まれた概念であるが、そのことに由来する演習問題もなかった。

現在使用されている中学校用教科書は、生徒の理解を深めることに対する配慮が全くされていないように感じた。例えば、一意的に解の存在する連立一次方程式を教えた直後に、解の存在しない連立一次方程式や解が一意的でない連立一次方程式を教えるのは、生徒を無用に混乱させるように思われる。また、身の周りの問題に関連するような連立一次方程式の演習問題もなかった。

数学は身近な事象と密接に関連しているのものであり、公式や定理は論理的に導き出すものであることを認識させる教育への改善が望まれる。

６－２　教員養成訓練の現状と課題、協力にあたっての留意点

カンボディアの教員養成訓練には問題が多い。教員養成（Pre-service Training）、現職教員研修（In-service Training）ともに多くの課題を抱えている。教材や教育施設が不足しているカンボディアの学校で、少しでも教育の質を上げるためには、教員の役割が大変重要になってく

る。しかしながら、現行の教員養成及び現職教員研修は、そのようなニーズに応えるものであるとは言い難い。ここでは後期中等教育（高校）を中心に、教員養成及び現職教員研修の現状と問題点についてまとめる。

(1) 教員養成

小学校教員養成課程は、全国に18校あるＰＴＴＣ（Provincial Teacher Training College）で高校卒業者に対して行われる。中学校教員養成も、全国で６校あるＲＴＴＣ（Regional Teacher Training College）で高校卒業者に対して行われる。高校教員については、大学卒業後、カンボディアに唯一の高校教員養成機関である高等師範学校（ＦＯＰ：Faculty of Pedagogy）で１年間の教員養成課程を履修することになる。

高等師範学校を修了した学生は高校教員やＲＴＴＣ、ＰＴＴＣ教官となることからも、高等師範学校はカンボディアの教員教育の頂点に立つ機関であると見ることができる。しかしながら、現状の高等師範学校は、その役割の重要さに見合うだけのキャパシティをもち合わせているとは言い難い。また高等師範学校の現行プログラムは、その質に問題があり、大きな改革が求められている。

教員養成課程は、専攻科目ごとに課程を履修することになっており、文学、歴史、地理、哲学・社会学、数学、物理、化学、生物、英語、フランス語、心理・教授法(Psycho-Pedagogy)のなかから専攻科目を選ぶ。各教科ごとに一応カリキュラムが決まっており、教授法とともに教科内容学を学んでいる。しかし教科内容学については、大学と同様の講義を繰り返しているのが現状である。

教員養成に携わる人材にも問題がある。高等師範学校教官の採用は教育・青年・スポーツ省によって行われているが、必ずしも高等師範学校の意思を反映しているわけではない。教員教育に優れた者が選ばれているとは言い難い。首都での勤務を希望する者が「不透明な状況」のなかで送られてくる。教官の大部分が元高校教員であり、知識経験ともに学生とあまり変わらない者もいるとの指摘もある。

このような状況の下、大学卒業生を受け入れる教育機関でありながら、高等師範学校のステイタスは高くない。予算も少なく、多くの活動は援助機関の支援に頼っている。教官のなかでも研究を行う者はほとんどいない。

表－１は1996年から1999年までの高等師範学校での理数科目専攻の学生数を示している。年度によって学生数が大きく変化しているが、これは必ずしも教員の需要に応えている訳ではなく、職を求めてデモをした大学生を高等師範学校に受け入れたという経緯がある。1996/97年度には1,200人以上の学生が高等師範学校に入学している。

表－１　高等師範学校理数科目専攻学生数

	1996年	1997年	1998年	1999年
生物	101	115	104	23
化学	117	151	116	9
物理	93	45	58	31
数学	269	133	216	58

高校教育のカリキュラム及び教科書・教材が未整備であることは、教員養成を一層困難にしている。教育・青年・スポーツ省では1997年からカリキュラムの見直しを行っているが、高校教育におけるカリキュラムや教科書はまだ整備されていない。表－２に示されるように、高校教育のカリキュラムが整備されるのは、2002年となっている。

表－２　カリキュラム見直し

年度	1996/1997	1997/1998	1998/1999	1999/2000	2000/2001	2001/2002
見直しする学年	Grade 1 Grade 7	Grade 2 Grade 8	Grade 3 Grade 9	Grade 4 Grade 10	Grade 5 Grade 11	Grade 6 Grade 12

教育・青年・スポーツ省教員養成局の作成した Strategic Plan: Teaching Services Development 1997-2002では、高校教員養成課程の質の向上のために、王立プノンペン大学（ＲＵＰＰ）と高等師範学校に関する方針として以下のように述べられている。

1)　教員をめざす学生のためのＲＵＰＰ学位プログラムを改革し、幅広い知識を得ることができるようにすること。現行のＲＵＰＰでの大学教育は過度に専門的であり、教員を志す者のための教育としてふさわしくない。大学でも「物理・化学・数学」などのように関連のある科目を２～３科目まとめて専攻できるように話し合いをしていくべきである。

2)　高等師範学校をＲＵＰＰに再統合し、教育セクターを担う人材をつくり出すための機関とすること。他の高等教育機関からも一目置かれるような機関となることをめざす。

3)　教員養成学校（ＲＴＴＣ、ＰＴＴＣ）の教官の実力を高め、教員養成学校の課程の質を改善する必要がある。高等師範学校の役割を広げて、教員養成学校の教官の教育も行うことにする。そのためには、現行の教員養成課程を見直して新しいプログラムをつくり出す必要がある。

上記の活動に加えて、高等師範学校の資質・能力向上（Capacity building）が重要である。高等師範学校が、カンボディアの教員養成訓練を牽引するような機関となることをめ

ざすのならば、特にマネージメント能力の向上は急務である。

(2) 現職教員研修

現職教員研修が組織的に実施されているのは小学校教育である。毎週木曜日は教員研究日として休みになり、学校群ごとに現職教員研修が行われる。このような研修は援助機関の協力によって可能となっているため、援助機関の支援のない地域や学校群では研修が行われていない。小学校の現職教員研修を行うトレーナーは高等師範学校で訓練を受けている。

一方、高校教員のための現職教員研修の制度は整っておらず、教員養成と現職教員研修の関係についても明確な定義がない。現職教員が新しい知識や教授法について学ぶ機会は皆無に等しいといえる。

教育・青年・スポーツ省は現職教員研修を実施するための予算をもっておらず、計画策定・実施能力にも欠ける。

(3) 教員養成訓練に係る政策及び計画策定と実施

カンボディアの教育の最大の問題は、明確な政策がないことである。教員養成訓練分野においても、政策の欠如と計画策定・実施能力の不足が問題となっている。

教育・青年・スポーツ省では、教員養成局を中心に、「Teacher Training Master Plan (1996年12月草稿提出)」と「Strategic Plan: Teaching Services Development 1997-2002 (1997年5月草稿提出)」を作成しているが、両方とも草稿提出からかなりの時間が経過しているにもかかわらず、いまだ最終稿となっていない。

Strategic Plan: Teaching Services Development 1997-2002には、高等学校教員教育に関する方針として以下のようなことが述べられている。

1) 現在の高校での生徒対教員の割合が低すぎるので、数値が30：1になるまで新しい教員は採用しない。
2) 中長期的に就学者数の増加が予想される。教科ごとに教員の需要にそって採用する教員数を算出し、教員採用は実力を最重要視して行う。
3) 小中学校教員として1997年以降に採用された者のうち大学卒業者を高校教員として採用し、短期の再訓練を行う。

しかし、これらの方針を実施に移せるかどうかは大いに疑問である。教育・青年・スポーツ省の計画策定能力や計画実施能力が問われるが、まだCapacity buildingの必要性が高く、多くの援助機関の資金協力や技術協力に依存している状態である。同省がオーナーシップをもつ真の意味での教育開発が実施されるようになるまでには、かなりの時間がかかるのではないかと危惧される。

第７章　実施機関

７－１　実施機関（高等師範学校）の概要

７－１－１　組織概要

高等師範学校は、校長及び２人の副校長（現在は空きポスト）の下、以下の４つの部局から成る。

(1) Administration Office

(2) Education Management Office：In-service Training を担当。

(3) Research Office

(4) Academic：Pre-service Training を担当。

その他、同じ敷地内に、付属中等学校（中高６年制）と小学校がある。教員数は 165 人（小学校を含む）で、中等学校の数学教員 13 人、物理教員９人、化学教員 12 人、生物教員 11 人となっている。

７－１－２　事業概要及び将来計画

高等師範学校は、1937 年に小学校教員養成学校として創立された後、中学校教員養成学校、小学校視学官養成学校、教育行政官養成学校などを経て、1994 年には高校教員養成学校となった。

現在の高等師範学校は以下のような機能をもつ。

(1)　高校教員養成：1994 年から現在に至るまでに４回卒業生を出しており、卒業生の合計は 3,000 人になる。

(2)　小学校視学官の教育：これまでに４回にわたり計 156 人の研修を行った。

(3)　中学校視学官の教育：これまでに 12 人の研修を行い、現在 26 人が研修中。

(4)　高校のフランス語教員養成

(5)　地方教員養成校（ＲＴＴＣ）英語教員養成

(6)　ワークショップ、郡教育行政官の現職研修

しかしながら、ここ数年の高等師範学校の活動の実績を見ると、年によって実施するコースの種類、規模が異なり、計画的に事業が実施されているとは言い難く、また、将来計画についても必ずしも明確ではない。核となる機能は今後も継続的に高等師範学校がもつことになると考えられるが、教員養成のシステムが確立されていないため、高等師範学校にもたせる機能についても明確に定まっておらず、今後必要に応じて他の機能が付加されていく可能性がある。

1979 年から現在に至るまでに高等師範学校で教員養成課程や研修を受けた者の合計は１万 2,000 人にのぼる。

現在の教員養成課程の就学者数は 427 人で、高校教員養成課程は 305 人、中学校教員養成課程（英語、フランス語）は 122 人である。数学専攻は 57 人、物理専攻は 31 人、化学専攻は９人、生物専攻は 21 人となっている。

高校教員養成課程は通常は 10 月から７月までであるが、1999 年は遅れて３月に開講したので 10 月に終わることになる。７月に卒業した大学生は、高等師範学校への入学を待つ間、小中学校教員となっていた。

高等師範学校での高校教員養成課程を終了した後、試験がある。これに合格すれば高校教員の資格が得られる。学生の 90%は合格するが、たとえ落ちても、そのまま教員を続け、次の年度に試験を受けることができる。

７－１－３　予算措置状況

高等師範学校の予算は教育・青年・スポーツ省により措置されることになっており、同省に予算措置の実績について情報提供を依頼したが、きちんとした予算書は作成されていない様子で、確認することができなかった。

教育・青年・スポーツ省の予算の大半が行政官、教員の給与に充てられていることにかんがみると、高等師範学校の予算についても同様であることが推測される。高等師範学校校長からの聞き取りから、恒常経費の一部については外部への授業時間外の教室の貸出による収入、学生の駐車代等学校自身の収入により賄っているとの情報、また、活動についてもドナーのサポートがつけば新たに実施するという状況から判断すると、恒常経費、活動経費についての予算措置はほとんどないものと推測される。

７－１－４　人員配置状況

高等師範学校の理数科教員は合計 26 人であり、内訳は以下のとおり。

(1) 数学：９
(2) 物理：４
(3) 化学：６
(4) 生物：７

高等師範学校の教官の選定は高等師範学校ではなく教育・青年・スポーツ省が決定する。首都での勤務を希望する地方の高校教員などが送られてくる。教官となった者のための特別な研修などはなく、高等師範学校の教官と学生の実力の差はほとんどないと言っても過言ではない。このような状態を改善するために、海外での研修などが望まれる。英語の教官については、オーストラリア、カナダ、英国等の協力により４名が海外留学中である。

その他、高等師範学校附属の中等学校（中高６年制）に数学教員 13 人、物理教員９人、化

学教員 12 人、生物教員 11 人の理数科教員がいる。

７－１－５　施設、設備の整備状況

高等師範学校は 23 の部屋をもち、このうち 10 部屋がプロジェクト事務所等に使われている。残りの13部屋が教室となっている。実験室はない。 また、教室にはスライドやＯＨＰ等の視聴覚機器はなく、黒板と白墨があるのみである。

７－１－６　高等師範学校における他ドナーの活動

高等師範学校における他ドナーの活動は以下のとおりである。（活動内容の詳細については第８章「他のドナーの当該分野における支援動向及び協力概要」を参照）

機関	協力内容
ＥＵ	初等教育を中心とした現職教員研修
ＤｆＩＤ	英語教育（教材開発、教員養成、現職教員研修）

７－２　国立理数科教育センターに係る計画

要請どおりカンボディア側が同センター設立の意思はもっていることは確認されたものの、センターの位置づけ、センターの設立に係る人員の配置計画、予算配置計画、活動内容等についての具体的かつ明確な計画は全くない。また、現時点での教育・青年・スポーツ省及び実施機関となる高等師範学校の人員、予算等の観点から見た当事者能力は極めて低く、新しい組織をつくり運営管理する能力は甚だ乏しいと判断されたことから、すぐにセンターを設立することとはせず、今回の協力のなかで、同センターの設立計画を含めた理数科教員養成に係る計画を策定、またそれを実施する準備をすすめていくことにつき合意した。

センター設立については、同計画が組織のサステナビリティー等の観点から十分に実効性をもつものかどうかを検討したうえで行う必要がある。

また、カンボディア側の参加意識を高める目的から、センター設立に係る以下の項目を含んだ計画案を 1999 年８月末までに作成し、ＪＩＣＡカンボディア事務所を通して日本側に提示することを依頼した。

(1) 組織
(2) 人員配置（人数及び人材リソース）
(3) 予算措置（額及びリソース）
(4) 期待される機能及び活動、機能及び活動の観点から見た高等師範学校との関係
(5) センターの位置づけ

７－３　関係機関との関係

７－３－１　教育・青年・スポーツ省

前述のとおり実施機関である高等師範学校の予算、人員の観点から見た当事者能力が必ずしも高くないことから、今回の協力の実施にあたっては教育・青年・スポーツ省の教員養成局、普通中等教育局、教育学研究局等の関係部局との十分な連携を図り、支援を得る必要がある。また、カウンターパートについてこれらの部局の人員を含めることについて先方と合意しており、理数科教育に係る行政能力、政策の立案・実施能力の向上を図るために教育・青年・スポーツ省行政官のカウンターパート研修も必要である。

７－３－２　王立プノンペン大学

高校教員養成については、王立プノンペン大学の卒業生が高等師範学校で１年間の教員養成課程を履修することで教員免許を得ている。大きく分けると、王立プノンペン大学では学科教育、高等師範学校では教授法等についての教育が行われている。

このことから、高等師範学校での教育内容と王立プノンペン大学の学士過程の内容との一貫性をもつことが重要となり、今回の協力の実施にあたっては同大学との連携を密接に図っていく必要がある。

なお、今回の調査で明らかになった王立プノンペン大学の概要は以下のとおりである。

現在 13 学科（Department）があり、その内訳は文系が心理学、哲学、社会学、歴史学、語学・文学、地理学の６学科、理系が数学、化学、物理、生物、コンピューター科学の５学科、外国語系が英語及び日本語の２学科である。

これらの学科のうち社会学科はイタリアのＮＧＯの１つである New Humanity の援助で開設されたものである。

近年、外国語及びコンピューターについては夜間部が設けられ、年額 450 ドルの授業料を徴収して、正規の学生以外の者を入学させて運営が行われており、予算の少ない大学のなかで重要な収入源となっている。

全学の学生数は 3,000 人余りであり、上述の夜間部学生 500 人余りを加えると、4,000 人近い学生が在籍している。

全学の教職員数は約 450 人であり、このうち教員は約 200 人である。教員のなかで博士学位を有する者は 11 人、修士は 25 人である。

現在までのところ学士課程のみで大学院は置かれていないが、1999 年５月以降は教育学の分野で２年制の大学院修士課程を開設することになっている。この大学院設置に関してはフィリピンのアテネオ・デ・マニラ大学の支援を受けている。開設に際して、当初は高等師範学校への設置が検討されたが、アテネオ大学側が高等師範学校にはそのための条件が整っていないと

判断し、以前から心理学とともに教育学が講じられていた王立プノンペン大学に設けられることになった。当面は担当教員についてはアテネオ大学に全面依存することになり、正規の課程受講前に学生は半年間の英語の集中訓練を受けることになるという。ちなみに、海外の大学による協力としては、この他、イタリアのソレント大学による支援がある。

大学の抱える最大の問題は経費不足である。国家からの予算措置は教官１人当たりの月給20ドルを除いてほとんどない。大学は毎年教育・青年・スポーツ省に概算要求を行い、同省はこれに基づいて財務省に要求をし、財務省を通じて国会に提出された予算が最終的に採択されることになる。しかし、教育・青年・スポーツ省から王立プノンペン大学に対して年間の予算配分額が示されることはなく、大学から個別項目について必要が生じるごとに改めて同省に請求する仕組みになっている。予算妥決額の提示がないのは教育・青年・スポーツ省のみの特殊事情のようであり、医科大学を管轄する保健省、農業大学を管轄する農業省などからは各大学に対して年間予算の提示があるという。

同大学では単位制に基づく新カリキュラムを２年前から実施しているが、各科目を担当する教員を必ずしもすべて擁しておらず、他大学や学外からの非常勤講師も招いているとのことであるが、カリキュラムに見られる開設科目が実際にすべて講じられているかどうかは甚だ疑問である。

自然科学系に限った教員の学歴状況は、生物学では博士０、修士２～３人、物理学では博士０、修士１～２人であり、化学では博士号取得者が２人というが、各分野とも大学院教育を受けた者は極めて少数である。

大学への入学は全国統一入試を通じて選抜が行われるが、競争率は受験生 10 人に対して合格者１人という狭き門である。入試科目は数学、クメール語などを含むGeneral Culture、物理ないし生物、化学、外国語の５科目である。受験生が志願表に記入できるのは１学科のみであり、第２志望などはなく、入試成績が当該学科の合格基準を満たしていない場合にはそのまま不合格となる。物理学は実験器具などが整っていないこともあって人気がない。

卒業生の多くは官僚志望である。ただし、教育・青年・スポーツ省を希望する者は少ない。理数系の卒業生に限れば、全体の19%が教員となるために高等師範学校での教育を受けることになるが、無償のうえ、奨学金まで支給されているにもかかわらず特定職種などへの奉職義務はなく、教員志望者を除いて多くの者は自ら職を探すことになっている。

カリキュラムのなかで第３学年まで外国語の履修が義務づけられているように、各分野とも外国語教育の比重が大きいが、これは外国語、特に英語の教材が多く、これを利用するには外国語の能力が欠かせないからである。ただし、教材は外国語でも授業はクメール語で行われ、試験もクメール語で答えることになっている。専門用語については翻訳も行われており、原語を音訳する方法が採られることもある。教材をクメール語化する作業も一部で行われている。

大学での研究については、社会科学、人文科学分野では若干の研究活動も可能であるが、実験器具・機材を必要とする理系の諸分野では研究の実施は不可能である。

授業は、午前は朝７～11ないし12時、午後は２～５時まで行われ、一部の授業は夜８時まで行われる。授業の１単位時間は50分である。

実験室については、化学実験室が50数人を収容できる比較的大きなものから小人数用のものまで数部屋あるが、タイル張りの固定式実験台に水道のみがあり、ガスは引かれていない。物理実験室にはロシア文字の入ったものなど若干の簡易な器具があるが、埃をかぶったものもある状態であった。生物学実験室には動・植物の標本が若干置かれていたが、極めて貧弱であった。

第８章　他のドナーの当該分野における支援動向及び協力概要

８－１　各援助機関の協力活動

カンボディアで教育分野の援助活動をしている援助機関やＮＧＯは多い。そのなかでも初等教育分野での協力を行う機関・団体が多い。初等教育は農業や貧困対策、障害者のためのプロジェクト活動の一要素として含まれていることも多いので、教育にかかわる協力をする援助機関は多岐にわたる。今回の調査では、中等教育・理数科教育・教員養成訓練等に関連のある援助機関や団体を訪問し、その機関の協力活動を中心に調査を行った。表－３は援助機関の活動をまとめてある。

表－３　調査した援助機関の活動

	協力分野	協力機関	協力額	協力期間
世銀	ＰＨＲＤ(Policy and Human Resouvce Development Fund)による調査、タケオ州での初等教育学校群パイロットプロジェクト 初等教育協力準備 教育の質の向上のためのモデル作り（ＬＩＬ）	計画局 州教育事務所	 $0.6m $0.6m $５m	 1993-1995 1998-1999 1999-2004
ＡＤＢ	中等教育開発戦略を作成予定 教育援助情報システム（ＡｉｄＭＩＳ：Aid Management Information System）	計画局 ＰＭＭＯ		1999-2000
ＵＮＤＰ	教育･青年･スポーツ省 Capacity Building	計画局		
ＵＮＥＳＣＯ	教育･青年･スポーツ省 Capacity Building 教科書開発	計画局	$4.4m	1994-1998
ＥＵ	初等（中等）教育教員養成、現職教員研修、及び初中等教育、職業準備教育（ＰＡＳＥＣ）	教員教育局 ＦＯＰ, ＰＴＴＣ 初等教育局 州教育事務所	$27m	1994-2001
ＤｆＩＤ	ＦＯＰにおける英語教育（教材開発、教員養成、現職教員研修） ＣＡＭＳＥＴ Ⅰ ＣＡＭＳＥＴ Ⅱ	教員教育局 ＦＯＰ, ＲＴＴＣ	 $４m $4.6m	 1994-1997 1997-2000
ＡｕｓＡＩＤ	中等教育試験の見直し	中等教育局		1997-2002
World Education	ＩＰＭ（Integrated Pest Management） ＦＡＯ、ＵＮＩＣＥＦ、ＵＮＤＰ－ＣＡＲＥＲＥ及び世銀の支援による	農林水産省 教員教育局		1996-

８－１－１　世界銀行（World Bank）

世界銀行（世銀）が関心をもっているのは、カンボディアでは教育開発のための明確な政策が存在しないという点である。また、外からの援助のほとんどが中央に集中していて、基層ないし地方（州以下）への支援が乏しいという点である。

重要なのは資金の使われ方であり、そこで、世銀としては、学校群(Cluster)レベルへの資金援助（Grant)、特に教育の質の向上と実績評価（performance measurement）に力点をおく政策をとってきた。世銀の協力の重点は初等教育レベルである。

基本方針としては、1999年からの５か年のプロジェクトとする予定であり、教育・青年・スポーツ省計画局内にプロジェクト準備ユニット（ＰＰＵ：Project Preparation Unit）をつくって、１年間の準備を行っている。ＰＰＵ事務所のスタッフは、Director(Chief Technical Advisor、Ou Eng氏)、３人の専門家、Program Officer、Research Facilitator、会計担当者であり、いずれもカンボディア人である。この他にＰＰＵの事務所自体の所属ではないが、世銀のプロジェクトにかかわり、３か月程度の期間で働く７人の短期外国人コンサルタント(この中にはパイロットプロジェクトの評価担当者で、まだ着任していない者を含む)がおり、パイロットプロジェクト、学校群、effective schoolの管理運営などにかかわっている。

教育・青年・スポーツ省の主張は、準備期間中に成果が上がれば、試験的（trial basis）に、いくつかの学校群に資金を投入すべきだというものである。

準備期間中の仕事としては、以下の事項の調査がある。

(1)　学校群自体の実績調査

(2)　初等教育レベルの必要経費の調査（親及びコミュニティの負担、及び土地・現物支給による寄付を中心とする費用調査）

(3)　教員に対するインセンティブ（いかなるインセンティブを与えると効果が上がるかという観点から）の調査

(4)　効果的な授業時間の調査（国としての授業時間は規定されても、現実に子どもがどれほど授業を受けているか。空腹で授業など受けていられないといった場合も含めて実態調査）

(5)　教育評価・情報システム（educational measurement and information system）の調査(実際の就学率、第１～第６学年の修了率と消耗率の測定など)以上の調査を通じて、援助資金活用の有効性を高めることが可能となる。

(6)　タケオ州で10の学校群を対象にパイロットプログラムを実施中

これらに必要な経費はいずれも人材育成開発基金（ＰＨＲＤ）Grantから支出している。１学校群当たり平均9,000ドルで、合計９万ドルの経費が投入されている。学校数は全部で65校であり、経費の一部は直接個々の学校に投入され、一部は学校群としての活動に投入される。

国の政策は週６日制だが、小学校については木曜日は教員の資質向上のための研修に充てられ、授業はない。この日を利用して、教員の訓練・研修が実施され、経費はそのために使われている。

教員の訓練・研修は学校群単位で実施されることが多く、その内容は新教科書への習熟、新しい教授法、例えば児童中心的（child-centered）教授法の習得、図書・資料室の整備などである。訓練･研修は第１木曜日に第１学年担当教員､第２木曜日には第２､第３学年担当教員、第３木曜日には第４、５、６学年担当教員を学校群の中核学校（core school）に集めて実施するというように、輪番で行われる。

最も重要なことは、提案書の作成（何をめざすのか、それに必要な援助とは何か、活動をいかにして評価するのかなどを含む）からプログラムの実施まで、部外者ではなく学校群自身が主体となって訓練・研修が行われることである。これは全く新しい経験であり、多くの援助を必要とする。この援助はタケオに拠点を置くProduct Program Teamによって行われる。各学校群所在地であるDistrictに配置されるDistrict Animatorと呼ばれる指導的役割を果たす者が提案書の作成やフォローアップなどを中心となって行う。

タケオ州のパイロットプログラムにかかわっているのは､何年もタケオで働いている外国人専門家のpilot program officerと同州出身でやはり何年も働いているカウンターパートのassistant director、２つのdistrictにそれぞれ１人のanimator、さらに各districtそれぞれから出される２人のdistrict trainerである。10の学校群のそれぞれにもcluster trainerと呼ばれる訓練指導員が配置される。もともとの構想ではanimatorだけ配置することにしていた、新しい試みであり、彼らを援助する者が必要であることが分かったために、district trainerやcluster trainerを置くことになった。cluster trainerとなるのは教職経験の豊富な教員である。

プログラムは10月の新学期開始時に始めた。最初は誰も訓練を受けた者がいなかったので、種々の準備に時間を要した。12月までに各学校群からのproposalが集まり、それから１か月をかけて州レベルの管理委員会の訓練を行うとともに、申請書の審査基準、得点のつけ方、申請書の修正、fundingの決定などを行った。

プログラムが今後どのように進むかについては不確定な要素もあるが､１つのシナリオはプログラムの実施範囲を2000年までに２つのdistrictのすべての学校群に拡大し､その次のステップとして全州に拡大し、５年間で全州は無理だが、３州に拡大するというものである。教育・青年・スポーツ省はできるだけ早く実施範囲を広げて行きたいという希望をもっているが、５年どころか20年はかかるのではないかと思われる。

パイロットプログラムのサイトとしてタケオ州を選んだ理由については、事前に教育・青年・スポーツ省と綿密な打ち合わせを行い、かなり難しい課題であるので、行政的に見て比較

的先進的な州、基礎のしっかりした州を選ぶ必要があったとされている。また学校群がある程度発展していることも必要であった。タケオ州の場合、国連児童基金（ＵＮＩＣＥＦ）がこれまで同州で学校群の整備に力を入れてきたこともあって、基礎ができていた。また同州ではニュージーランドのＮＧＯの１つであるVoluntary Service Award（ＶＳＡ)も学校群に取り組んできていた。これらが役立った。プノンペン市内ではなく、またあまり農村部でないところで、しかしプノンペン市に比較的近いという点も考慮した条件であった。この点では３つの州が選定の対象となった。Redd Barnaが力を入れているコンポンチャム州、ＣＡＲＥが支援しているカンダル州、そしてタケオ州であったが、最終的にタケオ州が選ばれた。

ＰＰＵは教育・青年・スポーツ省の計画局（Planning Department）の一部である。世銀のプロジェクトにはtechnical advisory committeeが置かれているが、同委員会の長は計画局長が務めている。計画局の中のPlanning & Aid Coordination Unit（ＰＡＣＵ：現在は単にPlanning Officeと呼ばれ、計画局の一部）は戦略的な長期計画の策定を行い、一方、ＰＭＭＵ（Project Management & Monitoring Unit。現在はProject Management & Monitoring Office）は短期の計画に対する責任を負っていた。その後、ＰＡＣＵとＰＭＭＵとの合併により機能の調整を行い、Duy Peng計画局長が統括している。両ユニットにはスタッフの継続性及び外からの援助の継続性がなく、例えば、ＡＤＢが支援していたときにはＰＭＭＵには活気があったが、ＡＤＢの援助が途絶えると勢いがなくなった。

公務員の給与が低いため、公務員のなかから外国のＮＧＯや企業に移る者が続出し、スタッフの継続性が保てなかった。公務員は給与補填の意味で各種プロジェクトに参加していた。

プロジェクトの進行状況に関して、現在は実施準備のための各種セミナー、ワークショップを開催しており、proposalの点検を行っている段階である。1999年５月末までに教育・青年・スポーツ省がプロジェクトの最終案を策定し、６月初めには世銀で検討を始め、できれば６月末までにMemorandum of Understanding署名にこぎ着け、10月からプロジェクトを始められるように考えている。

ドナー間の調整に関連して、各ドナーはそれぞれに学校群（クラスター）を支援しており、ＵＮＩＣＥＦクラスター、世銀クラスター、ＶＳＡクラスターなどドナー名で呼ばれているのが現状である。このため、１つの考え方として世銀が示唆していることは、各ドナーが州に投資を行い、世銀、ＰＡＳＥＣ、ＵＮＩＣＥＦなどいくつかのドナーからの資金を教育・青年・スポーツ省や州政府が独自の判断でプロジェクトに使うというものであり、これなら複数のドナーの資金を１つのプロジェクトで使うことができる。しかし、その実現に関して、各ドナーは原則賛成であるが、ドナーの側ではなくカンボディア側での選択や運営が中心となることから、今のところドナー間の意見の一致は見ていない。

世銀のプロジェクトが学校群システムに則ったものであるため、そのTechnical Advisory

Committeeのメンバーには、学校群にかかわりのあるRedd Barna、ＵＮＩＣＥＦ、ＴＯＰＳ（台湾のＮＧＯの１つであるTaipei Overseas Peace Service）などが入っており、学校群とは関係のないＰＡＳＥＣは現在のところ入っていないが、今後加わる可能性はあり、2000年あたりはメンバーシップが変わったものになることもあり得る。

教育統計にかかわる仕事も世銀が行っているかとの質問に対して、統計についてはＵＮＥＳＣＯの援助で行われたものであり、ＵＮＥＳＣＯの開発したマニュアルに従って、学校群を中心にデータが収集され、プノンペンに送られ、まとめられていることが分かった。在籍者数は学期初めに統計が集められるため、最も人数の多い時期の数字になっていることや、児童・生徒の年齢については信憑性に問題があるが、全体として信頼できると考えられるとのことであった。

８－１－２　アジア開発銀行（ＡＤＢ：Asia Development Bank）

ＡＤＢの支援は中等教育を中心として、これから開始される予定である。この他に、教育協力にかかわる情報システムの構築についても協力を行っている。

(1) 中等教育

1999年５月にＴＡミッションが予定されており、６か月にわたる協力で中等教育全分野にわたっての投資計画を作成することになっている。その目的は中等教育のサブセクターごとに開発目標（target)、必要投資金額を推定して、中等教育の開発戦略を作成することにある。この前提には、中等教育進学率が増加し、教育投資が必要になることがある。早ければ2000年初めに報告書が出る予定である。

(2)　教育援助情報システム（AidＭＩＳ：Aid Management Information System）

この協力の目的は、教育・青年・スポーツ省の援助調整能力の強化であるとされている。カンボディア国内の教育に関するほぼすべての情報（教育統計、スクールマッピング、協力実施団体の実績など）をデータベース化した。３月にワークショップを行って、このシステムの紹介を行い、このデータベースを１枚のＣＤに収めたものをワークショップに参加した関係諸機関及び援助機関に配布している。それまでは資料収集は困難かつ時間のかかる作業であったので、教育援助関係者のAidＭＩＳに対する評価は高い。

このデータベースには、最新の教育統計(Education Statistics & Indicators 1997/98）が収められている。また、全国のスクールマッピングに加えて、各小学校の児童数、進級率と留年率、教職員数、校長名、教室や施設の数などのデータが取り出せるようになっている。援助機関の協力についても、分野ごとに検索できるようになっており、プロジェ

クト名、協力期間、支援額、報告書の有無、事業運営機関などがProject Summary Listingとして記載されている。

非常に有用なデータベースであり、カンボディアで活動を行うすべての援助機関の活動を網羅しており、日本からの専門家派遣についても記載されている。現在のところ、学校情報に関しては小学校が中心となっているが、今後、中学校・高校についても同様の情報がデータベースに含まれるようになることが望まれる。また、このデータベースが活用されていくためには、情報の更新が継続的に行われることが重要である。

８－１－３　国際連合開発計画（ＵＮＤＰ）

ＵＮＤＰの活動は、①農村社会経済開発（ＣＡＲＥＲＥ：Cambodian Area Rehabilitation and Regeneration、地雷センターなど）、②マクロ経済運営・統治（経済・行政制度改革、税制改革）、③社会セクター開発（教育、職業訓練、保健）、④環境・資源保護（森林保護、トンレサップ湖開発・保全）などである。

教育開発分野ではＵＮＥＳＣＯの教育情報管理システム（ＥＭＩＳ）を中心としたCapacity Building（後述）がある。職業教育は貧困撲滅の手段として位置づけられており、国際労働機関（ＩＬＯ）が実施機関となり、全国７か所に州職業訓練センター（Provincial Vocational Training Center）を設置し活動を開始した。同分野にはＡＤＢ及びドイツ技術協力公社（ＧＴＺ）も資金協力及び技術協力を行っている。1993年のプロジェクト開始以来、約7,000人が35の職業分野での訓練を受け、70%が就職を果たしている。

この他、社会セクターでは、保健セクター改革を開始し、DfIDや世界保健機関（ＷＨＯ）と協調融資を行っている。カンボディアはアジアの中でもＨＩＶ感染率の高い国であり、エイズ対策としてのRoyal Government's National AIDS Office及びProvincial AIDS Committeeの支援を行っている。

ＵＮＤＰは他の多くの国々で行っているのと同様に、人間開発報告のカンボディア版を作成した。このCambodia Human Development Report 1997は社会セクターと貧困に焦点をあててまとめられている。教育についても、男女、都市と農村、収入の差などが成人識字率や就学率に大きな影響をもたらすことが示されている。

８－１－４　国際連合教育科学文化機関（ＵＮＥＳＣＯ）

ＵＮＥＳＣＯの教育分野での協力は「教育と人的資源分野のCapacity building」と「教科書開発支援」である。

(1) 教育と人的資源分野のCapacity building（Project ＣＭＢ/91/009）

1995年からProject ＣＭＢ/91/009 （Capacity Building in Education and Human Resources Sector Management）を実施中である。同プロジェクトは以下の３つのコンポーネントから成る。

1) Senior Staff Training：教育行政官を対象にした計画・運営管理分野の現職研修を実施している。1995年には28人、1996年には50人、1997年には、800人を対象に１週間のコース、1998年には700人を対象に３週間のコースを実施した。研修のための７モジュール(Educational Planning, Financial Management, Office Work Procedures, Staff Development, Performance Appraisal, Leadership and Motivation, Communication Skills）を開発した。また25人の上級行政官が近隣国で研修を受けた。この結果、カンボディア教育・青年・スポーツ省スタッフは、教育の質の向上のために、「よい仕事をする(doing better jobs)」という考え方を中心とした計画とマネジメントの基本概念を理解した。

2) Education Management Information System（ＥＭＩＳ）：1995年には28人のスタッフによる教育情報調査を行った。次に教育統計と情報工学の研修を13人のスタッフが受けた。このような準備を経て、ＵＮＩＣＥＦとともにＥＭＩＳセンターを設立し、教育セクターの基礎データを収集するシステムを構築した。地方では、1998年４月までに、16州・都市にコンピューターとＥＭＩＳデータベースシステムを整備し、学校長、州及び郡教育局がデータ収集に協力した。1996/97及び97/98の教育基礎データと教育指標を作成済みである。ＥＭＩＳデータを基に、カンボディア教育予測モデルを開発した。

3) Educational Sector Planning Workshops：４つの州教育省行政官及び中央行政官による、ＥＭＩＳのデータを基にした教育分野の問題分析、解決策検討のワークショップを実施した。ワーキンググループでは、戦略的計画作りにＥＭＩＳを活用している。加えて、州ごとの実情を調べ、州からのプロポーザルを確認した。さらに教育セクターアウトライン計画を作成した。

(2) 教科書開発支援

Science 及び Social Science の教科書開発の支援を実施している。既にGrade ９（中学３年）までの教科書を開発し、1999年から３年間かけてGrade 9から12（中学３年～高校３年）の教科書を開発予定である。クメール語及び算数・数学の教科書については、ＵＮＩＣＥＦが開発を支援しており、英語はDfID、仏語はＤＧＣＩＤが支援している。

８－１－５　欧州連合（ＥＵ）

ＰＡＳＥＣ（Programme d'Appui au Secteur de l'Education Primaire）はＥＵのプロジェクトで、小学校教育を中心とした技術協力である。４人の長期専門家（チームリーダー及び下記の各分野の専門家）により「現職教員研修（In-service Training)」「教員養成（Pre-service Training)」「職業準備教育（Pre-vocational Education)」の３つの分野の活動が行われている。

(1) 現職教員研修（In-service Training）

1995年４月から1997年６月までに、５グループ、805人の小学校教員トレーナーを研修した。研修人数の内訳は表－４のとおり。

表－４　教員トレーナーの研修実績

研修実施日	男性	女性	合計
1995年４月～８月	122	56	178
1995年９月～96年１月	132	46	178
1996年１月～４月	128	43	171
1996年４月～８月	107	17	124
1997年２月～６月	149	5	154
計	638	167	805

小学校教員トレーナーの多くは現場の教員やＰＴＴＣ教官及び小学校校長であった。研修の後、学校群ごとに現職教員研修を実施する人材である。各州ごとに決めた基準に沿って人材の選考が行われた。

研修は高等師範学校（ＦＯＰ）での訓練（４か月）とフィールドでの訓練（３か月）に分かれている。ＦＯＰでの研修は「算数」と「クメール語」で、次のような内容から成る。

1)　教授法：カリキュラム、教科教育などの研修
2)　指導法：指導のための、観察・アドバイス・コミュニケーションなどの研修
3)　遠隔教育（distance education)：教材を使って勉強を続けるための研修
4)　自習（self-help)：自分で勉強を続けるための研修

４か月の研修は、「ロールプレイ」や「問題解決（problem solving)」などの新しい方法論を学ぶことを中心としている。研修の終わった教員トレーナーは、毎週１回、現職教員研修を行っている。木曜日（小学校教員研究日として学校は休み）の午前中に、学校で研修を行う。学校群全部の教員を集めて研修を行う時と、学校ごとの小規模なトレーニングがある。トレーナー１人当たり平均６～７校、70人の教員を対象に現職研修を行ってい

る。

ＰＡＳＥＣでは、州に研修のための予算を出している。ここから教員トレーナーに対して毎月 15 ～ 25 ドルと交通費の実費が支払われる。

(2) 教員養成（Pre-service Training）

全国18か所にあるＰＴＴＣを協力対象として技術協力が行われている。これまでに370人のＰＴＴＣの教員の研修を行った。ＰＴＴＣ教官は高校の教員として教育を受けた者が多いので、小学校教育についての再研修が必要である。150 人の教官が研修を受けた。教官は教科内容と教授法ともに研修が必要であったが、特に教授法についての知識は乏しく、ゼロに等しかった。このため学生が教育実習をする際の指導がうまくできていなかった。研修では教授法に特に力を注いだ。

今後は、他の援助機関と協調して研修を行っていく予定である。例えば、どのように参考文献を活用するかについて、ＵＮＩＣＥＦとＵＮＥＳＣＯと共同で研修を実施する予定である。小学校教員養成カリキュラム改善についても他の援助機関と協調して実施していく。小学校教科書と教科内容、小学校カリキュラム、教育目標の間の整合性について見直しを行い、そのうえで教員養成カリキュラムについて考えるという方法をとる。

1995 ～ 96 年にかけて、教員養成の質の向上のために、教員養成現場の環境整備をめざした。まずＰＴＴＣの調査を行った。教官の給与は低く勤務環境もよくないが、教官の勤務時間は少ない。さらにひどいことに、給与だけもらって他のことをしている「幽霊教官」も多かった。このような不必要な教官を減らして１人当たり最低16時間は教えることにした。また70年代の社会主義の政策の下、無秩序に採用されていたＰＴＴＣの事務員も400人を 100 人まで減らした。また、ＰＴＴＣの施設修復や机・椅子の補充なども行った。

ＰＴＴＣの一番の問題はマネージメントである。マネージメントがよくないために、多くの問題が出てきており、解決されないまま一層ひどくなっている。予算が少ないことも問題であった。予算に関して透明性（transparency）を強調し、援助機関やＮＧＯに対してのプロポーザルを書けるように指導した。また活動のモニタリングもできるように、コミッティを作ることなども研修に取り入れた。何よりも既存のカリキュラムを実施できるようにすることが先決である。

ＰＴＴＣで教員養成が効率的に行われるための前提条件としてマネージメントが問題であるのと同様に、国家レベルでの教員養成に関してのポリシーが大切である。ＰＴＴＣ入学者数は必ずしも教員の需要を反映していない。

小学校教員の社会的な地位は低い。小学校よりは中学校、高校の方が「上等」な職だと思われており、優秀な人材が集まらない。

(3) 職業準備教育（Pre-vocational Education）

小中学校の教育が、知識偏重で実生活に結びつかない内容となっている。小学校・中学校９年間の教育に、実際的な教育内容をいれることにより「役に立つ教育」をめざす。そのためには、エリート的な教育ではなく実践的な教育が必要である。教育現場でのニーズを知るために、設備・教材の調査を行ったが、実践的な教育をするために十分であるとはいえない。職業準備教育（Pre-vocational Education）の概念にも「曖昧さ」があり、現場の教員の理解を得ることが大切である。

実際の活動として、次のようなことを計画している。

1) 小学校低学年から、職業教育への興味を引き出す
2) カンボディアの経済開発と技術に即した教育を行う
3) 教科書の開発を行う
4) 地元で手に入る材料を使った教育を行う

８－１－６　英国国際開発省（DfI D）

CfB TはDfI Dの最近10年来の政策である途上国の開発援助を民営化する方針の下に、同局の委託を受けて、途上国の教育分野の開発に従事してきた。民営化方針の背景には、ブリティッシュ・カウンシルのような政府機関と民間団体を競争させることで、開発プロジェクトの運営効率を高めようとする狙いがある。

高等師範学校内の英語教育リソースセンターは、もとはＣＡＭＳＥＴプロジェクト開始に伴い設置されたものである。そして、当初からプロジェクト終了時には改修した建物や諸機材はカンボディア側に引き渡され、その後の運営はカンボディア側によって継続されるべきであることを繰り返し強調してきた。1996/97年にプロジェクト実施のために現在同センターとなっている２階建て建物の改修には大金を投じたし、光熱水料費、職員の給与など諸経費も負担した。

現在では、高等師範学校内の英語教育リソースセンターについては、常勤のボランティア１人の給与を負担しているだけであり、職員給与、光熱水料費、コンピューターの維持費などセンター運営に必要な諸経費については、カンボディア政府の負担及びセンターの種々の収益活動からの利潤で賄っている。当初カンボディア政府に熱意や計画がなく、経費もなかったため、運営継続の重要性を強調したばかりでなく、収益活動によって運営維持の道を開いた。

収益活動には２階建て建物の１階部分で行っているe-mail使用の外部者への開放、種々の印刷英語教材の販売、センター資料のコピー料金、会議室の賃貸料（１日20ドル）などがある。年間800～900人がセンターを訪問し、利用している。会計状況については、事業が既にCf ＢＴの手を離れているので不明であるが、各種収益活動からの利潤はセンター経営のための

必要経費を満たし得るものであり、教育部には会計報告書があるはずである。

センターの運営責任者であるカンボディア人は運営面の経験がなく、同時に英語教科書の執筆を行わなければならないので、十分な時間もない。運営がきちんと行われているとは言い難いが、口を出すと依存されたり、代わってやることになるために自制するほかないという。

1992年にイギリス政府はカンボディア教育支援を考えたが、政府間協定がなく、自ら教育・青年・スポーツ省に直接協力することはしないで、CfBTに経費を供与し、同省の管轄外で英語教育を実施することになった。

1994年に97年までの３年間のプロジェクトが約250万ポンドの経費で発足した。その内容は英語教員養成リソースの開発、視学システムの確立、シラバスの作成であった。

1997年から2000年８月までは、中等教育レベルの視学システムを強化するプロジェクトが進行しており、視学局と連携して事業を実施している。これは中等教育に限られるが、英語のみでなく全教科にわたるものである。カンボディア教育・青年・スポーツ省は現在、統一的な視学システムの構築を計画しているが、容易ではない。問題の根本には初等・中等教員の不足がある。大卒者は政府官僚になることを望むメンタリティがあり、中等学校に配置されるとなるとストライキが起こるといった具合である。

カンボディアでの教育開発プロジェクトには、こうした ①教育・青年・スポーツ省中等教育視学局の強化の他、②州レベルの視学システム運営、③英語教員の養成・研修システムの構築、④中等英語教科書・教師用参考書の作成・配布と評価システムの構築、⑤生徒の学習効果測定のためのシステム（ＥＬＴ：evaluation system）の開発、⑥教育・青年・スポーツ省及び他省庁の都合17省庁の幹部職員の英語能力向上プログラム（ＬＡＭＴＵ:The Language and Management Training Unit）の運営、がある。CfBT派遣の専門家は、視学局、州レベルの視学関係、教科書作成、教員養成、訓練管理システム（training management system）の各分野に１人ずつ、計５人が働いている。これらの専門家のうち訓練管理システムの専門家は教育・青年・スポーツ省の財務局と財務省とを結びつける役割も果たしている。

この国ではプロジェクト参加者の日当（per diem）を準備しなければ何も動かない。しかし、日当はできるだけ低く抑え、また教育・青年・スポーツ省自体が準備するようにもっていくべきである。日当については統一した基準のようなものはない。しばしばＵＮＩＣＥＦとＵＮＤＰの値に言及されるが、ＵＮＩＣＥＦはこれを高すぎるとして、引き下げようとしている。CfBTはＵＮＩＣＥＦの値を考慮して教育・青年・スポーツ省と独自の基準を取り決めてきた。その際、給与補填（salary supplement）は決して行わず、特定の仕事に対する報酬ないし手当の形で支払い、例えば教科書執筆の場合には、超過勤務手当として１時間当たり9,300リエルを、１日最大４時間分を越えない範囲で支払っている。プロジェクトが終わって、当該の事業を継続しようと思えば、教育・青年・スポーツ省がこの手当部分を自ら準備し

なければならなくなる。

カンボディアほど多くのプロジェクトが進行している国は少ない。しかも、実質的にプロジェクトを理解できるのは、最上級層の幹部のみで、中級以下の官吏は責任も決定権も、当該事項に関して見識をもっていないというのが現実である。

教育・青年・スポーツ省内の調整機能は全くといってよいほど働いていない。中等視学課でも職業教育課でも学校関係の同じようなデータを頻繁に集めている。また計画局（Planning 0ffice）にはＥＭＩＳがあり、ＵＮＥＳＣＯやＵＮＤＰの援助を受けるＥＭＩＳもまた各種の学校関連データを収集している。中等教育局も既得権の維持に汲々としており、他の部局との重複など意に介しないふうである。さらに、計画局と組織上はその下位に位置づけられているＰＭＭＯ（以前のＰＭＭＵ。教育・青年・スポーツ省の中には従来、unit、office、institute など種々の名称の部局があり複雑であったが、現在では office に統一されつつある）との間には対立がある。その原因としては、歴史的要素、政治的要素、当該責任者の人格的要素が考えられる。

何らかの訓練プログラムを始めるに際しては、しっかりとした計画が重要である。しかし、他に同様のプログラムが存在するかどうかを知ることは容易ではない。教育・青年・スポーツ省関係者もそうした情報を積極的に教えてくれることはない。また、何か養成・研修のプログラムを考える場合、新たに仕組みやシステムを構築するのではなく、既存のものを利用することを考えるべきである。例えば、毎週木曜日は教員の研修日になっており、現在のところ、ほとんど管理運営（administration）関係の事柄に時間が使われているが、この時間帯を実質的な研修に利用することが可能である。現実の状況として、校長や幹部教員は度々研修のためにプノンペン市に呼び出され、そのたびに当該校での授業が妨げられることが起こっている。重要なことは教員ができるだけ長く学校にいるようにして、授業が抜けることがないようにすることである。視学官にしても、研修をやるために本来の業務である学校の指導・監督活動を休ませるのではなく、研修を実施するのであれば、彼らが学校の視察に出かける時間を研修の機会として捉えるべきである。中央の視学官になるような人は当該教科の指導では最善の人物であることが多く、しばしば州レベルに出かけ、複数のプログラムにかかわりをもつことが往々にしてある。大切なことは、同様の内容の複数の研修があれば、重複をさける調整を行うことである。

８－１－７　オーストラリア国際開発援助庁（AusＡＩＤ）

AusＡＩＤからの資金で、オーストラリアの非営利団体ＡＣＥＲとＩＤＰが実施している中等教育の試験の見直しプロジェクトである。協力期間は５年間（1998 ～ 2002 年）となっている。中等教育すべての教科の試験の見直しを行う予定である。他の援助機関との連携も行って

おり、英語科についてはDfIDと協力して実施することになっており、定期的に会合をもっている。

カンボディアでは中学３年と高校３年に全国試験が行われる。この試験はカンボディアの教育の中心的存在であり、大変に重要なものとして認識されている。下記のような他の活動と協力するために定期的に会合をもっている。

(1) 王立プノンペン大学の調査研究に関して、調査研究方法のワークショップ等にも貢献

(2) 教科書作成、カリキュラム、シラバスの開発

(3) ＣＡＭＳＥＴ Ⅱのなかの現職教員研修、視学制度及び英語教育

一般的に、全国統一試験を行うための前提は、次のようになっている。

(1) 試験の内容は生徒が学んだことを反映している。

(2) 生徒は試験に臨むまでにカリキュラムの大部分を学んでいる。

しかし、カンボディアではこのような前提が成り立っていない。まだ高校教育のカリキュラムが作られていない。カリキュラムが完成するまでに、早くてもあと２年間かかる。現在教えられている教科内容は、その目標が明確ではなく、教授法も不適当である。このような傾向が特に強いのが科学科目である。実験施設や器具は皆無に等しく、実験はほとんど行われていない。

試験問題は「体験から得られた知識」ではなく「暗記された知識」をテストするものとなっている。「実践」ではなく「理論」を、「応用」ではなく「機械的な計算力」をテストしている。認知の高いレベルではなく、単なる理解しか試験していない。教育・青年・スポーツ省は最近、選択肢問題を導入したが、これにより、試験の問題はますます「単なる知識をテストするもの」としての傾向を強めている。

Grade 12（高校３年）試験には20%の平常点が含まれる。平常点は学校の期末試験の結果をまとめたものにすぎないうえ、全科目の合計点にしている。学校ごとの格差も大きいが標準化なども行われていない。改善すべき点が多い。

Grade 12 試験は毎年７月頃に行われる。1999 年は７月 19、20 日に行われる予定である。試験は500点満点で250点以上が合格となっている。不合格でも235点以上ならば追試を受けることができる。1999 年の追試は８月 30、31 日に行われることになっている。

1998年のGrade 12試験では、受験者は2万9,685人で、合格者9,603人、追試合格者5,117人、合格者計1万4,720人であり、合格率は49.59%であった。今年の受験者は3万3,000人に増加することが見込まれている。

1998 年の Grade ９（中学３年）試験では、受験者は９万 1,140 人、合格者２万 1,661 人、追試合格者 9,575 人、合格者計３万 1,240 人であり、合格率は 34.28%であった。

受験料はGrade ９試験1,000リエル、Grade 12試験1,500リエルであるが、試験にかかるコストをカバーすることはできていない。中等教育開発予算のかなりの割合（推定では25％）が試験に費やされているという報告もある。

Grade 12試験に合格すると、大学受験資格が得られる。大学は学部ごとに入学試験をするが、この時にGrade 12試験の結果は考慮されない。大学進学希望者に比べて大学の定員は大変に少ない。Grade 12試験の合格者1万4,720人に対して、すべての学部の合計でわずか1,800である。

Grade 12試験に先だって２学期に模擬試験がある。これは中央で問題を作り学校ごとに実施される。1999年は６つの州でのみ実施される。

1997年に小学校の卒業試験が廃止された。全国統一試験を廃止して学校ごとあるいは地方ごとの試験をする方向に向かっている。Grade ９試験も廃止しようという意見もあり、３年ほど前から検討されている。

８－１－８　その他

(1) World Education（ＮＧＯ）

World EducationはＦＡＯの資金協力で、包括的な地域に根ざした稲作の害虫対策（ＩＰＭ：Integrated Pest Management）を行っている。協力対象は農林水産省であるが、実際の活動において学校を活用しているので、教育・青年・スポーツ省もかかわっている。

これは学校に水田を作り教育活動を行うことにより、地域の害虫対策を行うという新しい試みである。小学校（５、６年生対象）、中学校（２、３年生対象）、教員養成学校などで活動を始めた。

小学校の活動では、稲の発育の観察を行う。毎週木曜日に活動が行われ、児童は稲の高さを測ったり、稲についている虫を採集したりする。稲や虫を観察し、写生し、観察結果をグループごとに発表し、討論を行う。Eco-system Analysis（ＥＳＡ）の図を描く。採集した虫を分類し、飼育して、何を食べるのか、どのように繁殖するのかを観察し、どのようなものを食べるのか実験を行う。ある虫が害虫であると教えるのではなく生徒に観察させて「発見」させる学習方法をとる。

さらに、水田で、殺虫剤の使用（ＩＰＭの方法、従来の方法）、肥料（ＩＰＭの方法、従来の方法、回数を分ける）の５つのやり方の試験を行った。

活動に先がけて16週間の研修を行った。対象地域は、６州（Kandal, Takeo, Svay Rieng, Pursat など）である。1996年には、中学校１校35人の生徒を対象に水田を作って活動をした。1997年には小学校２校で活動し、その学校で２日間の指導者のためのワークショップを行った。1998年には６州12校（生徒394名、教師26名）に活動を広げ、

州でのワークショップに加えて、中央でのワークショップも行った。1999年には、ＴＳＦ（教員、州及び郡教育局職員研修）、ＳＦＳ（教員を研修する人材の15日間の研修）、教員養成校での研修、コミュニティマネージメントの研修（世銀からの支援による）などを行った。これに加えて野菜栽培も始めた。

８－２　援助機関調整・協調

カンボディアの多くの援助機関の間では公式・非公式な情報交換が盛んに行われている。いくつかの会合があり、最も代表的なものにＥＤＵＣＡＭがある。ＥＤＵＣＡＭはカンボディアの教育にかかわっている政府職員、援助機関、ローカル及び国際ＮＧＯのスタッフが、定期的（毎月第２金曜日）に集まる会合である。教育にかかわるさまざまな課題、プログラム、懸念される事項などについて意見交換する場となっている。1999年２月の会合ではＣＧミーティングへの提言について、World EducationによるＩＰＭに関する報告、インドシナ開発会議の報告、中等教育インスペクター研修、教員ストについて、３月の会合では「万人のための教育」評価計画について、と幅広い議題が討議されている。

ＥＤＵＣＡＭには教育・青年・スポーツ省の代表も参加することになっているが、欠席することも多い。このような会合や情報交換の場に対して同省の官僚たちがオーナーシップをもってかかわっているとはいえないのが現状である。ＥＤＵＣＡＭは、多くの点でドナー側主導（donor-driven）であり、原則として英語を媒介としている。情報交換や討議の場としては役立っているが、何かを決定するという機能はない。最近、援助機関の出す日当の基準を決めようとしたが、うまくいかなかった。

この他に、フランス語での会合（ＥＵ、フランス等が参加）、教員教育に係る会合（DfID、ＥＵ等が参加）及び学校教育にかかわっているＵＮＩＣＥＦ，DfID，ＥＵ，AusＡＩＤ，世銀などの会合も計画されている。

このＥＤＵＣＡＭでは、長老格である世銀のMcNamara氏が議長を務めることが多い。また、オーストラリアの教育専門家であるDr. Coyneらの貢献も大きい。ＪＩＣＡ事務所からは、企画調査員が参加している。このような機会を活用して、ＪＩＣＡの理数科分野での協力について紹介し、意見交換を通じて理解を求めることは有効であると考えられる。

８－３　援助機関の協力と持続発展性

教育・青年・スポーツ省においても、政府と援助機関との調整・協調の必要性を認識しており、Education Sector Review 1999にも次のような記述がある。

「教育の質の向上及び初等教育における量の拡大は、さらなる調整を必要としている。緊迫した財政の下、教育の質と量のジレンマにいかに対処していくか、カンボディア政府と援助機関が協

力して戦略をたてるべきである。また、援助の効果を最大限に生かすためには、カンボディア政府と援助機関との間に真のパートナーシップを築かなければならない。真のパートナーシップを築くことができるか否かは、カンボディア政府が社会セクターにどれほどの予算を投資するのか、その意思にかかっている。」

しかし、依然として教育・青年・スポーツ省にあてられる予算は少なく、多くの活動は援助機関の資金協力によってのみ可能な状態である。多くの活動は、援助機関の協力がある間は盛り上がりを見せるが、協力が終わると徐々に活動が停止していくことも希ではない。例えば、教育・青年・スポーツ省行政官の Capacity building はＵＮＤＰ / ＵＮＥＳＣＯの協力によって行われてきたが、プロジェクトが佳境に入ったところで資金切れとなり、1999 年で活動を終えることになった。この後、他の援助機関が引き続き支援を行うことなしに活動を継続することは困難である。

資金協力終了後、訓練を受けた人材が引き続き活動を行うことは難しい。公務員の給与は低く、援助機関ではしばしばカウンターパートの給与補填を行っている。しかし、援助が終われば、有能な人材は、新たな給与補填を求めて他のプロジェクトに移ってしまう。

このように、カンボディアの教育は持続性（sustainability）の面で問題が多い。援助機関も、この問題を認識してはいるものの、解決策を見出せない状態である。これまでに多くの援助が入り「援助慣れ」しているカンボディアと援助機関との真のパートナーシップの構築には時間がかかることが予想される。

第９章　プロジェクト協力の基本計画

９－１　プロジェクトの名称

要請書の名称であったSecondary Teacher Training Project in Science and Mathematicsを<u>Secondary School Teacher Training Project in Science and Mathematics</u>と改めることで合意した。

９－２　協力の方針、期間及びサイト

(1) 協力の方針

カンボディア側からの要請については、1996年提出の本要請書では、高等師範学校を実施機関とし、その資質・能力向上(Capacity building)をプロジェクトの目標にしていたが、その後1997年に提出された追加要請書により、国立理数科教育センターを設立し、そのCapacity building を目標とする内容に変更された。

今回の調査を通して、要請どおりカンボディア側が同センター設立の意思をもっていることは確認されたものの、センターの位置づけ、センターの設立に係る人員の配置計画、予算配置計画、活動内容等についての具体的かつ明確な計画は全くないこと、また、現時点での教育・青年・スポーツ省及び実施機関となる高等師範学校の人員、予算等の観点から見た当事者能力は極めて低く、新しい組織をつくり運営管理する能力は甚だ乏しいと判断されたことから、すぐにセンターを設立し、これに対する協力を行うことはしないことにつき先方の了解を得て、９－３節で述べるマスタープランの大枠の協力につき、カンボディア側と合意した。

なお、本件プロジェクト終了後の継続的な協力実施の可能性については、プロジェクト終了時にその必要性、妥当性を検討し、それらが認められた場合には継続協力の可能性がある旨をカンボディア側に伝えた。

(2) 協力期間

協力期間については、３年間とすることで合意した。

(3) プロジェクトサイト

高等師範学校とすることで合意した。しかしながら、高等師範学校の施設規模は非常に限られており、後述するとおり、プロジェクト活動を実施するためにプロジェクト基盤整備費で小規模の施設を建設することが望まれる。同施設完成までの間については、現存施設の教室１部屋をプロジェクトオフィスとして提供すること、及びプロジェクト活動に必要なス

ペースについても必要に応じて準備することがカンボディア側により約束された。施設完成までは、計画作り、カリキュラム、シラバス開発等の活動が中心となることが想定され、プロジェクト基盤整備費により施設が完成した後に（おそらく２年目から）開発されたカリキュラム、シラバス等を使ったコースを実施することが想定される。

９－３　マスタープランの大枠

(1) プロジェクト目標

高等師範学校の中等理数科教育に係る機能を拡充し、能力を向上させるとともに、中等理数科教育にかかわる人材を広く養成する中心的な組織を新たに設立する構想も考慮に入れた中等理数科教員養成・訓練の改善に係る計画を策定し、同計画を実行する準備が整備される。

(2) 成果

1) 中等理数科教員養成・訓練の改善に係る将来計画が策定され、同計画を実行する準備が整備される。
2) 高等師範学校の中等理数科教育に係る各種養成・研修コースの質が向上する。
3) 理数科教育に係る啓蒙活動が活発化する。

(3) 活動

1) 中等理数科教員養成・訓練の改善に係る検討委員会を組織・運営する。(＊注 1)
2) 1996年に実施された Science and Mathematics Education Secondary School Survey の調査内容をアップデート、補足するための各種実態調査を実施する。
3) 理数科教員養成・訓練の問題点について検討する。
4) 理数科教員養成・訓練の改善に係る計画を策定し、同計画を実行する準備が整備される。
5) プロジェクト活動のための各種作業部会（カリキュラム開発作業部会、等）を組織、運営する。
6) 養成コースの現有カリキュラムの修正及び現職訓練コースのカリキュラムの開発を行う。
7) 養成コースの現有シラバスの修正及び現職訓練コースのシラバスの開発を行う。
8) 教育教材及び教育要領を開発する。
9) 各種養成・研修コースを実施する。
10) 各種養成・研修コースの評価・モニタリングを行う。

11) 現場の教員、生徒を対象にしたセミナー、ワークショップ、展覧会を開催する。

12) ニュースレター、ジャーナルを発行する。

（注1) 同委員会は将来的にセンターを運営管理する人材を考慮に入れつつ、カンボディアの理数科教育を担う人材を広く教育・青年・スポーツ省関係局、王立プノンペン大学、高等師範学校、地方教員養成校等から集めて構成することで合意した。

９－４ 協力の範囲

プロジェクトの対象とする養成･訓練コースは高等師範学校が現在有する中等理数科教育に係る以下の３つのコースとすることで合意した。

(1) 高校教員の Pre-service Training （養成コース）

(2) 中学校・高校の視学官の In-service Training （現職研修コース）

(3) 地方教員養成校の教官の In-service Training （現職研修コース）

なお、要請では、高等師範学校に新たに高校教員の In-service Training （現職研修）の機能を付加し、これについてもプロジェクトの対象とすることが求められていた。しかしながら、現時点では高校のカリキュラム・シラバス・教科書がまだ作成されておらず、今年から３年間をかけて作成することが予定されている状況であり、現職研修は教科書が作成されてから実施する方が効果的であるとの判断から、今回の協力の対象からははずすこととした。

今回の協力の対象はこれら３つのコースに焦点を当てて高等師範学校の理数科教育に係る能力を向上させ、これらが質的に充実した後に高等師範学校に高校教員の現職研修等の機能を付加し、機能のさらなる拡充をめざすこととする。

９－５ カンボディア側の取るべき措置

カンボディア側の取るべき措置として以下について合意した。

(1) コロンボプランのもと、カンボディアで働く第三国専門家に認められるものと同等の特権、免除等を日本人専門家及びその家族にも認める。

(2) カウンターパート及び運営のための人材のサービス、日本人専門家及びプロジェクトの活動に必要なオフィススペース、土地及び施設設備、日本からの供与機材以外に必要となる機材等の供与を行う。

(3) 供与機材の設置、維持管理費及びカンボディア国内での運搬にかかる費用、カンボディア国内で機材にかかる税、プロジェクト活動に必要なランニングコストの支出を行う。

９－６　日本側の取るべき措置

日本側の取るべき措置として以下について合意した。

(1) 専門家の派遣

1) 長期専門家

チーフアドバイザー（理科もしくは数学教育兼務）

業務調整員

理科もしくは数学教育の専門家

2) 短期専門家

必要に応じて。

(2) 必要な機材の供与

(3) カウンターパートの本邦での研修

９－７　施設建設

前述のとおりプロジェクト活動を実施するためにプロジェクト基盤整備費で小規模の施設を建設することが望まれる。また、改修か新設かについては、改修の対象となる可能性のある建物を視察したが、非常に古い木造の建物であった。プロジェクトでは実験室をもつ建物（水回りの整備が必要）を想定しているため、改修による使用の可能性は低く、新設することが妥当と思料される。

９－８　プロジェクトの実施体制

プロジェクトの実施体制については、以下のとおり合意した。

(1) プロジェクトの運営に係る最高意思決定組織として、日本・カンボディア双方の以下のメンバーからなる合同運営委員会を組織する。

1) カンボディア側

教育・青年・スポーツ省関係局（教員養成局、普通中等教育局、教育学研究局、計画局及び経理局)、カンボディア開発評議会、王立プノンペン大学及び高等師範学校の代表

2) 日本側

日本人専門家チーム及びＪＩＣＡカンボディア事務所の代表

(2) 教育・青年・スポーツ省次官を合同調整委員会の議長とし、また、同次官はプロジェクトダイレクターとしてプロジェクトの運営・実施に係る総責任をもつ。

(3) 教育・青年・スポーツ省教員養成局長はプロジェクトマネージャーとしてプロジェクトの運営管理に係る責任をもつ。

(4) 高等師範学校の校長は副プロジェクトマネージャーとしてプロジェクトマネージャーを支援する。

第１０章　技術協力の妥当性

カンボディア中等理数科教員養成・訓練計画の実現にあたり、今回の協力は、以下の理由から妥当なものと認定できる。また本件協力は、カンボディア教育・青年・スポーツ省が提出している中等理数科教員養成・訓練にかかわる要請の趣旨を実現するうえでも、実行性のある施策であると評価できる。

(1) 理数科教育の重要性：カンボディアの基礎教育開発の要として

カンボディア政府は1996年、最初の５か年計画である「第１次社会経済開発計画：1996-2000」(First Socioeconomic Development Plann: 1996-2000) を公にした。このなかでカンボディア政府は、教育分野の重点開発課題として「基礎教育の質の向上」、「基礎教育の普遍化」、「教育計画・経営システムの改革」の３つを上げている。基礎教育としては、６＋３の９年間の教育が予定されており、初等教育での留年や中途退学防止に加え、前期中等教育での平等で普遍的な就学が、2000年までの教育政策課題として打ち出されている。カンボディアの現状に照らして見ると、計画最終年度の2000年までにこれらの目標が達成される可能性は薄いと思われるが、引き続いてこれらが教育開発の中心テーマとなっていくことは疑いない。現在、カンボディア教育・青年・スポーツ省を中心に、中等教育普遍化に向けた改革努力が、海外のドナーの支援の下に進められており、教科書開発及びカリキュラム開発、教育行政制度の改革、教育経営及び学校運営の改革等の分野で、着実な進展が生み出されている。これに加え同省は、教員の質の向上をめざして独自の「教員養成マスタープラン」（1996年）を策定し、教員需要の急増と質的向上に対処する努力を開始している。この計画によると、現在（1996年）２万1,260人いる中学教員は2000年までに新たに１万9,195人を訓練し補充する必要があり、5,538人いる高校教員は1,750人の補充が必要とされるという。また、教育行政官や視学官の養成・訓練も必要とされている。しかし現在、教員養成・訓練は初等教育分野に集中し、上記の中等分野の計画は、海外ドナーの支援による外国語（英語、フランス語）教師の訓練が進められている以外、遅々として進んでいないのが実情である。このようなカンボディアの中等教育開発の現状のなかで、この度我が国が前期及び後期中等教育分野での理数科教員養成・訓練計画に協力することは、同国の教育開発基本計画の達成を支援すことにつながり、カンボディア及び海外ドナーから、高い評価と期待をもって受けとめられることになろう。

上記の５か年計画においては、カンボディアの社会経済の発展にとっての３大問題として、貿易赤字、財政赤字、“人材赤字”が指摘され、この克服が開発計画の基本となることが強調されている。このなかで人材の赤字とは、管理・技術・技能分野の人材の不足を意味し、

これら人的資源の回復が緊急の課題であると述べられている。特に人的資源開発に関連する開発戦略として、①ヒューマンスキルを向上させ市場経済化への適応を促進する、②輸出志向の工業による雇用開発と中小工業及び観光業(tourism)の開発、③天然資源の持続可能な利用と保全管理、④カンボディア経済の地域及び世界経済への再統合、が指摘されている。これらの戦略的課題の達成は、中等及びそれ以降の教育制度の充実と、その下での実務的・技術的・管理的人材の潤沢な供給を抜きにしては考えられない。このような人的資源の要請に応えるためには、中等教育の充実、特に理数科分野の教育における質と量の改善がその出発点となろう。すなわちカンボディアの開発戦略の遂行のためには、理数科の基礎知識と実務的能力に支えられた中核開発人材の育成が、緊急課題となるものと考えられる。

(2) 基礎教育の一部としての中等教育

周知のとおり、「万人のための教育」（ＥＦＡ:Education For All）世界会議の強い国際世論の下に、国際援助機関と途上国の多くは、1990年代初頭から初等教育の拡充と質的向上に努力を集中させてきた。また、1995年のＯＥＣＤ開発援助委員会（ＤＡＣ）の新開発戦略は、貧困・保健医療・環境・初等教育分野の問題に焦点を当てた社会開発の理念をうたい上げた。これらの結果として、国際機関の教育援助政策は、初等教育や識字及び社会的弱者の教育に焦点が当てられ、この分野で大きな貢献を生み出した。しかし、初等教育の普遍化努力と並行する形で、その次の段階である基礎教育の充実が求められるようになった。ちなみに基礎教育（初等教育６年と前期中等３年を含む９年教育）の普遍化は、現在ＡＳＥＡＮ諸国の共通の教育開発テーマとなっている。ＡＳＥＡＮ諸国においては、産業分野の技術革新や国際競争力の強化をめざす開発政策を推進するうえから、中等教育卒業を前提とした中級産業人材の育成が、教育開発計画の中心テーマとして浮上してきている。タイ国の第７次教育開発５か年計画（1992年～1996年）はその典型であり、この５か年計画においては、初等教育から前期中等教育への進学率を事実上100%に向上させ、９年間の基礎教育を普遍化することが教育目標として明記された。

カンボディアにおいても、第１次５か年計画の教育開発目標として、９年間の基礎教育の普遍化がうたわれている。このような教育開発課題の設定は、同国がＡＳＥＡＮの一員となり経済・経営の国際化に対処するため、緊急に人的資源の高度化を図らねばならない現実を考えれば、当然の結果といえよう。しかし前述のとおり、カンボディアの教育開発に対する国際機関の支援は、ＥＦＡやＤＡＣ指針の影響もあってほとんど初等教育に集中しており、中等分野の教育開発は停滞したままである。教育・青年・スポーツ省の試算によると、1997年現在で前期中等教育の純就学率は23%、後期中等教育ではわずかに6.3%である。

このような現状を改善し、５か年計画で目標とされた基礎教育の普遍化を促進するため、

近年カンボディアでは小学６年生から中学１年（７年生）への進学を無試験とする政策変更が実行された。これにより中学への進学者数が急増し、教室、教材、教師の不足が深刻化することが懸念されている。このような情勢から明らかなとおり、カンボディアにおいては、段階的というより、今後一挙に９年間の基礎教育を達成することが教育開発の重要目標となっている。このような情勢のなかで中等学校教員、特に理数科分野の教員の養成・訓練は急務であるが、現在この重要課題に応えようとしているドナーは我が国だけである。前述のとおり、初等教育に専念する国際援助機関の教育開発支援には、一貫した政策目標と財政面・技術面での制約が存在している。そこで我が国がその隙間を埋め、中等理数科教員養成・訓練計画を通じ、カンボディアの基礎教育普遍化政策の全体的推進を後押しすることは、極めて大きな意義をもつことになる。

(3) 中等理数科分野での教員養成・訓練の充実の必要性

カンボディアの国づくりにおける最大の問題は、あらゆる分野での基幹人材の供給不足である。その原因は、1975 年から 1979 年の約５年間にわたるポル・ポト政権時代に生じた知識人の大量虐殺に由来するものであるが、悲劇の対象とされた人々の大半が教師を中心とした知識人であったことを考えると、人的資源開発に対する技術協力は、カンボディアへの開発協力の内でも特に急を要する分野であるといえる。ポル・ポト政権後の教育再建においては、学校建設に合わせて大量の無資格教員の補充が行われた。その結果現職教員の多くが、その後の教員再訓練の努力にもかかわらず、教員としての基本的能力を欠いた低資格者にとどまっている。初等教育及び中等外国語（英語、フランス語）、国語（クメール語）においては、国際教育援助の下に教員再訓練の努力が積み重ねられてきているが、中等の理数分野では教員養成・訓練の本格的努力はいまだに開始されていない。したがって、我が国がこの分野で指導的役割を果たし、カンボディアのみならず国際ドナー・コミュニティーからの期待に応えることは、国際開発協力の重要な貢献目標となろう。

以上のような基本的教育政策課題に加え、カンボディアを取り巻く現状は、理数科人材（教育者及び理数科能力保持者）の供給体制の確立を、緊急な要請案件として求めている。このような要請の背後にある第一の問題は、間近（1999 年４月下旬）に迫っているカンボディアのＡＳＥＡＮ加盟である。ＡＳＥＡＮ加盟を契機として、外交・貿易・運輸通信・経済・技術等あらゆる分野で近隣諸国との対等の国際交流が本格化し、その任に当たる人材の養成が急務となっている。前教育・青年・スポーツ省長官によると、そのような人材の資質の中核は、語学力（英語）と理数科的能力であるという。このような能力を備えた人材の供給体制を確立することは、今後の経済・経営におけるグローバル化の進展と、カンボディアのこの流れへの効果的な適応の必要性を考えるとき、より明らかなものとなろう。この点は本プ

ロジェクトに対するカンボディアの要請書のなかにも明確にうたわれている。

以上の点を勘案すると、カンボディアに対する理数科教員養成・訓練の支援は、長期的かつ体系的なもの（人づくり、組織づくり、制度づくり、機材供与等を含む）であることが望まれる。すなわち、性急に新たな理数科教育の手法を教育現場に持ち込むのではなく、まず第一に理数科教育に関連する人材の育成及び教材の開発、また必要な組織・制度の整備を行い、その下で理数科教育を実践する教師の養成・訓練を行っていく必要がある。このような人づくり・制度づくりがカンボディア当局主導の下に行われ、理数科教育の体制が整備されてはじめて、学校教育を通じた持続的な理数科人材の育成が可能となる。我が国のカンボディア理数科教育に対する支援は、このような方針に基づいて進められる必要があろう。

(4) カンボディア側の財政及び組織的条件

1998年度のカンボディアの教育分野の予算は、全予算額の７～８％にとどまり、当初予定されていた15%の配分からは著しく乖離した結果となっている。このため学校建設、教員給与の改善、教員再訓練等の事業の進展は遅く、かつ予算は初等教育に集中配分されており、中等教育分野でカンボディアが自力で開発計画を達成するには多大な困難と時間を要することが推測される。前述のとおり、英語及びフランス語については、それぞれ英・仏の支援の下に、中等教員の訓練が軌道に乗っている。これに加えて、我が国が中等理数科教員養成・訓練で支援を開始することは、カンボディアの財政状況を考えるとき、強く期待される協力活動として理解されよう。ただし、この財政基盤の脆弱さのゆえに、プロジェクト方式技術協力においては、カンボディア側の技術吸収能力や付随経費負担能力に注意した取り組みが求められることも事実である。

一方、カンボディアの政治・行政制度の安定性に対する懸念であるが、1998年７月の国政選挙の結果を受け、同年10月には人民党のフンセン首相を頂点とした新政権が設立された。新政府においては、野党フンシンペック党との対立も緩和され、現在まで安定した行政機構が維持されてきている。このような背景のなかで、カンボディア教育・青年・スポーツ省においても1998年11月組織改革が断行され、ト・ラ教育大臣（フンシンペック党）の下にイム・セティ長官（人民党）が協力体制を敷く、新組織が動き出している。今回の事前調査においても、同省の全組織が党派を越えて執行体制を組む用意を示しており、本プロジェクトに対する組織的な支持は、教育・青年・スポーツ大臣の関与も含め十分に与えられているものと考えられる。ただし、本プロジェクトの遂行には、組織的支持に加えて、教育・青年・スポーツ省内部から有能な実務専門家（カウンターパート）の参画が必要とされることから、その選抜と組織化には十分な注意が必要である。また彼らを育成し、将来、理数科教育を全国的に推進する組織づくりの基幹人材とすることが考えられるため、この点について同

省側の認識を深める努力も必要とされる。

第１１章　協力実施にあたっての留意事項

カンボディアでの協力にあたって、下記のような事項に留意する必要がある。

(1) ローカルコスト

教育・青年・スポーツ省の予算の絶対的不足に加えて、予算が効率的に使われているとは言い難いという問題がある。プロジェクト運営費用に関しても先方政府の負担を期待することは難しい。DfID等の他の援助機関は、プロジェクトのなかに収益事業を組み込んで、運営費用の一部を出せるようにするなどの工夫をしている。

これについて、カンボディア側にできる限りの努力を促すとともに、日本側としてもカンボディア側の負担能力の低さをカバーする工夫を検討する必要がある。

(2) カウンターパートのインセンティブ

カンボディアでは、プロジェクト実施に際してカウンターパートの給与補填をすることが頻繁に行われている。公務員の給与が非常に低いので、プロジェクト活動に専念してもらうために、やむなく行われているというのが実情である。日本のプロジェクトでは給与補填はできない。「新しい技術を学ぶ」といった職業的なインセンティブに加えて経済的インセンティブを提供するべきであるかどうかについて、あらかじめ考えておく必要があるかもしれない。

(3) 教育・青年・スポーツ省のオーナーシップ

教育開発に関する活動の多くは援助機関主導となっている。このような外部への依存体質、希薄なオーナーシップは、教育・青年・スポーツ省職員が教育開発に関して援助機関をあてにするという体質を生みだし、持続発展性の欠如に結びついている。プロジェクト形成から運営に至るプロセスに、できるだけ同省の関係者を引き込み「自分たちのプロジェクトである」という意識をつちかう必要がある。理数科教育センター構想についても、教育・青年・スポーツ省側のオーナーシップを強化する形でかかわることが大切である。

(4) 他の援助機関との関係

教育分野での協力を行っている援助機関はＥＤＵＣＡＭのような情報交換・意見交換のための会合を続けている。このような場で日本の協力について情報を提供し、意見交換を行うことが大切である。プロジェクトへの理解と関心を高めてもらうためにも、このような会合に積極的に参加貢献し、日本のプレゼンスを高めていくことが必要である。1998年10月に

出された理数科教育基本ライン研究では、教育・青年・スポーツ省と理数科教育にかかわる諸機関（援助機関を含む）が会議を行うことが提案されている。このような会議を通じて日本がカンボディアの理数科教育協力でのリーディングドナーとしての役割を果たすようになることが望まれる。

(5) 教育・青年・スポーツ省の人間関係

カンボディアでは多くの公務員が政党に属している。教育・青年・スポーツ省職員も与党派と野党派に分かれており、両者の間には微妙な緊張関係がある。過敏になる必要はないものの、協力を進めるうえで留意する必要がある。

(6) 国内支援体制

長期・短期専門家の選定と支援、研修受入れ等を効率よく進め、日本からカンボディアでの活動を支え活動の持続性を保つためにも、強力な支援体制が必要となる。複数の大学・研究所等の協力機関によるコンソーシアムなどが考えられる。

第１２章　今後の取り組み方

(1) カンボディア側が1999年８月末までに取るべき措置

今回の調査で、プロジェクト開始に先立ってカンボディア側が取るべき措置として、以下の計画案を準備し、1999年８月末までにＪＩＣＡカンボディア事務所を通して日本側に示すことにつき、カンボディア側の了解を得た。

1)　プロジェクト活動に係る３年間の詳細計画

2)　専門家及びプロジェクト活動に必要なオフィス、施設、土地に係る計画

3)　以下の項目を含む理数科センター設立に係る可能な限り具体的な計画

a．組織

b．人員配置（人数及び人材リソース）

c．予算措置（額及びリソース）

d．期待される機能及び活動、機能及び活動の観点から見た高等師範学校との関係

e．センターの位置づけ

(2)　短期調査の実施

これらの計画を踏まえ、更に詳細についてカンボディア側と協議を行うために、実施協議調査団を派遣する前に短期調査を実施することが望まれる。また、同調査時に設計の専門家を派遣し、プロジェクト基盤整備費で建設を想定している建物の設計を行うことも想定される。

(3)　国内支援体制の確立

長期・短期専門家の選定と支援、研修受入れ等を効率よく進め、日本からカンボディアでの活動を支える活動の持続性を保つためにも、強力な支援体制が必要であり、早急に国内支援体制を整える必要がある。同支援体制の確立にあたっては、複数の大学・研究所等の協力機関による幅広い支援体制の確立が望まれる。

付　属　資　料

１．ミニッツ

２．参考資料

(1) カンボディア教育統計 1997/1998

　　*“Education Statistics & Indicators 1997/1998,

　　May 1998, EMIS Center, MoEYS”からの抜粋

(2)　高等師範学校　理数科カリキュラム

(3)　カンボディアの教育体制と教員養成体制

THE MINUTES OF DISCUSSIONS BETWEEN THE JAPANESE PRELIMINARY STUDY TEAM AND THE AUTHORITIES CONCERNED OF THE ROYAL GOVERNMENT OF CAMBODIA ON THE JAPANESE TECHNICAL COOPERATION ON SECONDARY SCHOOL TEACHER TRAINING PROJECT IN SCIENCE AND MATHEMATICS IN CAMBODIA

The Japanese Preliminary Study Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") headed by Dr. Mitsuru Wakabayashi, visited the Kingdom of Cambodia from March 29th to April 8th, 1999, for the purpose of conducting a preliminary survey on the Japanese Technical Cooperation on Secondary School Teacher Training Project in Science and Mathematics in Cambodia (hereinafter referred to as "the Project").

During its stay in the Kingdom of Cambodia, the Team exchanged views and had a series of discussions with the Cambodian authorities concerned.

As a result of the discussions, both sides agreed to recommend to their respective Governments the matters referred to in the document attached hereto.

Phnom Penh, April 7, 1999

M. Wakabayashi

Prof. Dr. Mitsuru Wakabayashi
Team Leader,
Preliminary Study Team,
Japan International Cooperation Agency,
Japan

H.E. Im Sethy
Secretary of State
Ministry of Education, Youth and Sport
Kingdom of Cambodia

THE ATTACHED DOCUMENT

1. Framework of the Project

Both sides agreed on the framework of the Project as follows;

(1) Project Title

Both sides agreed to change the title of "Secondary Teacher Training Project in Science and Mathematics in Cambodia" in the proposal to "Secondary School Teacher Training Project in Science and Mathematics in Cambodia".

(2) Project purpose

The Project purpose is to enhance the capability of Faculty of Pedagogy (hereinafter referred to as "FOP") in Science and Mathematics education. At the same time, a plan for improving secondary school teacher training in Science and Mathematics will be prepared. The establishment of a new organization (National Resource Center for Science and Mathematics Education) will be examined in this plan.

(3) Outputs

(1) A plan to improve secondary school teacher training in Science and Mathematics will be prepared.

(2) Quality of training courses on Science and Mathematics education at FOP will be improved.

(3) Activities to promote Science and Mathematics education will be activated.

(4) Activities

(1-1) To organize a committee for improvement of secondary school teacher training in Science and Mathematics

(1-2) To conduct a supplementary survey to update Science and Mathematics Education Secondary School Survey 1996

(1-3) To examine problems in secondary school teacher training in Science and Mathematics

(1-4) To prepare a plan to improve secondary school teacher training in Science and Mathematics

(2-1) To organize various task forces for the Project activities such as the one for development of teacher training curricula

(2-2) To revise the existing pre-service training curricula and develop the in-service training curricula

(2-3) To revise the existing pre-service training syllabi and develop the in-service training syllabi

(2-4) To develop teaching materials and teaching guides

(2-5) To conduct training courses

(2-6) To conduct monitoring and evaluation on the training courses

(3-1) To hold seminars, workshops and exhibitions for teachers and/or students

(3-2) To publish newsletters and/or journals

(5) Training courses targeted in the project

1) Pre-service training for upper secondary school teachers

2) In-service training for secondary school inspectors

3) In-service training for trainers at RTTC

(6) Duration of the Project

Three(3) years

(7) Project site

FOP

2. Measures to be taken by the both sides for the implementation of the Project

(1)Measures to be taken by the Government of Japan

The Government of Japan will take the following measures:

1) Dispatch of Japanese experts

a. Long-term experts

a) Chief advisor (Chief advisor will also be responsible for Science or Mathematics Education)

b) Coordinator

c) Expert on Science or Mathematics Education

b. Short-term experts, if necessary

2) Provision of necessary machinery and equipment for the Project activities which the Cambodian side cannot procure

3) Training of Cambodian personnel in Japan

(2)Measures to be taken by the Royal Government of Cambodia (hereinafter referred to as "the RGC")

1) The RGC will grant, in the Kingdom of Cambodia, privileges, exemptions and benefits to the Japanese experts and their families, which are no less favorable than those accorded to experts of third countries working in the Kingdom of Cambodia under the Colombo Plan Technical Cooperation Scheme.

2) In accordance with the laws and regulations in force in the Kingdom of Cambodia, the RGC will take necessary measures to provide at its own expense for the Project:

a. Services of the Cambodian counterpart personnel and administrative personnel

b. Office space, land, buildings and facilities necessary for the Japanese experts and for the Project activities

c. Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the

Project other than the equipment provided by JICA

3) In accordance with the laws and regulations in force in the Kingdom of Cambodia, the RGC will take necessary measures to meet:

a. Expenses necessary for the transportation within the Kingdom of Cambodia of the equipment as well as for the installation, operation and maintenance thereof;

b. Customs duties, internal taxes and any other charges, imposed in the Kingdom of Cambodia on the equipment; and

c. Running expenses necessary for the implementation of the Project.

3. Administration of the Project

(1) The Joint Steering Committee (JSC) will be established for the Project, which will be composed of the following members:

a. Cambodian side

Executive personnel concerned from CDC, Departments of Ministry of Education, Youth and Sport (Teacher Training Department, General Secondary Education Department, Pedagogical Research Department, Planning Department, Finance Department), Royal University of Phnom Penh and FOP

b. Japanese side

Japanese expert team for the Project and representative from JICA Cambodian Office.

(2) Secretary of the State, Ministry of Education, Youth and Sport will be the chairperson of the JSC, and as the Project Director, will bear overall responsibility for the administration and implementation of the Project.

(3) The Director of Teacher Training Department, Ministry of Education, Youth and Sport, as the Project Manager, will be responsible for the administrative, managerial and operational matters of the Project.

(4) The Dean of FOP, as the Deputy Project Manager, will support the Project Manager.

4. Measures to be taken by the Cambodian side before the commencement of the Project

The Cambodian side will prepare the following documents and present them to the Japanese side through the JICA Cambodian office by the end of August, 1999:

(1) A detailed 3-year-plan of activities in the Project, as a draft of Tentative Schedule of Implementation (TSI)

(2) A plan for office space, land, buildings and facilities as stipulated on the Clause 2-(2)-2)-b

(3) A draft plan for the establishment of the Center, which should include the following:

1) A plan for the organization,

2) A plan for the staff allocation (Number, Resource)

3) A plan for the budget allocation (Amount, Resource)

4) A plan for the expected roles and activities and its relationship with FOP in terms of the roles and activities

5) Status of the Center

付属資料２．参考資料

（１）カンボディア教育統計 1997/1998

		就学前教育	小学校	中学校	高校	計
学校数		793	5,026	350	125	6,294
教室数		1,393	45,443	5,926	1,653	54,415
寺院の学校		102	1,794	159	34	2089
児童・生徒数	総数	43,358	2,011,772	229,102	73,849	2,358,081
	女子	21,569	906,827	79,832	25,608	1,033,836
	女子の割合	49.8%	45.1%	34.8%	34.7%	43.0%
教員数	総数	1,802	43,282	13,800	3,020	61,904
	女性	1,783	15,816	3,821	717	22,137
	女性の割合	98.9%	36.5%	27.7%	23.7%	35.8%
教員１人あたりの生徒数		24.1	46.5	16.6	24.5	
１クラス当たりの児童・生徒数		31.1	44.3	38.7	44.7	

	小学校	中学校	高校
入学率	97.9%	-------	-------
入学率(女子)	94.2%	-------	-------
祖就学率	88.3%	23.7%	8.1%
祖就学率（女子）	81.2%	16.8%	5.7%
純就学率	77.8%	16.6%	6.8%
純就学率（女子）	72.4%	12.4%	5.0%
進学率	71.9%	66.3%	-------
進学率（女子）	38.8%	40.7%	-------
飲料水のある学校の割合	78.0%	49.7%	32.8%
トイレのある学校の割合	75.7%	39.7%	15.2%
障害児教育を実施している学校数	614	15	0
PTAの活動している学校	3,716 (59.4%)	-------	-------

（２）高等師範学校　理数科カリキュラム

４教科に共通しているのは、教授法（数学・物理・・・）１０４時間と、数学のトレーニングあるいは知識の強化と訳されるような教科内容学１５６時間が決められていることである。

数学

A.教授法　（１０４時間）		B.数学トレーニング　（１５６時間）	
高校の一般数学	１２	代数	3
高校の数学指導ガイドライン	6	等式	３０
その他の高校数学	6	不等式	３０
高校におけるいくつかの教授法	１２	幾何	３４
モデル数学教授法	１２	解析	３８
数学教材の使い方	2	確率	２４
評価	2		
授業準備法	2		
クラス環境	2		
授業準備法（自分のノート法）	１０		
授業のアレンジメント	4		
授業計画	4		
実践	３０		

物理

A.物理教授法　（１０４時間）		B.知識の強化　（１５６時間）	
物理の理論と方法	4	力学	１５
高校の主要な方法	２５	モルキュラー	１０
重要ポイント物理教授法	２７	？	２０
重要ポイントの学び方	？	電気	６０
口述の物理・・・	？	エレクトニクス	１０
授業計画	１５	原子と原子核	２８
現代的教授法	5	その他	

化学

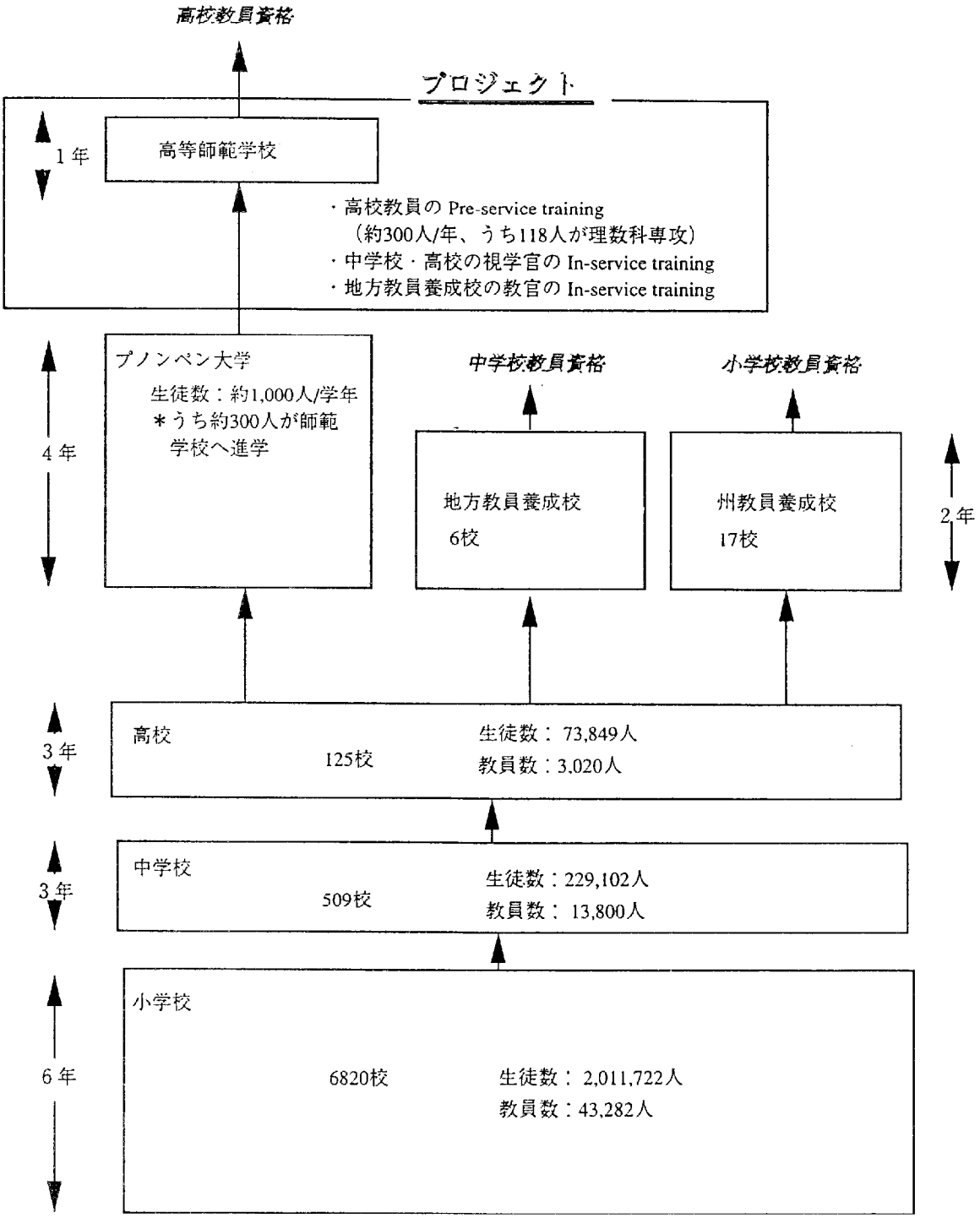
A.教授法　（１０４時間）		B.カリキュラムの重要点・理論強化（１５６時間）	
中学の一般化学	4	一部理論強化	９０
教授理論	１０	基礎科学	１０
その他教授法	１６	無機化学	２０
教える前の準備	１０	酸化	１６
訓練生の観察評価	１６	解決	２０
化学の仕事	１０	有機化学	２０
生徒中心の化学教授法	１０	環境化学	4
グループデスカッション	?	実験室での実際と観察	6
濃度	１０		
復習	8		
一般中学の一般知識	?		
復習と試験	4		
新しいカリキュラム	6		

生物

A.理論手法　（１０４時間）		B.トレーニング　（１５６時間）	
一般手法	３８	生物化学	２６
教授法	３６	人体器官	３６
実習	３０	植物分類	２８
		動物分類	１８
		細胞学	１８
		植物細胞	以下で３０
		動物細胞	

（３）カンボディアの教育体制と教員養成体制

管轄省庁：教育・青年・スポーツ省



1997年統計

カンボディア
中等理数科教員養成・訓練計画
事前調査団報告書
(資料編)

平成11年5月

国 際 協 力 事 業 団
社 会 開 発 協 力 部

目　次

1. General Population Census of Cambodia 1998

KINGDOM OF CAMBODIA
Nation - Religion - King

National Institute of Statistics, Ministry of Planning
Phnom Penh, Cambodia

Funded by:
United Nations Population Fund

July, 1998

KINGDOM OF CAMBODIA
Nation - Religion - King

General Population Census of Cambodia 1998

Provisional Population Totals

National Institute of Statistics, Ministry of Planning
Phnom Penh, Cambodia

Funded by:
United Nations Population Fund

July, 1998

PROVISIONAL POPULATION TOTALS

CONTENTS

FOREWORD

Cambodia's first population census in 36 years was conducted in March 1998. We have great pleasure in presenting this report containing the preliminary results of this census. These results are based on careful scrutiny and tabulation of summary figures prepared by enumerators. They give the population of Cambodia and provinces by sex and rural-urban classification. At present, data processing of filled-in census questionnaires of more than two million households is in progress. When it is completed, the final census data in the form of a variety of statistical tables will be available. This is expected to be ready by the middle of next year. In the meanwhile, these preliminary figures are published to give a general idea of the size and distribution of the population of Cambodia.

We express our deep sense of gratitude to HE Chairman of the National Assembly (Acting Head of State), HE Deputy Chairman of National Assembly, HE First and Second Prime Ministers, HE Deputy Prime Minister and Co-Minister of Interior and HE Minister of Planning for their messages to the nation on the eve of the 1998 census which went a long way in enlisting the co-operation of the people and the enumeration staff. Our thanks are due to the members of the National Census Committee, Technical Committee for the Census and the National Steering Committee for Census Information and Education Campaign for their guidance from time to time.

We have always depended heavily upon the support and encouragement of HE Sar Kheng, Deputy Prime Minister and Co-Minister, Ministry of Interior and Chairman of the National Census Committee and HE Chea Chanto, former Minister of Planning and Chairman of the Technical Committee for the Census and National Steering Committee for Census Information and Education Campaign, but for whose active interest at every stage of the census operations, it would not have been possible to put through this gigantic task.

The census operations were carried out mostly with the help of the Province Census Committees headed by Governors of Provinces. We thank the Governors and the members of the Provincial Census Committees for their assistance. The Press, the radio and the TV played a very important role in census publicity and our thanks are due to them.

We wish to place on record our gratitude to the United Nations Population Fund (UNFPA) and in particular its successive Representatives in Cambodia, Dr. Vincent Fauveau and Mr. Hedi Jemai for providing the necessary funding and technical assistance. We also thank the staff of UNFPA office Cambodia for their continued assistance. We are grateful to the United Nations Department for Economic and Social Affairs (DESA) for their co-operation in executing the project.

We thank the UNDP, especially Mr. Paul Mathews, Resident Representative for providing funds for census vehicles and computer equipment. Our thanks are due to UNESCO, its former Director Mr. Bruno Lefevre and Ms. Sophie Borel, Campaign Co-ordinator and her colleagues for successfully implementing the advocacy and public information campaign for the census.

We thank the international team of observers consisting of Mr. Sam Suharto, Chief, Demographic and Social Statistics Branch, UN Statistical Division, New York, Mr. Pali Leholha, Chief Director, Demography, Central Statistical Services, South Africa and Mr. Jerrold W. Huguet, Population Affairs Officer, Population Division, ESCAP.

Our thanks are due to Mr. Nott Rama Rao, Chief Technical Adviser, Mr. Harry Lode, Data Processing Adviser and other staff of the Census Project for their constant assistance and guidance. We thank all the UN Volunteers associated with the census for their dedicated work.

The success of the census operations is mainly due to the teamwork in the census organisation itself. The Census of Cambodia is a massive administrative-cum-statistical exercise and its completion has been possible with the total help and co-operation received from one and all. The major share of the credit for the success of the census should go to the people of Cambodia themselves and to the large number of devoted, hard working and loyal enumerators, supervisors, village chiefs, commune, district and province census officers and their colleagues, Regional and Assistant Regional Officers and other staff of NIS and Ministry of Planning drafted for census work.

Mr. Hou Taing Eng, Director, NIS ably co-ordinated the census operations. It is continued efficiently by Mr. San Sy Than, Director, NIS assisted by Mr. Seng Soeun, Deputy Director, NIS, in post-census activities. Thanks are due to each of them.

It is hoped that Ministries, international agencies, researchers and the public will find this report useful.

Suy Sem
Acting Minister of Planning

Ministry of Planning
Phnom Penh
July 27, 1998

Composition of the National Committee for the General Population Census of Cambodia

1.	HE Deputy Prime Minister and Co-Minister of the Ministry of Interior	Chairman
2.	HE Minister of Planning	Vice Chairman
3.	HE Under Secretary of Council of Ministers	Member
4.	HE Under Secretary of Ministry of Defence	Member
5.	HE Under Secretary of Ministry of Planning	Member
6.	HE Under Secretary of Ministry of Economy and Finance	Member
7.	HE Under Secretary of Ministry of Education, Youth and Sports	Member
8.	HE Under Secretary of Ministry of Health	Member
9.	HE Under Secretary of Ministry of Information	Member
10.	HE Under Secretary of Women Affairs	Member
11.	Director of National Institute of Statistics of Ministry of Planning	Secretary

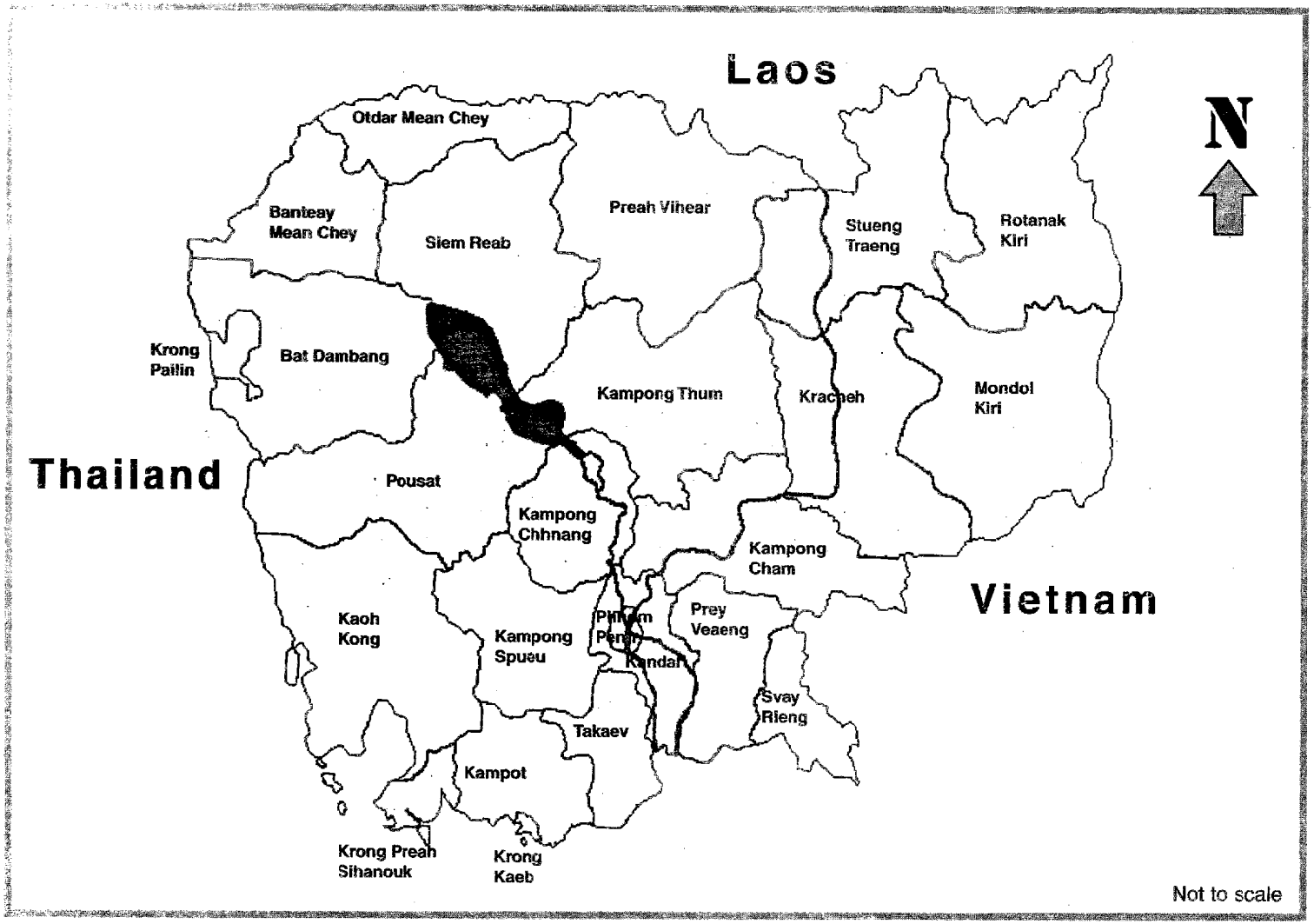
Composition of the Technical Committee for the General Population Census of Cambodia

1.	HE Minister of Planning	Chairman
2.	HE Under Secretary of Ministry of Planning	Vice Chairman
3.	Director of National Institute of Statistics of Ministry of Planning	Permanent Member
4.	Chief of Cabinet of Ministry of Planning	Member
5.	Deputy Director General of Ministry of Interior	Member
6.	Director of Geographic Department of Council of Ministers	Member
7.	Deputy Director, Department of Population Statistics of National Institute of Statistics	Secretary

Composition of the National Steering Committee for Census Information Campaign

1.	HE Minister of Planning	Chairman
2.	HE Under Secretary of Ministry of Planning	Vice Chairman
3.	HE Under Secretary of Ministry of Information	Vice Chairman
4.	HE General Director of Radio and TV	Vice Chairman
5.	Director of National Institute of Statistics	Permanent Member
6.	Representative of Ministry of Interior	Member
7.	HE President of League of Cambodian Journalists	Member
8.	Representative of Khmer Press Agency	Member
9.	Representative of Ministry of Education, Youth and Sports	Member
10.	Representative of Ministry of Health	Member
11.	Representative of Ministry of Cults and Religion	Member
12.	Representative of Ministry of Culture	Member
13.	Vice Director of National Institute of Statistics	Secretary

Map 1. Cambodia - Provinces

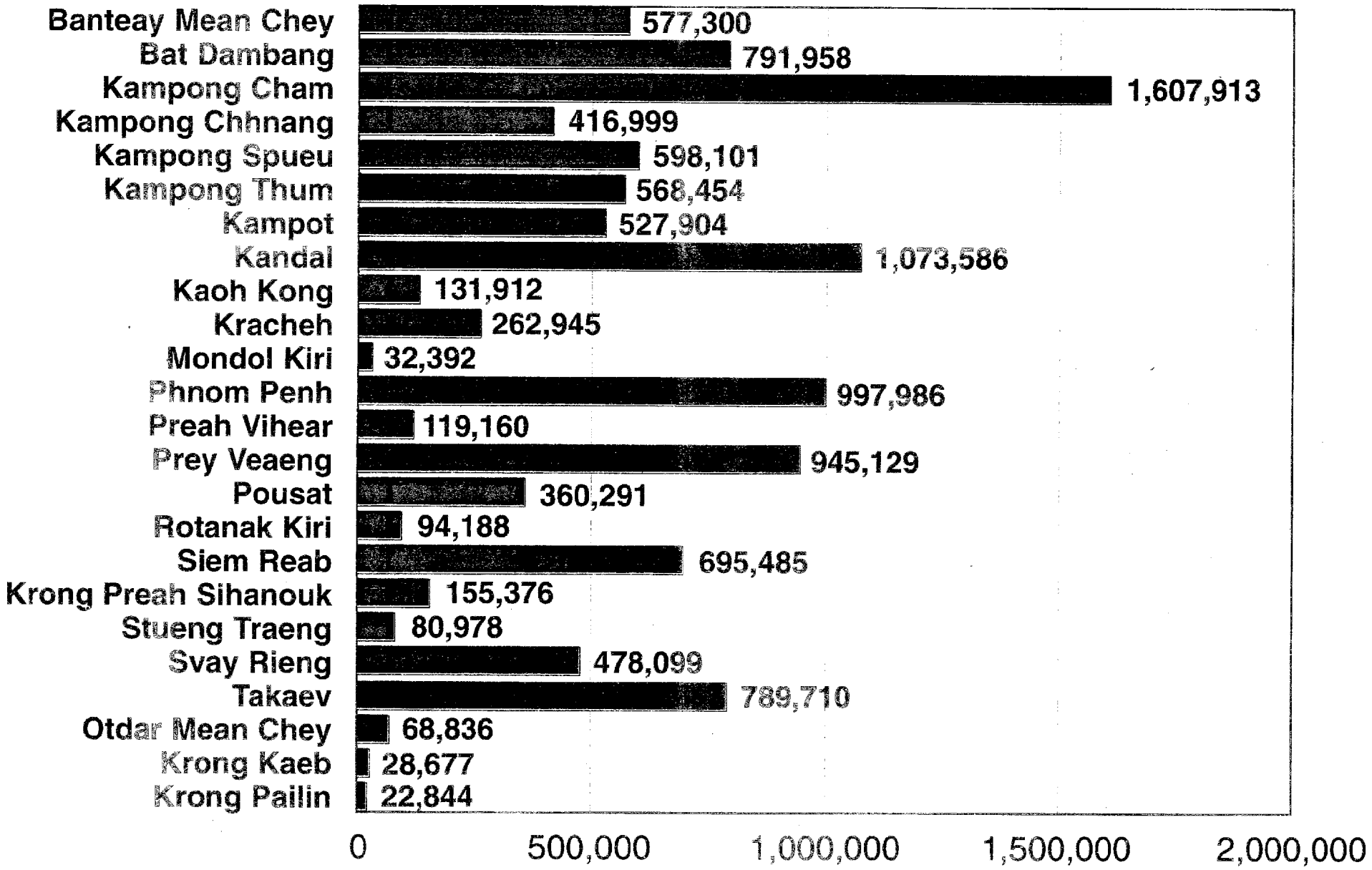


Provisional Population Totals

Figures at a Glance

Number of Provinces		24
Number of Districts		182
Number of Communes		1,623
Number of Villages		13,408
Population of Cambodia	Both Sexes	11,426,223
	Males	5,509,204
	Females	5,917,019
Percentage of Urban Population		15.7
Annual Population Growth Rate (percent)		2.4
Density of Population		64
Sex Ratio (males per 100 females)		93.1
Average Size of Household		5.2

Figure 1. Population by Province



Chapter 1

Introductory Note

1.1 General

This report contains the preliminary results of the General Population Census of Cambodia, 1998. The last official census was conducted in 1962 when the population was counted as 5.7 million. The war and the ensuing upheaval of people since that census has changed the demographic scene of the country completely. For obvious reasons there was no census or systematic surveys during that period. Consequently, there exists currently a very limited population database which is not enough for evolving development policies and programs. This was the background in which a comprehensive population census of Cambodia was considered necessary.

1.2 The Census Programme

At the request of the Royal Government of Cambodia in 1993, UNFPA has been providing technical and financial support for conducting a population census from 1995. The first Phase of the Census Project was provided for by UNFPA-funded project CMB/94/P02-Support to National Population Census of Cambodia (Phase I). Under this project (1995-96), a team of technical staff commenced the census preliminary work in 1995. A census office was established and equipped within the National Institute of Statistics (NIS) of the Ministry of Planning, a number of NIS staff and provincial staff were trained in demographic statistics, census and data processing internally and at reputed institutions abroad. This was very necessary as NIS had no staff with census experience. The conduct of national-level Demographic Survey of Cambodia (DSC) covering 20,000 households in March 1996 as part of Phase I activities helped in training staff of the NIS and the provincial and district level statistical system, to carry out successfully a large-scale data collection exercise. The DSC data which were disseminated through reports and diskettes in December 1996 were welcomed and appreciated by the Royal Government of Cambodia as well as data users. Phase II of the UNFPA funded census project (1997-99) CMB/97/P02 focused on capacity building in the preparation for the census, the conduct of the Population Census in March 1998 and data processing and dissemination of results. For Phases I and II of the project the budget is US$1.4 million and 4.9 million respectively. UNDP shared US$0.7 million in Phase II to provide census vehicles and some equipment. The Royal Government of Cambodia also contributed towards census field work expenditure.

The 1998 Census was conducted under the authority of the Royal Decree (Kret) No. JS/RKT/02-96/08 dated February 29, 1996 on the organization of the General Population Census of Cambodia. According to this Decree, the Ministry of Planning is responsible for the General Population Census with the National Institute of Statistics (NIS) as the implementing agency.

By sub-decree No. 12 of January 31, 1997, a National Committee for the General Population Census has been constituted with HE Deputy Prime Minister and Co-

Minister of Interior as Chairman. Technical Committee for the census to go into technical aspects of the census was constituted with the approval of the National Committee. Provincial Census Committees were formed with the respective Governor as chairman to guide and supervise the census work in each province.

For the 1998 Census of Cambodia the reference time was midnight of March 3, 1998 (00 hour of March 3, 1998) which was also referred to as Census Night. The Royal Decree ensured confidentiality of personal information collected in the census. This information would be used for statistical purposes only. After tabulation, the data collected would be used for national and local development.

All persons present in Cambodia (including foreigners but excluding foreign diplomatic corps and the like) on the Census Night were expected to give the required information in the census. There were two schedules used in the census for data collection by enumerators after visiting each household. Form A (Houselist) was for listing buildings and households. Form B (Household Questionnaire) was the main census questionnaire which was canvassed by enumerators in Khmer language.

1.3 Field work

One of the most important preliminary items of work for the census was to develop maps at various administrative levels. For the purpose of enumeration each enumerator was given an enumeration area (EA) with definite boundaries. An EA had about 100 households. It might be a village or part of a village (in the case of a big village). Starting from December 1996 the work of preparation of village sketch maps and delineating Enumeration Areas was completed in about a year's time.

The population census was a huge task which involved visiting some two million households in the country located in different terrains, in the course of ten days' time. Apart from families living in houses, those living in institutions like hotels, hostels, pagodas, hospitals, prisons etc, were also enumerated. Special arrangements were made to enumerate the homeless population, transient population and those living in boats, on the night of March 3, 1998.

About 25,000 enumerators and 8,350 supervisors were appointed to do the enumeration of every individual in each and every household. They were spread over 13,400 villages in 24 provinces. This excluded some areas which were inaccessible due to military operations. The population in these excluded areas may be only about 45,000. There were also some difficult areas in the country which were not approachable by road or motor transport. They were reached by enumerators only by walk or by such transport like ox-drawn carts, boats etc. Moreover, enumerators had to be careful about areas which were mined. Being local people, the enumerators were familiar with such danger zones.

The enumerators and supervisors were drawn from teachers and other officials. The staff of NIS, Provincial, District and Commune Offices were used for training the enumeration staff and supervising their work. Services of officers of other ministries and departments were also requisitioned. The latter half of 1997 was mainly devoted to training the trainers of enumerators and supervisors. The enumerators and supervisors were trained during February 1998. The training programme was very crucial for

conducting the census satisfactorily and hence this was carefully planned in 982 training sessions held in 538 training centres all over the country.

The census was supervised by national and international staff. UN Volunteers were posted in six provinces most of them remote. An international team of observers inspected the census. The team reported that census was conducted well.

1.4 Census Publicity Campaign

For successfully conducting the census, people had to be informed well in advance about the scope and purposes of the census to get their co-operation. They had to be convinced that the information collected in census would be kept confidential. For this purpose a complementary project called "Advocacy and Public Information Campaign for the Population Census" CMB/97/P08 was executed by UNESCO with UNFPA funding of about 0.5 million US dollars. This project assisted in mobilising all the relevant communication networks in Cambodia:
Physical networks, such as those of the main line ministries, of the cults (mainly the pagoda), the electronic networks, especially radio and television and the press, and also the more traditional communal, district level and provincial campaign networks and their more traditional methods of communications such as banners, stickers, etc.

It also assisted in mobilising all the key personalities of the country, including the Members of Parliament, to support the campaign; training the press, the journalists, the editors and the information officers of the ministries on all issues relative to the census; co-operating with Cambodian institutions and staff for the production of all the printed materials for the campaign.

All the radio/television spots and programmes produced during the campaign were done by or in co-production with the existing Cambodia stations.

1.5 Census Questionnaires

Based on the Demographic Survey and census pre-test experience, two questionnaires were prepared for the 1998 Census of Cambodia. These were called: Form A: Houselist and Form B: Household Questionnaire. These questionnaires were discussed in a Data User's Meeting and later approved by the Technical and National Committees. Form A: Houselist which was canvassed during the preliminary round (February 27 to March 2, 1998) was used to collect the following information in respect of buildings which had households in them: Building / Structure number, predominant construction material of wall, roof and floor of building, whether building is wholly or partly residential, household number, and name and sex of head of household and number of persons usually living in the household.

Form B: Household Questionnaire had four parts:- Parts 1, 2, 3, and 4. This was used for census enumeration during March 3 to 12, 1998 in all households. In Part 1, information on usual members of household present on Census Night (March 3, 1998), visitors present on the Census Night and usual members absent on the Census Night was collected.

Part 2 of Form B, was used to collect the following information in respect of each usual member of household present and each visitor to household: Full name, relationship to head of household, sex, age, marital status, mother tongue, religion, birth place, previous residence, duration of stay, reason for migration, literacy, full time education and economic characteristics.

In Part 3 of Form B, fertility information of females aged 15 and over in the household was collected. In Part 4 of Form B, following information was collected on housing conditions and facilities: basis of occupation of the dwelling by household (like owner occupied or rented), main source of light available for the household, main cooking fuel used by household, whether toilet facility was available within premises, main source of drinking water supply for the household and number of rooms occupied by household. Specimen copies of the questionnaires are given at the end.

1.6 Census Evaluation

Soon after the census, a Post-Enumeration Survey (PES) was conducted to evaluate the census results. It was conducted in 99 selected EA's. The main objective of the PES was to estimate the coverage and content errors in the census. The collected information is being tabulated and analysed at present.

1.7 Data Processing

The main post-census activity of the Data Processing Division is the manual coding and editing of census documents, data entry from the questionnaires, computer editing and tabulation and the generation of various dissemination products.

The manual coding and editing of the census documents are being done in two stages. First, the summary statements were scrutinised and edited. This provided the basis for the provisional census results (population by sex at national and provincial levels), which are released through this book. The second stage will concentrate on the coding and editing of the main census questionnaire (Form B). The activity will require about a year to complete.

Computer editing will help in removing errors and inconsistencies in the data set. The computerised individual census data will be used to generate a number of statistical tables. For this purpose, a Tabulation Plan has been prepared taking into account the user needs. The production of sub-national tabulations can commence by November 1998. This will provide a standard format of Provincial, District and Commune level tabulations which form the input for the initial analysis of the census results. The final census tabulation is expected to be completed by July 1999.

1.8 Analysis and Dissemination

The main objective of the census is that its results should be properly analysed and used for planning for development. Census data will be disseminated through publications and the electronic media (diskettes/CD-ROM). Training in data analysis will be given to national staff, in training workshops. Data Analysis will be made by such national staff under the guidance of a consultant. The NIS staff who were trained in demographic statistics and analysis under the census project will be involved in the

census data analysis programme. Analytical reports, each dealing with a specific topic, will be published after the analysis. The 1998 General Population Census of Cambodia will fill in a long felt gap in demographic data in Cambodia. The plethora of census data could be used by the various Ministries of the Royal Government of Cambodia and by UN Agencies, NGOs and professional organisations working in Cambodia. The Census will provide bench-mark data which could be used by the agencies working in different areas like reproductive health and family planning services, education and training, research, population and development, women and gender. The census will also provide a reliable sampling frame which can be used for planning sample surveys and studies in the future. The Government will be able to develop an integrated population information system which in the long run, will be instrumental in monitoring population programmes.

Chapter 2

Brief Analysis

2.1 General

As the process of editing and coding of more than two million questionnaires and data entry and tabulation will take sometime, provisional population figures have been compiled first and presented as the first results of the 1998 Census of Cambodia. The provisional population results for Cambodia and 24 provinces have been generated by aggregating the figures compiled by enumerators at Enumeration Area level in Form 2 Enumerator's Summary (specimen given at the end) in the course of their field work. Each Enumerator's Summary was initially checked at the census office, NIS by the editing staff with reference to the corresponding Form B Household Questionnaire to ensure that population figures given in the summary tally with those in the filled-in questionnaires. After this initial scrutiny, the summary figures were entered on the computer by the data entry staff. Provisional Table 1 entitled "Number of Households and Population by Province and Sex" presented in this book contains the provisional preliminary results of the 1998 census. Provisional Tables 1.1 and 1.2 relate separately to urban and rural areas. The data available in these tables are discussed in this analytical note.

2.2 Size, Growth and Distribution of Population

The Population of Cambodia as at the midnight of March 3, 1998 was 11.43 million consisting of 5.51 million males and 5.92 million females. Out of the world population of 5.93 billion, little over 8.5 percent live in Southeast Asia (506 million). Population of Cambodia forms 2.3 percent of the Southeast Asian population. In terms of population, it occupies the seventh position among the ten countries in Southeast Asia.

According to the 1962 census, the population of Cambodia was 5,728,771 as at census night of April 17-18, 1962. There have been no further censuses and there was no systematic national surveys until 1993 and 1994. Several demographic disasters and shocks took place consequent on Indochina war in the late 1960's, a civil war between 1970 and 1975, the Khmer Rouge rule from 1975 to early 1979, and famine in 1979 and 1980.

Population changes during the 1970s have been examined in detail by several scholars who had made several population estimates. In 1980, the newly established Government of the People's Republic of Kampuchea carried out a population count in 1980. Though described as a General Demographic Survey, it was at best an administrative count. The official total was put at 6,589,954 as at the end of 1980.

Until after 1992, there was little further information about Cambodian population. The number of voters aged 20 and over who were registered by United Nations Transitional Authority in Cambodia (UNTAC) was 4.28 million. The extrapolated population estimated by the Socio-Economic Survey of Cambodia conducted by NIS was 9,870 thousand with reference to April 1994. The NIS carried out the DSC with March 20, 1996 as reference date and covered 20,000 households, as already mentioned.

The results of DSC were extrapolated to give the population of the entire country excluding some areas not covered by the survey for security reasons. The population of Cambodia according to DSC was 10,702,329. The DSC remained the only source of population data until the 1998 census held in March 1998.

Statement 1 presents for easy reference, the population of Cambodia as ascertained at different points of time by different sources.

Statement 1
Population of Cambodia according to different sources

Source	Population			Remarks
	Both Sexes	Males	Females	
1962 census	5,728,771	2,862,939	2,865,832	Reference time of census night on April 17-18, 1962
1980 General Demographic Survey	6,589,954	3,049,450	3,540,504	With reference to the end of 1980
1993-94 Socio-Economic Survey of Cambodia	9,870,000	4,714,000	5,156,000	Extrapolated population with reference to April 1994 based on a sample of 5,578 households
1996 Demographic Survey of Cambodia	10,702,329	5,119,587	5,582,742	Extrapolated population with reference to March 20, 1996 based on a sample of 20,000 households
1998 Census	11,426,223	5,509,204	5,917,019	With reference to March 3, 1998. Does not include a few areas where conflict took place at the time of the census. Population in these omitted areas is estimated as 45,000

Generally if two censuses are conducted consecutively in a country, say at an interval of 10 years, the inter-censal growth rate of population is worked-out using the two census figures. In the case of Cambodia, there has been no census since 1962. The annual growth rate of population (percent) between the two censuses 1962 and 1998 which are divided apart by nearly 36 years, is 1.9. But this figure has little meaning as the long interval was marked by drastic demographic changes due to war and unrest.

An attempt is, therefore, made to work out the annual growth rate using the results of the DSC, 1996 and the provisional 1998 census results.

The extrapolated population of Cambodia based on DSC was 10,702,329 as on March 20, 1996. The provisional population of Cambodia according to the 1998 Census was 11,426,223. These two figures are not *prima facie* comparable since DSC was a survey of persons in regular and normal households, whereas in the census, all persons were covered including persons living in institutional households, homeless population, boat population and transient population. Thus, those who were covered in the census and not in DSC were persons in military camps (barracks), some police posts, forestry camps, construction sites and such institutions as prisons, dormitories or boarding houses, those living on streets without a home, persons living in moving boats and those who were transient population at the time of the census. In addition, although they should have been covered by the sample design, some squatter settlements and unauthorized residential areas may have been excluded from DSC. On the other hand, the extrapolated population of DSC covered all areas in the country and the census could not cover the following areas due to conflict:- (i) whole districts of Anlong Veaeng in Otdar Mean Chey province, Samlot in Bat Dambang and Veal Veaeng in Pousat province (ii) Village of Ou Beichoan of Ou Chrov district in Banteay Mean Chey province. The estimated population of these excluded areas is 45,000.

According to provisional tabulation of 1998 census the total population in institutional households, homeless population, boat population and transient population for Cambodia as a whole is 247,844. To make DSC and Census figures comparable, the figure of 247,844 is deducted from the provisional population of 11,426,223 and 45,000 (estimated population in non-censused areas) is added to it. This gives a figure of 11,223,379. It represents an increase of 521,050 during the period March 20, 1996 to March 3, 1998. The annual growth rate (average annual exponential growth rate) of population during 1996-98 works out to 2.44 percent.

The provinces are ranked according to population size in Statement 2.

Statement 2
Ranking of provinces by population size

Rank	Province	Percent to Total Population of Cambodia
1	Kampong Cham	14.1
2	Kandal	9.4
3	Phnom Penh	8.7
4	Prey Veaeng	8.3
5	Bat Dambang	6.9
6	Takaev	6.9
7	Siem Reab	6.1
8	Kampong Spueu	5.2
9	Banteay Mean Chey	5.1
10	Kampong Thum	5.0

11	Kampot	4.6
12	Svay Rieng	4.2
13	Kampong Chhnang	3.6
14	Pousat	3.2
15	Kracheh	2.3
16	Krong Preah Sihanouk	1.4
17	Kaoh Kong	1.2
18	Preah Vihear	1.0
19	Rotanak Kiri	0.8
20	Stueng Traeng	0.7
21	Otdar Mean Chey	0.6
22	Mondol Kiri	0.3
23	Krong Kaeb	0.2
24	Krong Pailin	0.2

The biggest province by population size is Kampong Cham (1.6 million). Krong Pailin is the smallest province with a population of about 23 thousand.

2.3 Population Projection

Based on the results of DSC, a study was made by Mr. Jerrold W. Huguet*, wherein he had estimated the population of Cambodia during 1980-96 and projected it upto the year 2020. This was done after adjusting the extrapolated DSC population for under-reporting at ages 0-4 and 20-24 years.

The projected population of Cambodia for the mid-year of 1995 and 2000 according to this study is 10.9 and 12.2 million respectively. The interpolated population works out to 11.6 million as on March 3, 1998, the census date. The difference between the projected population (11.6 million) and the provisional census population (11.4 million) is marginal and can be accounted for by the cumulative effect of several factors such as exclusion of some areas from the census, emigration of refugee population to Thailand (not covered in the census), two different sources of data and assumptions made in the extrapolation of Demographic Survey population and in projection methodology. However, the average annual growth rate of population of 2.4 percent as worked out using DSC and 1998 provisional census figures is the same as projected by Huguet for the period 1995 – 2000. It can, therefore, be concluded that the provisional population at the national level nearly falls in line with the series of projected values in the study. A population projection will be made, when the final population figures with age distribution are available. Till then, Huguet's projections may be considered as valid. For more details on projections, the publication mentioned could be referred to. For immediate reference, an extract from this publication is given in Appendix 4 at the end, which gives the population of Cambodia as obtained by reverse projection for the quinquennial years 1980, 1985, 1990 and 1995 and projected population for the years 2000, 2005, 2010, 2020, 2015 and 2020.

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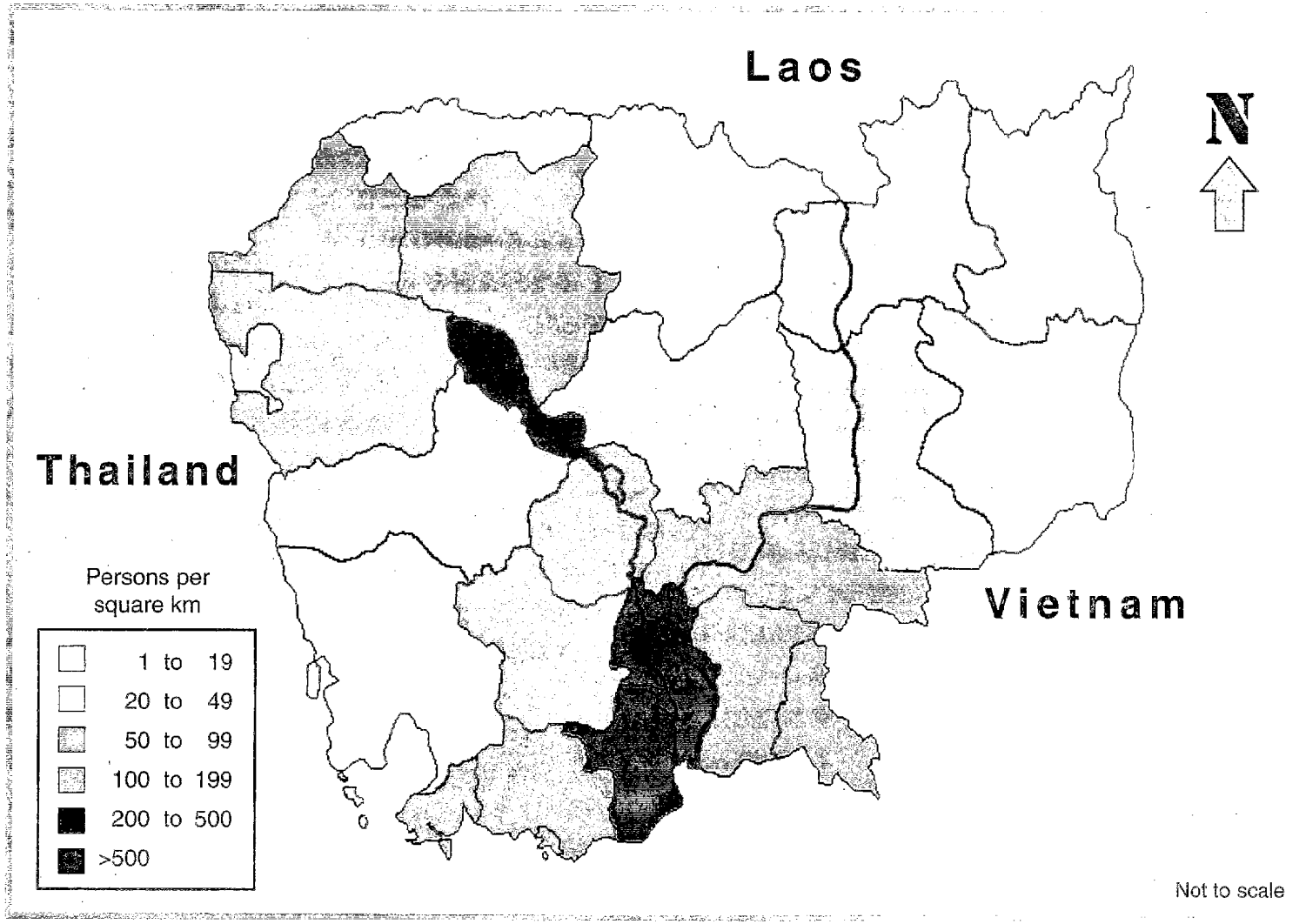
* *"The Population of Cambodia, 1980 – 1996 and Projected to 2020"by Jerrold W. Huguet, Population Division. ESCAP. published by National Institute of Statistics, Ministry of Planning, Phnom Penh.*

Map 2. Population Density by Province



2.4 Size of Household

For working out the size of household, only the regular or normal households are considered. The average household size works out to 5.2 for the country as a whole. The size of household in urban areas (5.5) is higher than that in rural areas (5.1). This pattern was noticed in DSC also. Phnom Penh province (5.7) has the highest size of household. The lowest size of household (4.8) is observed in Prey Veaeng and Svay Rieng. Incidentally, these two provinces have recorded the lowest sex ratios (89). All these point to considerable male out-migration from these provinces. This can, however, be confirmed only when the final census results on migration are available.

2.5 Density of Population

One of the important indices of population concentration is the density of population. It is defined as the number of persons per square kilometre. In 1962, the population density was 32. With a density of 64 in 1998, it has doubled between the two censuses. The density of population for each province is given in Statement 3. Phnom Penh which is an important pole of attraction has the highest density (3,441). The lowest density is observed in Mondol Kiri (2).

Cambodia can be broadly divided into four natural regions: Plain, Tonle Sap, Coastal, and, Plateau and Mountain. The average densities in these regions in 1998 are shown in Statement 4. For comparative purposes the corresponding densities in 1963 (after adjusting for jurisdictional changes) are also given. It is interesting to note that though densities have nearly doubled, or more than doubled, the pattern remains the same. In other words, the plain region has the highest density followed by Tonle Sap, Coastal and, Plateau and Mountain regions, in that order. However, there is a wide gap between the degree of concentration of people in the Plain and other regions.

Statement 3
Density of Population, Cambodia and Provinces, 1998

Cambodia / Province	Area (Km^2)	Population	Density (Persons / Km^2)
Cambodia	**181,035***	**11,426,223**	**64**
Provinces			
Banteay Mean Chey	6,679	577,300	86
Bat Dambang	11,702	791,958	68
Kampong Cham	9,799	1,607,913	164
Kampong Chhnang	5,521	416,999	76
Kampong Spueu	7,017	598,101	85
Kampong Thum	13,814	568,454	41
Kampot	4,873	527,904	108
Kandal	3,568	1,073,586	301
Kaoh Kong	11,160	131,912	12
Kracheh	11,094	262,945	24
Mondol Kiri	14,288	32,392	2
Phnom Penh	290	997,986	3,441
Preah Vihear	13,788	119,160	9
Prey Veaeng	4,883	945,129	194
Pousat	12,692	360,291	28
Rotanak Kiri	10,782	94,188	9
Siem Reab	10,299	695,485	68
Krong Preah Sihanouk	868	155,376	179
Stueng Traeng	11,092	80,978	7
Svay Rieng	2,966	478,099	161
Takaev	3,563	789,710	222
Otdar Mean Chey	6,158	68,836	11
Krong Kaeb	336	28,677	85
Krong Pailin	803	22,844	28

**Includes area of Tonle Sap lake (3,000 Km^2)*

Note: *Area figures have been obtained from the Ministry of Interior.*

Statement 4
Density of Population by Natural Regions

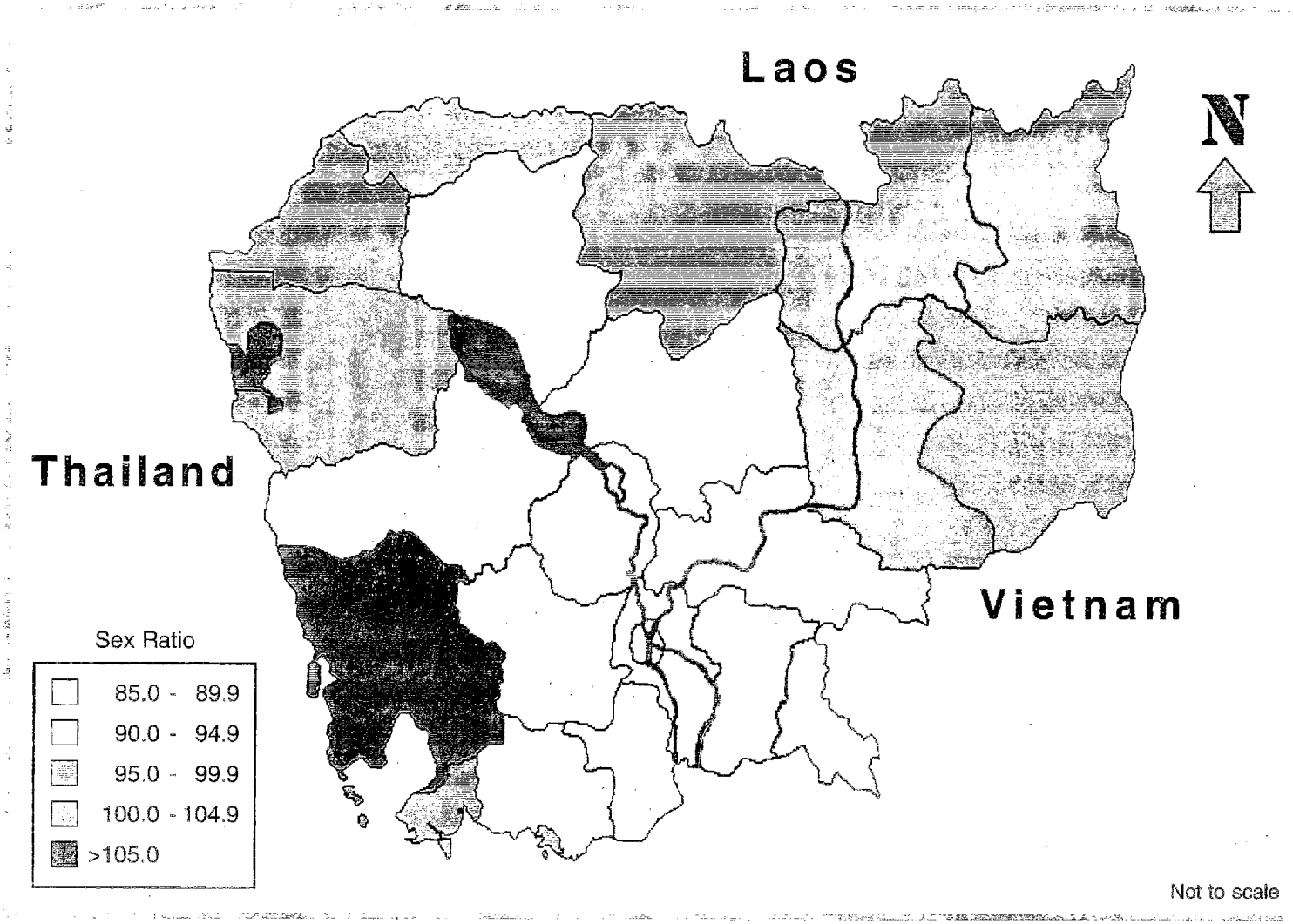
Natural Regions	Provinces in the region	Average density		Remarks
		1998	1962	
Plain	Phnom Penh Kandal Kampong Cham Svay Rieng Prey Veaeng Takaev	235	127	
Tonle Sap	Kampong Thum Siem Reab Bat Dambang Pousat Kampong Chhnang Banteay Mean Chey Otdar Mean Chey Krong Pailin	52	24	
Coastal	Krong Preah Sihanouk Kampot Krong Kaeb Kaoh Kong	49	23	
Plateau and Mountain	Kampong Spueu Stueng Traeng Rotanak Kiri Mondol Kiri Kracheh Preah Vihear	17	8	

2.6 Sex Composition of the Population

In any study on population, analysis of the sex composition plays a vital role. The sex composition of the population is affected by differentials in the mortality conditions of males and females, sex selective migration and the sex ratio at birth.

The sex ratio, the principal measure of sex composition is defined as the number of males per 100 females in the population. The trends in the sex ratio in Cambodia from 1962 may be seen in Statement 5.

Map 3. Sex Ratio by Province



Statement 5
Sex Ratio in Cambodia over the years

Source of information	Sex Ratio
1962 Census	99.9
1980 General Demographic Survey	86.1
1993-94 Socio-Economic Survey of Cambodia	91.4
1996 Demographic Survey	91.7
1998 Census	93.1

A sex ratio of hundred denotes a point of balance of the sexes. Greater the excess of males the higher the sex ratio; the greater the excess of females, the lower the sex ratio. In general, sex ratio of a population tends to fall in the narrow range from about 95 to 102 except in special circumstances such as history of heavy war losses or heavy immigration. National sex ratios outside the range of 90 to 105 are to be viewed as extreme. With this background it could be stated that the sex ratio was ideally balanced in Cambodia in 1962. It drastically fell to 86 in 1980, probably due to heavy mortality among men. From that year onwards it is showing an increasing trend reaching 93 in 1998. Fourteen provinces have registered a sex ratio higher than the national average of 93.1. In fact Kaoh Kong, Mondol Kiri, Otdar Mean Chey and Krong Pailin have recorded a sex ratio more than 100 each. The highest sex ratio has been recorded in Krong Pailin (117.9) which has recently joined the rest of Cambodia, having been under Khmer Rouge occupation for long. The lowest sex ratio (89) has been recorded by Prey Veaeng and Svay Rieng.

Sex ratio is higher (96.0) in urban areas than that in rural areas (92.6). This could be due to male-selective migration to urban from rural areas. This trend is true of all provinces except Banteay Mean Chey, Bat Dambang, Preah Vihear and Pousat where it is reversed. A detailed analysis of the sex ratio could be made once the final census figures are available.

2.7 Urban Population

For the purpose of the census all provincial towns (headquarters of the 24 provinces) have been treated as urban areas. In the case of Phnom Penh province (which is treated as a Municipality), four out of seven districts are treated as urban. Krong Preah Sihanouk, Krong Kaeb and Krong Pailin are totally urban. The population figures of urban areas in each province is given in Provisional Table 1.1.

The percentage of urban population in Cambodia works out to 15.7 percent. In other words, the rural population is more than five times bigger than the urban population. About 84 percent of the people live in rural areas. It may be of interest to note that in the 1962 census, the urban population constituted 10.3 percent of the total population of Cambodia. At that time, Phnom Penh, three other Municipalities of Kaeb, Bokor and Sihanuok Ville and 14 urban centres in provinces were treated as urban and the rest of the country was treated as rural.

The DSC estimated the percentage of urban population as 14.4. The increase of 1.3 percent between DSC and the census could be explained as follows:- DSC did not include institutional households, homeless persons and transient population who are found in large numbers in urban areas. Added to this could be the exclusion of squatter settlements and unauthorised areas in DSC though they are to be covered by sample design.

A detailed study of urbanisation could be made after the release of final census figures with data on age distribution, literacy and education, migration and economic activity of the population.

Provisional Table 1. Number of Households and Population by Province and Sex

Province	Number of Households	Population			Sex Ratio	Average Household Size (*)
		Both Sexes	Males	Females		
Cambodia – Total	2,187,238	11,426,223	5,509,204	5,917,019	93.1	5.2
Banteay Mean Chey	111,866	577,300	283,242	294,058	96.3	5.1
Bat Dambang	148,315	791,958	388,338	403,620	96.2	5.3
Kampong Cham	313,019	1,607,913	775,329	832,584	93.1	5.1
Kampong Chhnang	82,452	416,999	197,299	219,700	89.8	5.0
Kampong Spueu	115,576	598,101	287,299	310,802	92.4	5.1
Kampong Thum	106,835	568,454	272,676	295,778	92.2	5.3
Kampot	104,920	527,904	252,818	275,086	91.9	5.0
Kandal	205,992	1,073,586	515,809	557,777	92.5	5.2
Koah Kong	24,962	131,912	67,629	64,283	105.2	5.2
Kracheh	49,297	262,945	130,021	132,924	97.8	5.3
Mondol Kiri	5,673	32,392	16,367	16,025	102.1	5.6
Phnom Penh	173,232	997,986	481,385	516,601	93.2	5.7
Preah Vihear	21,481	119,160	59,232	59,928	98.8	5.5
Prey Veaeng	194,019	945,129	445,139	499,990	89.0	4.8
Pousat	68,206	360,291	172,945	187,346	92.3	5.2
Rotanak Kiri	16,754	94,188	46,399	47,789	97.1	5.6
Siem Reab	127,086	695,485	336,740	358,745	93.9	5.4
Krong Preah Sihanouk	28,013	155,376	76,858	78,518	97.9	5.5
Stueng Traeng	14,304	80,978	40,115	40,863	98.2	5.6
Svay Rieng	98,219	478,099	225,094	253,005	89.0	4.8
Takaev	154,971	789,710	377,037	412,673	91.4	5.1
Otdar Mean Chey	12,563	68,836	35,027	33,809	103.6	5.3
Krong Kaeb	5,367	28,677	14,046	14,631	96.0	5.3
Krong Pailin	4,116	22,844	12,360	10,484	117.9	5.2

(*) Based on Normal or Regular Households

Note:

Census enumeration could not be held in the following areas due to conflict:

(i) Whole districts of Anlong Veaeng in Otdar Mean Chey province, Samlot in Bat Dambang province and Veal Veaeng in Pousat province.

(ii) Ou Bei Choan village of Ou Chrov district in Banteay Mean Chey province. The estimated population of these excluded areas is 45,000.

Provisional Table 1.1 Number of Households and Population by Province and Sex

Province	Number of Households	Population			Sex Ratio	Average Household Size (*)
		Both Sexes	Males	Females		
Cambodia – Urban	**321,881**	**1,794,029**	**878,606**	**915,423**	**96.0**	**5.5**
Banteay Mean Chey	18,377	98,709	48,062	50,647	94.9	5.3
Bat Dambang	25,572	139,699	67,563	72,136	93.7	5.3
Kampong Cham	8,225	45,326	22,077	23,249	95.0	5.4
Kampong Chhnang	7,690	41,679	20,107	21,572	93.2	5.3
Kampong Spueu	7,577	41,521	20,343	21,178	96.1	5.4
Kampong Thum	12,295	66,014	32,095	33,919	94.6	5.3
Kampot	6,051	33,073	15,930	17,143	92.9	5.4
Kandal	10,263	58,227	28,745	29,482	97.5	5.5
Koah Kong	5,403	29,327	15,181	14,146	107.3	5.3
Kracheh	14,781	79,038	39,170	39,868	98.2	5.3
Mondol Kiri	1,275	7,035	3,584	3,451	103.9	5.5
Phnom Penh	96,984	569,192	277,062	292,130	94.8	5.8
Preah Vihear	4,130	21,600	10,705	10,895	98.3	5.2
Prey Veaeng	10,903	54,975	26,252	28,723	91.4	5.0
Pousat	10,839	57,473	27,409	30,064	91.2	5.2
Rotanak Kiri	3,192	17,010	8,598	8,412	102.2	5.3
Siem Reab	20,980	119,484	58,625	60,859	96.3	5.6
Krong Preah Sihanouk	28,013	155,376	76,858	78,518	97.9	5.5
Stueng Traeng	4,431	24,486	12,345	12,141	101.7	5.5
Svay Rieng	4,106	21,157	10,242	10,915	93.8	5.1
Takaev	7,248	39,145	18,987	20,158	94.2	5.4
Otdar Mean Chey	4,063	22,962	12,260	10,702	114.6	5.4
Krong Kaeb	5,367	28,677	14,046	14,631	96.0	5.3
Krong Pailin	4,116	22,844	12,360	10,484	117.9	5.2

(*) Based on Normal or Regular Households

Note:

Census enumeration could not be held in the following areas due to conflict:
(i) Whole districts of Anlong Veaeng in Otdar Mean Chey province, Samlot in Bat Dambang province and Veal Veaeng in Pousat province.
(ii) Ou Bei Choan village of Ou Chrov district in Banteay Meen Chey province. The estimated population of these excluded areas is 45,000.

Provisional Table 1.2 Number of Households and Population by Province and Sex

Province	Number of Households	Population			Sex Ratio	Average Household Size (*)
		Both Sexes	Males	Females		
Cambodia – Rural	1,865,357	9,632,194	4,630,598	5,001,596	92.6	5.1
Banteay Mean Chey	93,489	478,591	235,180	243,411	96.6	5.1
Bat Dambang	122,743	652,259	320,775	331,484	96.8	5.2
Kampong Cham	304,794	1,562,587	753,252	809,335	93.1	5.1
Kampong Chhnang	74,762	375,320	177,192	198,128	89.4	5.0
Kampong Spueu	107,999	556,580	266,956	289,624	92.2	5.1
Kampong Thum	94,540	502,440	240,581	261,859	91.9	5.3
Kampot	98,869	494,831	236,888	257,943	91.8	5.0
Kandal	195,729	1,015,359	487,064	528,295	92.2	5.2
Koah Kong	19,559	102,585	52,448	50,137	104.6	5.1
Kracheh	34,516	183,907	90,851	93,056	97.6	5.3
Mondol Kiri	4,398	25,357	12,783	12,574	101.7	5.7
Phnom Penh	76,248	428,794	204,323	224,471	91.0	5.5
Preah Vihear	17,351	97,560	48,527	49,033	99.0	5.6
Prey Veaeng	183,116	890,154	418,887	471,267	88.9	4.8
Pousat	57,367	302,818	145,536	157,282	92.5	5.2
Rotanak Kiri	13,562	77,178	37,801	39,377	96.0	5.7
Siem Reab	106,106	576,001	278,115	297,886	93.4	5.4
Krong Preah Sihanouk	-	-	-	-	-	-
Stueng Traeng	9,873	56,492	27,770	28,722	96.7	5.7
Svay Rieng	94,113	456,942	214,852	242,090	88.7	4.8
Takaev	147,723	750,565	358,050	392,515	91.2	5.1
Otdar Mean Chey	8,500	45,874	22,767	23,107	98.5	5.3
Krong Kaeb	-	-	-	-	-	-
Krong Pailin	-	-	-	-	-	-

(*) Based on Normal or Regular Households

Note:

Census enumeration could not be held in the following areas due to conflict:

(i) Whole districts of Anlong Veaeng in Otdar Mean Chey province. Samlot in Bat Dambang province and Veal Veaeng in Pousat province.

(ii) Ou Bei Choan village of Ou Chrov district in Banteay Mean Chey province. The estimated population of these excluded areas is 45.000.

Appendix 1

GENERAL POPULATION CENSUS, 1998
ENUMERATOR'S SUMMARY

Page No.: .....
Total number of pages for the EA.: .....

(To be entered from Columns of Form B Part 2 as indicated)

Identification Particulars

Form 2:

	Khet / Krong		Srok / Khand		Khum / Sangkat		Phum / Mondol		Enumeration Area No.	
Name										
Code										

Line No.	Building No.	House-hold No.	No. of Question-naires used	Population			Type of Household/ Population 1: Normal or Regular Household 2: Institutional Household 3: Homeless Household 4: Boat Population 5: Transient Population *(Enter Code)*	Remarks
				Males	Females	Persons		
1	2	3	4	5	6	7	8	9
1								
2								
3								
4								
5								
6								
7								
8								
9								
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11								
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24								
25								
26								
27								
28								
29								
30								
Page Total		@						
Grand Total for EA*								

Name of Enumerator: ..... Signature: ..... Date: ...../...../.....

Name of Supervisor: ..... Signature: ..... Date: ...../...../.....

@ Count the number of households and give that total here.

* *Give Grand Total for EA in the last page of Form 2 after adding page total of each Column.*

STRICTLY CONFIDENTIAL

FORM A HOUSELIST

Royal Government of Cambodia
General Population Census of Cambodia, 1998

Page Number .....
Total Number of pages for the EA .....

Identification Particulars

	Khet / Krong	Srok / Khand	Khum / Sangkat	Phum / Mondol	Enumeration Area No.
Name					
Code					

Building / Structure and Household Particulars

Line No.	Building / Structure Number	Predominant construction material of Building / Structure*			Purpose of Building / Structure 1: Residence 2: Residence & Shop 3: Residence & Workshop 4: Residence & any other establishment (specify) *(Enter Code)*	Household No.	Particulars of Head of Household		Number of persons usually living in the household			Remarks
		Wall	Roof	Floor			Name	Sex 1: Male 2: Female *(Enter Code)*	Males	Females	Persons	
1	2	3	4	5	6	7	8	9	10	11	12	13
1												
2												
3												
4												
5												
6												
7												
8												
9												
0												
					*(** Count the number of entries and give total)*	**Total		Total				

*KEY TO CODES

Wall Material (Column 3)
1. Bamboo / Thatch / Grass / Reeds
2. Earth
3. Wood / Plywood
4. Concrete / Brick / Stone
5. Galvanised Iron / Aluminium / Other metal sheets
6. Asbestos cement sheets
7. Salvaged / Improvised materials
8. Other (specify)

Roof Material (Column 4)
1. Bamboo / Thatch / Grass
2. Tiles
3. Wood / Plywood
4. Concrete / Brick / Stone
5. Galvanised Iron / Aluminium /Other metal sheets
6. Asbestos cement sheets
7. Plastic / Synthetic material sheets
8. Other (specify)

Floor Material (Column 5)
1. Earth / Clay
2. Wood / Bamboo planks
3. Cement / Brick / Stone
4. Polished stone
5. Parquet / Polished wood
6. Mosaic / Ceramic tiles
7. Other (specify)

Name of Enumerator: .....

_____ ____/____/____
Signature Date

Name of Supervisor: .....

_____ ____/____/____
Signature Date

Royal Government of Cambodia
General Population Census of Cambodia, 1998

STRICTLY CONFIDENTIAL

FORM B HOUSEHOLD QUESTIONNAIRE PART 1

Identification Particulars

	Khet / Krong	Srok / Khand	Khum / Sangkat	Phum / Mondol	Enumeration Area No.	Building No.	Household No.	Name of Head of Household
Name								
Code								

Population Particulars

Statement 1.1: Usual Members Present on Census Night

Type of Household / Population *(Give appropriate code in the box below)*	Sl. No.	Full Name	Relationship to Head of Household	Sex 1: Male 2: Female *(Enter Code)*
1: Normal or Regular Household 2: Institutional Household* 3: Homeless Household* 4: Boat Population* 5: Transient Population* (Specify location)		2	3	4
	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
	9			
	0			

Statement 1.2: Visitors Present on Census Night

Sl. No.	Full Name	Relationship to Head of Household	Sex 1: Male 2: Female *(Enter Code)*	Usual Residence: Within Cambodia (Give name of district and write name of province within brackets)	Usual Residence: Outside Cambodia (Give name of country)
1	2	3	4	5	6
1					
2					
3					
4					
5					
6					
7					
8					
9					
0					

Statement 1.3: Usual Members Absent on Census Night

Sl. No.	Full Name	Relationship to Head of Household	Sex 1: Male 2: Female *(Enter Code)*	Age	Location on Census Night: Within Cambodia (Give name of district and write name of province within brackets)	Location on Census Night: Outside Cambodia (Give name of country)	How long Absent (in completed months) Write 0 for less than 1 month
1	2	3	4	5	6	7	8
1							
2							
3							
4							
5							

Total No. of Persons in Statement 1.1

Total No. of Persons in Statement 1.2

Total No. of Persons in Statements 1.1 and 1.2

☐ Number of Form B used for the Household

**in these cases, fill-in only Identification Particulars.*
Population Particulars in Statements 1.1, 1.2 and 1.3 are not to be collected in these cases.

	Name	Signature	Day Month Year
Enumerator:	.....	.....	...../...../.....
Supervisor:	.....	.....	...../...../.....

FORM B HOUSEHOLD QUESTIONNAIRE PART 2: INDIVIDUAL PARTICULARS

FOR ALL PERSONS

Sl. No.	Full Name	Relationship	Sex	Age	Marital Status	Mother Tongue	Religion	Birth Place	Previous Residence	Duration of Stay	Reason for Migration
								9	10	11	12
	Names of Usual Members Present and Visitors (Please refer to Statements 1.1 and 1.2 in Part 1)	Relationship to Head of Household *(Enter Code from list below)*	1: Male 2: Female *(Enter Code)*	Age in completed years 00: Less than 1 year 01: 1 year 02: 2 years 97: 97 years 98: 98 years and over	Marital Status 1: Never Married 2: Married 3: Widowed 4: Divorced 5: Separated *(Enter Code)*	Mother Tongue 1: Khmer 2: Vietnamese 3: Chinese 4: Lao 5: Thai 6: French 7: English 8: Other (specify)	Religion 1: Buddhism 2: Islam 3: Christianity 4: Other (specify)	Place of Birth If in this village, enter code 1. If in another village, give name of district of that village and write name of province within brackets. If outside Cambodia, write name of country.	Where have you been living before? If always lived in this village, enter code 1 and skip to 13 If in another village give name of district of that village and write name of province within brackets. If outside Cambodia write name of country.	How long have you lived in this village? *(Enter Code from list below)*	Give reason for change of residence, if present residence is different from previous residence. *(Enter Code from list below)*
1											
2											
3											
4											
5											
6											
7											
8											
9											
0											

Codes for Column 3
Relationship to Head of Household

1: Head
2: Wife / Husband
3: Son / Daughter
4: Father / Mother
5: Grand Child
6: Other Relative
7: Non-relative

Codes for Column 11
Duration of Stay

00: Less than 1 year
01: 1 to less than 2 years
02: 2 to less than 3 years
.
.
10: 10 to less than 11 years
.
20: 20 to less than 21 years
.
97: 97 to less than 98 years
98: 98 years and over

Codes for Column 12
Reason for Migration

1: Transfer of work place
2: In search of employment
3: Education
4: Marriage
6: Family moved
6: Natural calamities or insecurity
7: Repatriation or Return after displacement
8: Visiting only
9: Other (specify)

FOR ALL PERSONS

Literacy	Full Time Education		Main Activity	Employment Period	Occupation	Employment Status	Industry, Trade or Service	Sector of Employment
13	14		15	16	17	18	19	20
Can you read and write with understanding in any language? 1: Yes 2: No *(Enter Code)*	(a) Have you ever attended School/ Educational Institution? 1: Never 2: Now 3: Past *(Enter Code)*	(b) What is the highest grade completed? *(Enter Code from list below)*	Main activity during last year *(Enter Code from list below)*	No. of months employed in the last 12 months	Name of Occupation	Employment Status / Class *(Enter Code from list below)*	Nature of Industry, Trade or Service	Sector in which Employed *(Enter Code from list below)*

Codes for Column 14 (b)
What is the highest grade completed?

For Never in 14 (a) put dash (-)
For Now or Past in 14 (a), Code as follows:-
00: No class completed
01: Class 1 completed
02: Class 2 completed

11: Class 11 completed
12: Class 12 completed
13: Secondary School / Certificate / Diploma
14: Undergraduate
15: Graduate / Degree holder
16: Postgraduate
17: Other (specify)

Codes for Column 15
Main Activity During Last Year

1: Employed (Fill in Cols. 16 to 20)
2: Unemployed (Employed any time before)
(Fill in Cols. 16 to 20 for last employment)
3: Unemployed (Never employed any time before)
Inactive
4: Home maker
5: Student
6: Dependent
7: Rent-receiver, Retired or other income recipient
8: Other (Specify)
(For codes 3 to 8, put dash (-) in Cols. 16 to 20)

Codes for Column 18
Employment Status

1: Employer
2: Paid employee
3: Own - account worker
4: Unpaid family worker
5: Other (specify)

Codes for Column 20
Sector of Employment

1: Government
2: State-owned enterprise (Parastatal)
3: Cooperative
4: Private
5: Other (specify)

Appendix – 3 (Continued)

FORM B: HOUSEHOLD QUESTIONNAIRE PART 3: FERTILITY INFORMATION OF FEMALES AGED 15 AND OVER LISTED IN COLUMN 2 OF PART 2

Sl. No.	Full Name	Sl No. in Col. 1 of Part 2	Fertility Information											
1	2	3	4										5	
			Number of Children Born (Give number in two digits like 01, 02,.....10, 11 etc. If none, write 00)										Particulars of Birth in the last 12 months	
			How many children have been born alive to the woman ?				How many of them are living?				How many of them have died?			
			(a) Male		(b) Female		(c) Male		(d) Female		(e) Male		(f) Female		Any child born alive to the woman during the last 12 months? (Give actual number like 1,2,... if none, write 0)	
													Male	Female
1														
2														
3														
4														
5														
6														
7														
8														
9														
0														

FORM B HOUSEHOLD QUESTIONNAIRE PART 4: HOUSING CONDITIONS AND FACILITIES**

(Enter Code in the box below)

On what basis does the household occupy this dwelling?	Main source of light	Main cooking fuel	Toilet facility within premises	Main source of drinking water supply	No. of rooms occupied by household (exclude kitchen, bathroom, toilet and storeroom)
1	2	3	4	5	6
1: Owner occupied 2: Rent 3: Not owner, but rent free 4: Other (specify) ..... ☐	1: City power 2: Generator 3: Both city power and generator 4: Kerosene 5: Candle 6: Battery 7: Other (specify) ☐	1: Firewood 2: Charcoal 3: Kerosene 4: Liquefied Petroleum Gas (LPG) 5: Electricity 6: None 7: Other (specify) ☐	1: Available 2: Not available ☐	1: Piped water 2: Tube / pipe well 3: Dug well 4: Spring, river, stream, lake / pond, rain 5: Bought 6: Other (specify) ..... ☐	1: One Room 2: Two Rooms 3: Three Rooms 4: Four Rooms 5: Five Rooms 6: Six Rooms 7: Seven Rooms 8: Eight Rooms and above ☐

**Part 4 need not be filled-in for Institutional and Homeless Households and for Boat and Transient Population.

Appendix 4

Population as obtained by reverse projection for 1980-95 and projected population upto 2020.

Year*	Population		
	Persons	Males	Females
1980	6,549,687	3,038,638	3,511,049
1985	7,803,920	3,688,702	4,115,218
1990	9,144,806	4,375,024	4,769,782
1995	10,863,152	5,226,046	5,637,106
2000	12,226,613	5,892,848	6,333,767
2005	13,756,025	6,649,486	7,106,540
2010	15,500,001	7,520,082	7,979,919
2015	17,382,632	8,466,320	8,916,311
2020	19,295,178	9,434,049	9,861,130

* *refers to midyear*

Source:- "The population of Cambodia, 1980-1996, and projected to 2020"by Jerrold W. Huguet, Published by the National Institute of Statistics, Ministry of Planning, Phnom Penh, Cambodia, May 1997.

2. Base Line Study Science and Mathematics Education Cambodia, October 1998, PMMU, MoEYS

Royal Government of Cambodia

Ministry of Education
Youth and Sport

Base Line Study
Science and Mathematics Education
Cambodia

PMMU
October, 1998

Note

The purpose of this research was to assist the Royal Government of Cambodia and other agencies to improve science development planning and implementation in Cambodia. It is a study that is intended to learn from people and not to provide immediate assistance. The interpretation of Baseline Study used for this study is:

> **a document for beginning to think about a project intervention..**
>
> *(Choosing Research Methods, Brian Pratt & Peter Loizos 1992)*

During the course of interviews with organisations with involvement in science and mathematics it has become clear that there is a need to summarise the main findings and to present these as a series of recommendations.

It is hoped that this study will help to guide future thinking regarding the development of science and mathematics education in Cambodia and the implication of such decisions within the context of the real-situation for MoEYS and other organisations.

There is also a need to clarify the involvement of organisations with involvement and to document clearly the extent and type of support that has been provided

For these reasons the resultant exercise goes beyond the provision of a situation analysis on science and mathematics education in Cambodia.

It is the wish of PMMU that this report be accepted as a learning document leading to a wider understanding of the overall situation in science and mathematics.

The report has been divided into 5 main sections.

I. Executive Summary & Recommendations

II. Introduction

III. Research methodology

IV. Results and Discussion

V. Commentary

Acknowledgements

A significant number of people have provided support in the completion of this report and PMMU would like to thank them for their assistance.

P.O.E. in Kandal Province and Phnom Penh Municipality	MoEYS
Directors in observed schools.	MoEYS
Science & maths teachers in Kandal & Phnom Penh	MoEYS
PMMU	MoEYS
Martin Ferns	BETP
Bob McLaughlin	CARE
Louise Ahhearns	MARYKNOLL
APSO volunteers	UPP
Lucy Royal-Dawson, George Taylor & Lor Char Vanna	CAMSET
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Dr Supote Prasertsri	UNESCO
Richard Geeves	World Education
Michael Bevis, Sue Gollifer	V.S.O.

I Executive Summary

At the present time there is no holistic statement of the goals and objectives for science education in Cambodia.

RECOMMENDATIONS

- The development of comprehensive guiding principles for science and mathematics education in Cambodia.
- The development of a Science & Mathematics Master Plan.

Methodology

There are inconsistent interpretations as to what constitutes student centred teaching and learning.

RECOMMENDATION

- Round table discussions between MoEYS and others with involvement in science education to establish understanding of the MoEYS interpretation of student centred teaching and learning.

There is a current conflict regarding donor perception of need within science within the context of the 'real situation' in Cambodia and a resultant confusion regarding needs delivery through the curriculum, particularly in science.
This has led in some cases to situations where areas of duplication or omission have occurred.
There is currently an uneven emphasis on teacher rather than student needs which although not suprising leads to a tendency to view interventions from a one-dimensional approach.

RECOMMENDATIONS

- MoEYS to ensure that the real situation and needs are made explicit and clearly understood when considering project assistance for science education.
- There needs to be a shared development of guiding principles.
- Project proposals for intervention should be examined from a 'micro' as well as a macro-perspective.
- Review of the appropriateness of an holistic transfer towards purely student-centred approaches to teaching and learning.

Curriculum

The current science programme is not a coherent, unified & logical process and students are currently receiving their science and mathematics education outside of a meaningful context. It is not clear to them or the teachers how this information can be tied together in a meaningful way and how their knowledge can be used to address the daily situation in which they find themselves.

There needs to be a clearly defined set of goals and learning objectives built into the curriculum that will support the development of a syllabus for science education and this in turn will further support future developments regarding standardised assessment.

Teachers need ideas for teaching activities based on the applications of science in their teaching & learning and allowing for the use of naturally occurring local resources.

This practical support for teachers is an important issue in order to avoid perpetuating the cycle of future generations of science teachers with no practical experience of science.

There has been no curriculum mapping to identify the needs of a science curriculum related to preparation for life beyond Grade 9 – this is problematic given that there will always be a need for a cadre of highly qualified university graduates to ensure the technological & scientific development of the country.

The lack of curriculum mapping has meant that the science curriculum has been prepared from the bottom up with little or no idea of the end point.

The science curriculum specifically, has received very limited technical assistance to date other than that which has been provided as a product of other project interventions. As more attention is paid to the development of science education, there will be much more focus on these needs.

There has been uneven liaison and communication amongst the donor community involved in science and maths education, particularly in science and this has meant that there has been duplication of some interventions and the creation of gaps where there has been a lack of clarification of the roles played by those involved.

There is no curriculum unit to focus on design, development and implementation and the roles of the curriculum writers have become merged with those of the textbook writers so that the curriculum has not developed as a set of statutory guidelines and the textbook writers have had a limited framework within which to develop student learning objectives.

RECOMMENDATIONS

- A list of priorities for science education drawn up by MoEYS for use in identifying possible areas for project intervention.
- The development of a curriculum unit within PRD who are separate and distinct from the textbook writers.
- A group of curriculum writers be identified to work on a curriculum review and curriculum mapping exercise with T.A.
- Curriculum mapping to identify:
  Desired subject coverage from Grades 1 – 12.
  Specific learning objectives
  Student competencies to guide the development of assessment tools
  Opportunities for application based practical experiences
  Identification of appropriate teaching methodology
- Assessment of the appropriateness of the T.O.P.
- Institutional strengthening aimed at the development of an infrastructure to support developments in science education.
- Development of closer links to enable the promotion of shared understandings of curriculum and teaching pedagogy.
- Technical assistance for inspectors to promote subject specific awareness of appropriate teaching methodologies

Textbooks

The textbook has become synonymous with curriculum and whilst at this stage of textbook development this is not totally inappropriate future developments in science and textbook development need to take place within a more clearly defined structure.
This structure would support the existence of a curriculum, syllabi for teaching the curriculum and a textbook and teachers manual to support the teaching & learning.
The lack of an official translation of the new textbooks so that donor projects can appropriately target and address needs has become increasingly problematic and assistance, whilst valuable, has been less effective in targeting need than would be the case with this translation.

The lack of comprehensive trialling of the new textbooks has undoubtedly caused problems associated with lack of accuracy, particularly in science which could have been identified through a trialling process and prior to whole-scale production.
The capacity to edit the textbooks in science is slowly evolving and subsequent textbook developments will show increased awareness of the needs of developing new materials.
The lack of a curriculum map to guide writers as to the needs within each grade has been identified as a main area of concern and this need will only become more pronounced as the pressure for Grades 10-12 are added.
Popov (UNICEF, July 1998) recommended a delay of two years on textbook development for Years 10-12, and although this timescale may be seen as unrealistic there is a serious need to learn from the experiences within Grades1 – 9 and not repeat the same errors.
The completion of a curriculum mapping exercise is not a lengthy process but it is one, which will be invaluable for the sustainability of the textbook production process, particularly in terms of wastage.
The restrictions placed on nos. of pages *for example* has proved problematic for science writers. Editing to take this into account has resulted in some confusion and a compromise on the quality of materials produced.
**Teachers ability to use the textbook will increase greatly if the books contain methodological suggestions.*
Current teacher manuals contain background information but not enough teaching suggestions to be considered useful.

RECOMMENDATIONS

- A statement of goals & aims to be clearly determined to guide writers.
- A translation made available of the science textbooks.
- Learning objectives and outcomes identified to provide a successful science curriculum.
- The addition of logical sequencing of age-appropriate content built in to existing curriculum.
- Review of the textbooks and Teacher's Manual to take into account:

1. Incorporation of clearly stated learning objectives.
2. Repetition of the same subject content in different grade level books.
3. Age appropriate content and level & with teaching methodologies taken into consideration.
4. Inclusion of suggestions on the use of naturally occurring materials for resource purposes.

Teacher Education

The area of teacher education was outside the objectives of this baseline study, however interviews with organisations and with science and mathematics teachers themselves together with lesson observations on teaching & learning suggest that this is an area of great need.

The dependence on the provision of INSETT has been a necessary factor in the upgrading of existing teachers knowledge, however, this needs to be balanced carefully against the constant annual emergence of science and mathematics teachers with fundamentally weak training, specifically in terms of the application of science.

This will mean that there will forever be a need for INSETT based at a most basic level.

There needs to be intervention in the form of attention to PRESETT in science and mathematics to enable the implementation of change within the culture of science and mathematics to be addressed.

There needs to be acceptance that INSETT is not the only way of managing change.

The more subtle and long term changes may be brought about by the emergence of a new cadre of science and mathematics teachers with a practical and applications approach who can function effectively within all schools.

Managers of institutions have many tools at their disposal to improve teaching and learning and one of these is to influence existing practice with the demonstration of new approaches. A training force of teachers who approach their teaching from a different perspective will allow for sharing of good practice and will support change from within schools with external assistance in the form of INSETT, the provision of which would be able to target increasingly more sophisticated development areas in science and mathematics education.

The above pre-supposes that there is a cadre of teacher trainers who are able to initiate change within teacher education and this should be seen as a priority area for intervention at the present time.

This would support the development of teacher competencies for science and maths.

RECOMMENDATIONS

- The review of teacher training curricula within the teacher training department of MoEYS.
- The development of teacher competencies for science and mathematics
- The development of application based pedagogical skills within teacher education curricula.
- The identification of a team of teacher trainers who can begin upgrading of knowledge to take into account new teaching methodologies.
- A concentration on the development and use of existing resources to support application based science.

II Introduction

Education is neither, a formal or a continuous process. It starts in the home and it does not cease when formal education in school ends.

The purpose of schooling is to ensure that all children acquire a basic knowledge and a capacity to learn so that they can enter society as well rounded and qualified as possible. This aim is always present and cascades down through generations.

It can be noted that:

- The more successful the school, the more vibrant and successful is the community of which it forms an integral part and on which it depends. This concept of community is an integral part of the socio-economic base of Cambodia.
- The more successful the school, the more the quest for knowledge is likely to be pursued beyond its doors, after the last examination.

The success of schooling is critical to the successful future of Cambodia, it provides the future workforce and is the foundation for the economic development and the ultimate competitiveness of the country.

It is a means to increase productivity; adaptability to new technology; versatility in employment and in effecting a reduction in population growth with improved health and life expectancy.

This is particularly pertinent when considered form the perspective of girl's education.

The facts surrounding the recent history of Cambodia have been well documented in a number of key publications relating to the education sector.

The A.D.B. Education Sector Strategy Study on Cambodia, 1996 states that the years from 1975 to 1979 saw:

> *The destruction of much of the institutional and physical infrastructure of the country and education. During this upheaval formal education was abandoned, books and equipment destroyed and teachers and students were sought and interned.*

Since 1979, the process of re-habilitation has begun with progress being rapidly made, particularly in the areas of Human Resource Development in Education.

Well-directed and focused investment in education is the key towards enabling the Royal Government of Cambodia to develop the country's educational capabilities. This will serve to increase access and to enhance educational opportunity which will raise the levels of independence of Cambodian citizens and will enable the skill development that is necessary to support the alleviation of the levels of poverty that so many Cambodian people find themselves in.

Focused and applied science education would further enhance this skill development, particularly as the increasing use in daily life of the products of science and technology underscores the need for a numerate and scientifically literate society.

The Government is committed to the provision of Science, Mathematics & Technology education for all primary and secondary students within the 12 year General Education requirement for schooling.

It is impossible to separate the realities of every day life from the scientific experience, whether in terms of making sense of everyday experience from a knowledge base or from applying scientific thinking to the situations in which an individual may find themselves.

85% of Cambodian society are involved in subsistence farming as their main livelihood and developments in agriculture serve to particularly illustrate the fundamental importance of the role of science within every Cambodian's educational experience.

A farmer already possesses a keen awareness of the need to increase crop yields to support the family and his/her behaviour and decisions are firmly rooted within a scientific context.

The study of biology supports the need for an understanding of the optimum conditions needed for plants to grow and an awareness of the consequences of changes made to these conditions, whether artificially or through environmental and physical changes.

Relevant science education will allow balanced and responsible decisions to be made regarding the ways in which the properties of chemicals can be used to support plant growth and in pest control. These decisions can be measured and rationalised against the potential harmful effects to the environment and ecological habitats that exist around the family home and land that is being farmed.

Crop rotation awareness will encourage the farmer to think about the land as a sustainable resource and to take steps to avoid depletion and to involve in patterns of long term planning.

The above utilises a discrete example to illustrate the extent to which science is embedded into the everyday life of a large group of the population.

In addition to these needs the Royal Government of Cambodia recognises that the burgeoning growth of any urban economy underscores the need for a large reservoir of numerate and scientifically literate students. This is important if the proportion of 'home grown' high quality engineers, designers and technicians is to be raised from its currently very low level.

III Research Methodology

The Aims of the Baseline Study

- To provide the MoEYS with qualitative and quantitative Data to inform the development of a Science and Mathematics Master Plan

The Objectives of the Baseline Study

The Baseline Study was based around three main objectives:

- To provide up-to-date information to the Ministry on the situation of Science and Maths teaching from Grades 1 to 12.
- To provide information about the curriculum reform process and textbook production.
- To provide baseline competency information for teachers of science and mathematics to inform the development of curricula within Teacher Training.

The Baseline Study was conducted in May and June 1998 by the Programme Management & Monitoring Unit (PMMU) of the MoEYS.

Research methodology involved the following activities:

- Investigation of secondary material
- Government statistics
- Information from organisations involved in science and mathematics education.
- Published literature
- Direct field observations of science and mathematics lessons
- Semi-structured interviews
- *(Involving checklists of issues)*
- Group interviews

The research was carried out using mainly participatory research where the researcher collaborated with local people and organisations involved in Science and Maths education to explore the issues that it was felt required research and action.
RRA was chosen as a partial method of grassroots research to identify problems, goals & strategies related to the status of science education within Cambodia.
It is acknowledged that one problem with research led by outside people is the raising of local expectations where people may assume that basic research may inevitably lead to

money being spent in a locally developed programme. The researcher indicated during the pre-visit the limitations and restrictions in this respect.
The unit of analysis for focus was on three schools in Kandal Province that were representative of a Provincial approach to teaching & learning and on four schools in the Phnom Penh Municipality.
The sample schools were selected using random number tables applied to school lists provided by EMIS within the Planning Department of the MoEYS.
(the names of individual schools involved in the study can be found in Appendix 1)
The primary informants for the school visits were officials of the Provincial & District Education Offices (POE), school directors and science and mathematics teachers.
Start-up time was spent in:

- Review of appropriate documentation pertaining to science education
- Preparation of action plan
- Obtaining permission for school observation visits
- Preliminary meetings with Government organisations, NGO's and others involved in aspects of science education.
- Initial briefings with support staff regarding study objectives and utilisation of tools and instruments for carrying out the study.
- Obtaining initial statistics to support the report provided by Science & Maths survey carried out in 1995.

It was recognised through this study that it was necessary to represent all views, as success or failure of future development projects depends crucially on the attitudes and interests of people involved. This would also serve to eliminate areas of possible bias.
There was a need to provide a relatively quick response to the needs of this particular development-oriented project and a low cost approach to the rapid collection of information related to specific groups.
The researcher generally favoured a team approach to address any issues relating to bias of the researcher, generation of imaginative ideas and to marshal insight, however a counterpart was unavailable at the time of the study.

The initial findings were presented as a draft report in order to check validity and accuracy, allowing changes and comments to be incorporated from participants in the study.

Limitations

It is recognised that the limitations involved in conducting this study using the techniques identified were the possibilities of personal bias and the recognition that it would produce a static view.
The researcher recognised that, given the formality of approach and the perception of the researchers as representatives of the Ministry of Education, specific aspects of the study relating to school visits may have been contrived. Therefore the snap-shot gained may be less accurate than might have been the case had there been instruments built into the methodology to take this into account.

In order to achieve the Baseline Study objectives a number of resources for collecting data were developed.
The researcher attempted to use, where possible, instruments that were already utilised by the Ministry of Education, e.g.The Quality Indicators for lesson observation used by the SEIO. were used as a basis for the development of specific criteria to establish some baseline competencies in science and maths teaching.

Semi-Structured Interview - P.O.E. officials

The semi-structured interview with the officials of the P.O.E. was designed to ask specific questions about science and maths education in the schools in the Province.
The questions were asked from the perspective of the capacity of the P.O.E. to support teaching and learning in schools within the Province.
It also explored the relationship and communication with different aspects of MoEYS.

Semi-structured interview - school director

The researcher and a translator undertook this interview with the school director of the schools visited.
The translator and researcher met prior to the pre-visit and the main visit to discuss understanding and awareness of the questions that were to be asked and the type of information that would be requested at the time of the main visit.

The interview discussed attitudes surrounding the following issues.

- Whole school approaches to teaching & learning in science and maths.
- Information about the current practice and methodology used in the teaching of science and maths.
- Progress that has been made against specific short-term indicators identified at the June 1996 conference in science and Maths held at the MoEYS.
- Long term targets for the development of science and maths within the school and on the influences and constraints that may affect this development.
- Issues related to technological, Environmental and health education linked to science will be explored.
- Discussion of initial thoughts relating to the introduction of the new curriculum for science in Grades 7 - 9.
- Review of the progress in the distribution and use of the new science textbook in Grades 7 & 8
- Feedback on the progress of the construction of the tests for the year 9 & 12 examinations (25% school assessment)
- Resources available for use in teaching science and maths.
- . Rooms available for teaching science and maths.

Group Discussion - Teachers

The group discussion took place with a researcher and translator.
A list of questions provided a basis for discussion within the group.(Appendix 2)
These questions were designed to act as a prompt to provide open and honest discussion regarding the motivations and commitments of the teachers who were involved in teaching science & maths both within and outside the school.
The interview was intended to be confidential in as much as names would not be attributed to any one respondent when interpreting and presenting the data obtained.
The discussion attempted to elicit retrospective analysis of the levels of preparedness of the teachers upon entering teaching and a view of the appropriateness of the teacher training that was received.
It was envisaged that a discussion surrounding teaching methodologies used would take place, together with indications as to the perceived needs required from any future INSETT programmes.
The concept of child-centred teaching and learning will be explored in terms of teacher's perceptions and understanding of the needs and the strategies that may be developed to enhance this approach in science and maths.

Lesson Observations

In order to assess the level of teaching competence in science and maths lessons, the researcher undertook lesson observations across a variety of different grades.
The schools were given the opportunity to select the lessons where observation was to take place and the tools to be used for observation purposes were introduced at this time.
The Quality Indicators for Lessons (Appendix 3) which are currently used by the SEIO was utilised and these were distributed to the school at the time of the pre-visit in order that the school were able to prepare for the visit.
The intention of this advance notice was to enable the researcher the opportunity to observe the best lesson that the teachers were able to produce.
It was not the intention of the researcher to adopt a critical or corrective approach towards the lessons that were observed but rather to assess to what extent teachers had absorbed, assimilated and utilised whatever training they had received to date.
The researcher offered feedback to all teachers and directors, either separately or together as a result of the observations and offered a written report if agreed by the teacher.

Focus for Observations

Teaching does not rest on the application of one or two attributes, rather it is a complex phenomenon that takes into account a wide range of personal characteristics, professional skills and a specialised basis of knowledge.
In order to begin to assess the levels of teacher competence the foci for observation were determined by establishing baseline criteria for a competent teacher within an effective science and mathematics learning environment.

The main headings that were identified to provide this focus are listed below:

- Communication
- Planning & preparation
- Explanation & Demonstration
- Questioning
- Feedback
- Worktasks
- Classroom Management
- Motivating students to learn
- Assessment

Within each heading a checklist of questions were established in order to provide a more detailed focus for lesson observation to take place. (Appendix 4)

Pre-Visit

In order for schools to be prepared for the visit and to enable them time to collate documentation a pre-visit was arranged.

The purposes of the pre-visit were to establish a framework within which the main visit would take place, by:

- Developing a timetable for the main visit to the school
- Introducing the format for the semi-structured interview to the school director
- Introducing the school data information form to the director.
- Introducing the checklist of questions for the group discussion with teachers and explain its purpose.
- Allowing teachers the opportunity to see the lesson observation sheet that would be used to observe teaching & learning in science.
- Determining a timetable and level of feedback to the director resulting from the study.

Visit

Each visit took place over a morning.
The timetable involved time for lesson observations, interview time with the school director and time with the teachers of Science and Maths.
The visit also provided the opportunity to discuss with the school director the school data information sheet and to check that the required information had been understood and included.

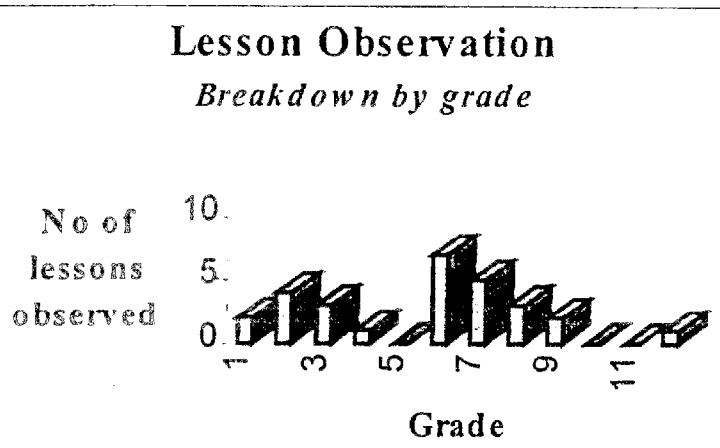
The interview with the Provincial Office official took place on the afternoon of one of the visits to schools.
The schedule for school visits can be found in Appendix 5.

RESULTS & DISCUSSION

The breakdown of lessons observed is shown in Table I

Grade	1	2	3	4	5	6	7	8	9	10	11	12
Maths lessons observed	2	3	2	-	-	3	2	2	1	-	-	-
Science lessons observed	-	1	1	1	-	4	3	1	1	-	-	1
Total lessons observed	2	4	3	1	-	7	5	3	2	-	-	1

(Table I)



The lessons that were selected by the school for the researcher to observe were all clustered around those grades where the new textbooks had been distributed and in which the teachers had received their T.O.P. (Textbook Orientation Programme) including the introduction into child-centred teaching methodologies.(see Table I)

It may be anticipated that the school director felt more confident about the support offered by the textbook and teachers manual and felt that in those grades where this support was available the teaching and learning observed would be more successful.

The proposed impact study proposed by BETP will provide useful information to address whether this is the case in schools following the introduction of the new curriculum.

It is also possible that the director of the school anticipated that the researcher was particularly interested in those grades where the new curriculum had been introduced, however, this had not been stated as a specific requirement of the visit, although it was

indicated at the pre-visit that adjustment to the new curriculum was an area that would provide a focus during interviews with teachers and the school director.

The breakdown of lessons observed according to specialist subject shows an interesting pattern. (Table 2)

Subject	Percentage Observed
Mathematics	63
Chemistry	11
Physics	7
Biology	29

(Table 2)

Whilst the above table shows the breakdown of a limited number of lessons it can be seen that the majority of lessons observed were in Mathematics which represented 53% of the sample group and of this 53% primary school classrooms represented 36%.
This trend may be explained by comments from the teachers interviewed in primary schools who stated that:

- The school had taken the decision to concentrate on Khmer and Mathematics teaching and had been advised through their cluster meetings not to worry about teaching science.
- The teachers felt more competent teaching mathematics
- Khmer and Mathematics teaching took priority within the limited contact time available.

This lack of contact time was attributed by teachers to be due in part to:

- The large number of public holidays.
- the high rates of teacher absence due to commitments to a second job in order to supplement family income.
- The high rates of student absence dictated by farming cycles where help is needed on family farms and in part on the requirement, particularly for girls, to be available to look after younger siblings.

The survey on girls education carried out by MoEYS Department of Planning in collaboration with CARE International, July 1998 also attribute these factors to the high rates of repetition. It follows that if restricted access to the curriculum is a feature of the educational experience of children for whatever reason, failure rates leading to repetition will result.

- A final factor in one school observed was that during the rainy season the school campus is totally flooded, light is bad and therefore ther is no way that anything can be seen inside the classrooms.
  As a result on the day of the visit lessons could not take p-lace and the students had all left the school by 8.30am in the morning. It would be hard to estimate how much

contact time between student and teacher is lost in this way in schools throughout Cambodia.

The exciting exposure to a wide range of educational opportunity afforded by subjects such as science is being to denied to children and this will in turn affect their motivation to learn.
Children who come willingly to school will become more effective learners and if the education that is received is stimulating and varied, learning outcomes will be improved.

In Lower secondary schools the lessons observed were biology and chemistry and in Upper secondary there was one lesson of Biology at Grade 12 and the rest of the lessons were Physics.
Physics is notoriously one of the most difficult subjects within science to teach due to the high conceptual demands and the demand on resourcing.
The teachers observed had all studied at ther Unoversity of Phnom Penh and felt confident with the subject material that they were to teach because of this input.
Another possible explanation for the pre-dominance of Biology may be found in the relative proportions of instructional hours afforded to science and mathematics through Grades 7,8 & 9. (Table 3).

Table to show relative proportions of instructional hours

SUBJECT	GRADE 7	GRADE 8	GRADE 9	TOTAL	PERCENTAGE
Mathematics	4	5	5	14	14.14
Geology	1	1	1	3	3.03
Chemistry-Physics	2	2	3	7	7.07
Bilogy	2	2	2	6	6.06

Table 3 *Source: Unofficial translation Lower School Curriculum*

Classroom observations focused on a total of 7 female teachers of whom 5 were mathematics teachers and 2 were biology.
The remaining observations were of male teachers with a breakdown of 10 maths teachers, 6 biology, 3 chemistry and 2 physics.

Lesson Observations

The following discussions relate to data presented as graphs in Appendix 7

Communication

In the lessons observed all teachers in Grades 1 & 2 attempted at least in part to utilise strategies that would encourage communication and dialogue between the teacher and the student and this communication at its most effective led to useful learning.
Proficient communication is essential for successful teaching and leads to the most useful learning.
The quality of teacher competencies in communication determines the level of student's learning and the interpersonal relationships that exist within the classroom and there is a need for the teachers of science and mathematicss to develop a range of communication skills if they are to maintain a purposeful learning environment.
The lesson observations showed that the quality of relationships was not something for which teachers employed deliberate strategies. 4% of teachers used first names when addressing students and 25% established eye contact regularly.
In some of the lessons observed the teachers were primarily concerned with the formal delivery of subject matter with the lesson at times resembling an extended monologue. There was little or no verbal interaction between the teacher and the student and questions were rarely asked.
Some teachers demonstrated an ability to listen to students views but the teachers in the lessons observed rarely encouraged students to express their own views about the subject matter being covered.
In some of the lessons observed the material was presented very quickly and the students had difficulty in keeping up with the pace of delivery. In at least two observations the speed of delivery suggested strongly that the teacher had a lack of knowledge about the subject content that was being taught.
In most of the lessons that were observed the teacher made little effort to vary tone, volume or emphasis and were therefore unable to transmit messages directly and forcefully to the students.
Science and Mathematics is a difficult subject when considered on a conceptual level and it is important for the teacher to emphasise key points and to employ repetition to emphasise these key points as the lesson progresses. 14% of teachers observed did recognise the importance of emphasis and used it effectively.
Repetition as a tool for reinforcing learning is one that was utilised strongly as a teaching and learning strategy and 89% of teachers utilised repetition in some way.

Planning & Preparation

Whilst most of the teachers observed in the study maintained high standards of written lesson planning these plans were largely based on an ideal and showed little awareness of the practicalities of the situation.
In many cases the expectations were well in advance of students abilities and activities that were planned were irrelevant or inaccessible to the students.
There was little awareness from discussions with teachers of how the achievement of learning objectives could be facilitated beyond the lesson plan itself, particularly given the physical and resourcing constraints present within Cambodian classrooms.

Explanation & Demonstration

These criteria originate from the premise that effective teachers provide quality demonstrations and explanations. The teachers observed attempted to provide support for students through the creative use of examples to help motivate students to learn and this use of appropriate examples provided an opportunity for students to link and integrate ideas.

The most effective teachers observed kept their demonstrations concise, clear and meaningful.

Some teachers whilst providing evidence of good record keeping and of grading and marking papers showed little willingness to provide good demonstrations that were meaningful and related to the subject matter being taught.

In many cases where teachers attempted to use demonstration the examples used were isolated activities and showed only a tenuous link to the subject content being taught.

Some teachers observed showed almost total dependency on the activities suggested in the teachers manual but when questioned closely had not assimilated for themselves the links between what was being taught and the activities suggested or examples used.

Many teachers showed a willingness to show use of resources during the course of the lesson observation however the examples used did not develop in a logical way and one example did not lead to the next.

In one lesson observed where the teacher was introducing units in maths, she asked students to choose for themselves what they wanted to use, e.g. straws or piles of paper were available.

The students developed mental maps of the columns representing units, tens, hundreds and thousands.

The teacher asked students to show each other how they represented numbers, which increased in complexity from 6 to 35 to 169 to 1284.

The students in this lesson had all absorbed what the teacher had wanted them to understand and although opportunities for students to become instructors for their peers and for individual ideas to be pursued were limited, the teacher had used her resources in an effective and meaningful way.

In another lesson on conduction of heat, the teacher had gone to a lot of effort to prepare an interesting and stimulating lesson with a variety of everyday resources to support her teaching, including candles, a pan of hot water and an iron.

She demonstrated to various students that heat could be felt and provided explanations related to the theory of conduction.

When the demonstration had finished the teacher was distracted by something that happened outside the classroom and left the room to investigate.

In the time between her leaving and returning students were 'feeling ' the heat from the objects left and playing with the lighted candles.

As is the case with most science at a basic level what students are exposed to is not different to experiences that they have on an everyday basis, however if we are to prepare them for further approaches utilising demonstrations and practical work, for example

using acids and alkalis we need to establish safe working practices and an awareness of the demands on the teacher when providing practical experiences in science.

Questioning

In general a great deal of time is taken up in lessons on questioning students and in some lessons observed this approach tended to dominate above all others.-
Questioning is the means by which communication between the teacher and the student takes place and is an obvious way to establish whether learning is taking place however there was a tendency for teachers in all of the lessons observed to utilise only closed questions in order to elicit the correct answer.*

* ***Closed questions*** *– Questions are posed in such a way that a one-word answer is the usual outcome. Usually only one possible correct response.. Teacher has control over the outcomes.*
Open questions *– questions posed prompt a variety of outcomes. There is no correct answer. Teacher has little control over outcomes*

The lessons observed revealed that in general more questions were directed at boys than to girls (Table 4)

Lesson Observation - *Questioning*																												
Gender	Mathematics															Biology									Chemistry			Physics		Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
Female	3	2	3	3	5	3	4	3	1	2	2	4	3	3	0	1	1	0	2	2	0	0	0	2	3	1	0	0	53
Male	3	6	2	3	7	7	4	2	2	7	2	7	3	5	2	1	3	6	3	1	2	1	2	3	0	2	2	0	88
Total	6	8	5	6	12	10	8	5	3	9	4	11	6	8	2	2	4	6	5	3	2	1	2	5	3	3	2	0	141

(Table 4)

There was no effort made to use open questioning in order that a variety of different responses could be produced and for students ideas and thoughts to dominate discussions.
Questioning also serves to draw out facts or inferences from students and this can help the student to reflect on relevant concepts in subject matter.
Students in the lessons observed were very cautious about the quality of the answers that they gave and were concerned that they gave the correct answer.
Teachers can play an important role in encouraging an environment where student response is valued, whether it is right or wrong.
To restrict the opportunities for student response denies the teacher a mine of useful information that can be used for assessment purposes.
In many of the lessons observed the pattern of questioning style had become routine.
Some teachers consistently favoured the same students to answer questions, although it would be difficult to determine whether this was because the teacher was concerned that incorrect or slow answers would be taken to reflect poor teaching on their part or whether this was an established pattern of their classroom practice.

In one case where the student was having difficulty trying to express himself the teacher cut him off before had a chance to formulate his answer and invited other students to provide the correct answer. The students observed all stood when answering the teacher. The boy who had answered incorrectly was left standing for 5 minutes until a question was asked that he could answer. This situation may well serve to inhibit this particular student and may serve to alienate him and reduce his motivation to learn.
This concern with speed of answer was also a feature in the lessons observed.

Worktasks

All teachers attempted to demonstrate students working through group discussions although the way in which these were set up and developed showed a lack of depth in the awareness of the teachers as to the ways in which students working in this way can be facilitated.
Efficient science teachers will be able to provide appropriate tasks that stimulate student interest and consequently extend student knowledge and enhance learning.
Acquisition of skills and knowledge whilst important is only one part of a process in science teaching where there is a need to apply this knowledge to the solution of every day problems.
In one maths lesson observed the teacher not only introduced a wide variety of resources to support learning but also attempted to utilise games as a medium through which mathematical learning could be reinforced.
This form of focused student activity allowed the student to transfer their acquired knowledge within new and different contexts.
The teachers observed as part of the study showed a real commitment towards the provision of tasks so that students were more active participants in the lesson, however many of the tasks lacked meaningfulness and did not provide opportunities for students to practice a range of skills.
Although the teacher had initiated many of the tasks observed the amount of support provided was minimal and therefore many of the students found that it was easy to deviate from the task at hand.

Motivation

There is no one way to motivate students to learn and many of the strategies that teachers utilise are subtle and often indirect.
The ability to motivate students starts with an comprehensive knowledge of each student and what he/she responds best to and this is dependent upon maintaining the individual as the focus for teaching & learning.
There is also an element of parent, teacher and school expectancy in determining levels of motivation, i.e. extrinsic motivation resulting from an applied external force.
The other variable of course is the level of motivation of the student themselves – intrinsic motivation.

Goal orientation in terms of achievement in terms of examination success may also be a factor, positive and negative.
The skill for the teacher is to maintain and utilise these various factors in a positive way.
In the lessons observed there were some teachers who did not project enthusiasm and as such their presentation tended to lack stimulation.
Discussions with teachers in one school indicated that the lack of an appropriate salary was one factor which affected their approach towards their work, although in terms of their own motivation all teachers identified a commitment towards the strengthening of the educational base of the country and desire to share their knowledge with students as their key motivation.
Some of the students in the sample maintained that if not for parental pressure they would much rather stay at home!
Attendance at school however does not in itself represent an automatic achievement and learning and motivating students is a valuable tool in a science teacher's repertoire.

Feedback

In one maths lesson following a set task of answering pre-prepared examples that were written on the board the teacher read out the correct answers and moved on to new work.
There was no attempt to elicit whether everyone had understood and no individual student was provided with comment about his or her performance.
In most of the primary maths lessons observed the teacher would ask a question and ask the students to write down the answer on a slate.
Within a time limit a large ruler was banged on a desk as a signal for the students to hold up slates with their answers on. The teacher would spend no more than 30 seconds looking at slates and then proceed to the next question.
In one lesson, one boy consistently failed to write down the correct answer but was given no indication that he was working incorrectly.
When one of the observers went to help the boy, it became clear that there were others who had also not understood.
The teacher seeing this intervention returned to previous examples and provided an excellent explanation of the approach needed to solve the problem and 'walked' the whole class through the answers asking questions to ascertain whether learning was taking place.
Feedback in the lessons observed was never provided on an individual level and this failure to recognise the needs of the individual was a concurrent theme running throughout the lesson observations.
The teacher found little time to record information on the feedback that each student required and no indication existed of any kind of record keeping that related to the individual student.

Assessment

In the lessons observed it became clear that whilst there was a lack of conscious awareness regarding formative assessment strategies, conversations showed that the teachers were constantly in the process of collecting information about students performance.

When the teachers were asked why they did not record some of the information they replied that there seemed to be little purpose and if they did record this information how could it be used afterwards.

This is a matter of concern to the MoEYS and increased communication with parents or guardians has been set out as a strategy within the National Education Plan for 1998 – 1999. (National education Conference – 10^{th} – 12^{th} September 1998).

Teachers in the survey also collected data from students as a result of formal written tests which were set at irregular intervals and consisted of 10 questions which were then marked as one question representing one mark.

This information was often recorded in the teacher's workbook or on apiece of paper, however there was no use made of this information in terms of informing parents or informing future teaching.

When questioned about the situation where a student 'failed' a test the teacher responded that there would be no action.

In the scenario whereby a students was shown in these tests to be consistently failing, the teacher responded that he/she would discuss the case with the director of the school and that on occasion the students parents might be visited and any problems discussed.

The teacher responded that he/she would be unlikely to find the time to work with a student who was failing on an individual basis nor necessarily take any steps to establish why a student was failing.

It is sometimes the case that poor attendance might contribute towards a student who was consistently failing to achieve, however regardless of whether the student was achieving or not, there would be a recommendation that the student repeat the year based solely on attendance statistics and not on academic capability.

This lack of a meaningful use of assessment information, if the above scenario is representative of a general situation will contribute towards repetition rates in some schools.

In addition to this factor some students, who, although having passed their examinations would turn up at the beginning of the school year with younger siblings and as such would be found in a grade which was beneath their academic capabilities.

These factors are worthy of further investigation by interested parties involved in the problems posed by high repetition rates.

V COMMENTARY

Teaching & Learning

When embarking on any commentary involving teaching and learning in science education it is important to maintain a clear impression of what it is we are trying to achieve.

In the schools visited there was a wide variety of involvement from both MoEYS and from other organisations, particularly in the area of student centred teaching and learning and this was in part tied into the Textbook Orientation training that teachers had received to support the introduction of the new textbooks.

In one primary school visited the teachers had been exposed to T.O.P. and in addition were in receipt of a wide variety of technical assistance.

The resultant effect of this support was a considerable confusion surrounding what was meant by student centred teaching and learning and with each individual input teachers were exposed to different sets of expectations and interpretations.

This exposure comes at a time when Cambodian teachers, despite their best efforts have not received appropriate pedagogical training aligned with insufficient subject knowledge, meaning that ultimately little real change will be achieved.

The teachers need a base from which to make sense of the changes that are being imposed upon them.

The resultant confusion and ineffective implementation of change not only highlights the needs of the teaching force, who were trained under emergency conditions, but also focuses attention on the appropriateness and accessibility of the training that is currently provided for teachers and the follow up needs that need to be provided..

In order for messages to be re-enforced and understood there is a responsibility for all involved in science education to define terminology and to reach a common understanding of what is meant by student centred teaching and learning.

In discussions with P.O E. officials, directors, teachers and representatives from other organisations there was no clear and common definition provided of what student centred teaching and learning is.

Definitions ranged from a consideration of 'student-centred' in its widest form to narrow, specific statements about what it is.

If changes to the approaches to teaching methodologies are to be effected there needs to be in addition a common strategy to identify methods for applying the definitions and a clear awareness of the processes that are involved in ensuring that change happens to the benefit of students and teachers alike.

The provision of textbooks and the limited T.O.P., whilst valuable represents only one part of the equation with the goal of improving the educational experience.

Changes to teaching methodology require a need to understand the differing needs presented by different subject areas.

Lesson observations confirm that teachers are attempting to approach their teaching in a student-centred way, they are trying to utilise a variety of resources and are beginning to introduce group work activities however there still needs to be an enhanced awareness that student centred teaching and learning approaches as are currently understood by teachers does not represent the sole approach to enable effective learning to take place.

The synthesis report on the joint evaluation of Sida/UNICEF support for basic education in Cambodia, 1998 cites that in the UNICEF/Sida supported clusters observed ...
"Teaching and learning is generally dominated by traditional teaching methods using highly teacher-centred forms of instruction and emphasising rote memorisation ".
This statement may be equally applied to the schools observed throughout this study, however in the case of science teaching, particularly, strategies commonly characterised as traditional may be the most appropriate approach.
Learning by rote is still considered to be the most satisfactory way to introduce the first 20 elements of the periodic table in Chemistry.
Learning time's tables in Mathematics provides a firm basis for the study of mathematics.
It is still the case that many teachers consider a more 'traditional' approach to be the most effective.
When introducing new conceptual knowledge in science a teacher-led, didactic approach may be the only way to present an understanding of new material, e.g. during an introduction to the lesson.
This provides the teacher with the opportunity to ensure that as a minimum the student has received accurate theoretical introduction.
A firm instructional approach is the most appropriate way to explain the approach towards practical work – for reasons of safe working practices and of organisation of limited resources.
The varying of the pace of a lesson in science is characterised by the ebb and flow of teacher versus student activity with student needs always being the focus of the activity whether teacher or student led, but in the lessons observed teachers lack the awareness of the subtleties of this distinction.
The science and maths teachers need to have re-enforced that a varied and balanced approaches can be used to enhance the quality of teaching and learning, there does not have to be a choice of one versus the other.
The UK education system is currently undergoing reactionary changes in teaching methodologies after a whole-scale move towards child centred approaches in the 1960's (Plowden report, 1967).
This is due to the emergence of data to suggest that educational standards have been falling in response to standardised testing and despite wide ranging financial support.
The move is now back to 'traditional teaching'.
This example whilst limited in scope serves to illustrate that there is no correct and best approach – rather there needs to be an agreed approach contingent upon the needs of education and not least on the capacity of the teachers to deliver these new approaches.
In discussions the teachers interviewed have stated that they would benefit greatly from an acceptance that some of what they have been doing is appropriate and that there is no absolutely correct approach.
It may be that the most effective support that can be provided focuses on getting the balance right rather than focusing on extreme points along a continuum.
Science and maths teachers, amidst this confusion have almost totally lost sight of the fact that science and maths are essentially practical and applications based subjects.
As was stated in the introduction it is impossible to separate our every-day life experiences from scientific experience.

A practical experience in a science lesson can serve to re-enforce understanding of new concepts and can provide a platform from which to solve practical problems by applying what has been taught and learnt.
A teacher can teach a student methods for cleaning and purifying water or can ask – how can you make water from this well cleaner?
The knowledge required to approach these problems is identical but the second approach demands that understanding can be transferred and applied to a real life situation and utilises a problem solving approach.
This shows the extent of understanding and also re-enforces that science is not exact or absolute but that there may be many different solutions to the same problem.
It also allows for the critical thought and creative approaches that typify the ways in which scientists work.
A problem solving approach further directs the emphasis of the provision of practical resources away from the teacher to the student.
In one lesson observed the student had on his own initiative presented a 'sieve' made out of a coconut shell with small holes as his solution for separating mixtures of different particle size.
The teacher had not asked the students to do this but the student had been interested enough to spend time out of school developing his idea.
This activity presented an opportunity for the teacher to develop the idea further by asking – What other ways can you think of for separating mixtures? But the opportunity was lost.
When asked the teacher stated that he was worried that he would run out of time and not cover all the work for that grade.
This answer prompts two questions:

- The MoEYS states that teaching time is 38 weeks each year. This is not a realistic number considering the realities of attendance. (UNESCO, 1998)

- Scheme of work development from the curriculum is insufficient due to the lack of guidance presented by the curriculum structure, particularly in terms of the identification of specific learning objectives.

The example stated serves to illustrate what most science educationalists understand and is in essence what motivates them to teach.
That is that each child arrives at school with a natural spirit of inquiry which complements perfectly scientific approaches.

Practical Approaches to Science Teaching & Learning

Within science education in Cambodia there is a chronic shortage of trained science teachers.
The additional factor that practical and experimental approaches are an essential component of a science curriculum in order for the applications of the subject to become fully absorbed and assimilated into every day life remains particularly problematic.

The fact that teaching approaches that currently exist are based mainly on theoretical and didactic approaches is not surprising since there is a real lack of resourcing in terms of materials and chemicals to support science teaching & learning even at the most basic level.

Neither is there the funding or the will from schools to identify dedicated funds to support science teaching & learning even at the most basic level. It is apparent from interviews with directors that even if there were identified funds within schools to address the additional needs inherent in science teaching & learning there would be little ability to meet the recurrent costs involved on a year by year basis.

The current science teaching community in Cambodia has had little or no experience of practical science; the majority would not be able to recognise scientific terminology and there is little basis for them to be able to realise or access the uses of this apparatus in a practical situation.

The teacher training in science does not address the practical nature of the subject and does not focus on the alternative ways of being able to provide a practical learning experience for students through the use of locally occurring and natural resources.

A feature of the situations observed with science teaching at present is that a very large number of science teachers at secondary level together with comparable numbers of teacher educators and textbook and curriculum developers have had little or no practical experience in the sciences and themselves have depended upon book learning.

They themselves learnt science by rote and may themselves feel inhibited to attempt any practical work in science and certainly would be in a position where they were unable to write about it for practising teachers or in the training new teachers.

It is important to note that the key scientific processes involved in the teaching of science,

- ❒ Hypothesising / Questioning
- ❒ Planning
- ❒ Obtaining evidence
- ❒ Analysing evidence
- ❒ Drawing conclusions
- ❒ Considering the strength of the evidence.

.. are all independent of a specific scientific content and can be applied outside science domains to other subject areas and more importantly to real life situations.

When the application of science is an integral component of science education, a selection may be made in terms of those situations where these applications would be profitable in the light of contributing to the improvement of quality of life and to the understanding of the environment. (Jay Rattanaike, Redd Barna, 1994)

The application of science to real life situations provides a foundation and vehicle for the development of the key processes of science and can exist in isolation from the slow process of science knowledge upgrading .

For the majority of children in school situations this approach will represent an important exposure to the only formal science that they may experience throughout their lives and when considering this it is important to identify clearly the aims of science education.

When considering the real-situation in Cambodia it not the case that the education system is solely concerned with producing a nation of scientists but rather a population that is capable of scientific thought.

Some children will need to be prepared for higher education and will become the 'scientists' of the future and this is important. An application approach does become an effective agent for understanding principles and concepts for those that do proceed to higher levels of science education.

RGC goals of General Education support the philosophy of a learner-focused population with the first priority being an educated population capable of shouldering the real life responsibilities and new approaches to science and mathematics teraching and learning will be a natural step towards further realising this philosophy.

Practical Resourcing

The science & maths survey carried out in May 1995 showed that one of the greatest obstacles to prevent the development of practical science education was,

"the almost non-existence of science resources in terms of specific equipment and chemicals".

This situation was not confined to provincial areas but existed also within the municipality of Phnom Penh and there is no evidence throughout discussions with various POE's to suggest that this situation has changed.
One school within Phnom Penh, has a science kit donated by the ADB but the use of this kit is limited in scope and restricted by the lack of knowledge and confidence of the teachers within this school, despite technical assistance for the last two years.
Further, at the recent science fair held at the school the teachers needed support which was of a basic nature. This showed above all else that the use of the apparatus to conduct experiments was one thing but when a problem occurred there existed no capacity to analyse the problem and to correct the mistakes.
The teacher knows what each piece of apparatus does but not how to apply it in a variety of situations.
This is after 18 months of technical assistance and is not related to the quality of the assistance that they received but on the quality of the basic levels of science education that the teachers had received.
The problems relating to lack of resourcing in science exists at all levels within Cambodian educational structure.
The science department at the University of Phnom penh has worked over the past two years with the assistance of APSO vols to put together programmes for under-graduates that involves the development of practically based science practices together with an

awareness of the applications of science apparatus related to theoretical aspects of science. The resulting programmes are of high quality and are successful.
This means that in theory upper secondary teachers entering schools in the near future will have a greater degree of practical science knowledge than in the past.
However the majority of teachers involved in Teacher Education programmes generally have no exposure to practical science and therefore those teachers entering lower secondary education are much less experienced and advantaged in terms of practical teaching methodologies.

UPP

The UPP has the most sophisticated and varied access to science practical resources some of which was provided as part of the country's involvement within the Eastern Bloc (1979-1991) and latterly through the procurement of some apparatus donated by the ADB in 1995.
At the UPP the supply of chemicals and equipment was organised through the exchange programme amongst universities within Eastern Bloc countries.
The UPP currently has a high grade of science laboratories, which have been further developed, with the support of vols from APSO.
At the time of interview these laboratories were used currently for only a small percentage of the week.
The greatest problem for the university is in terms of budgeting for the recurrent costing implied by the extensive use of consumables that is a necessary part of practical science teaching.
The UPP has no formal means of procuring such consumables and until recently had no knowledge of where in PP to obtain basic science equipment.
This problem related to procurement is nationwide.
It is relatively easy to obtain electronic items as these tools will often be necessary for the repair of practical appliances.
Other items, namely chemicals are usually sold through chemical companies but in Cambodia a pharmacy will only sell company made medicines.
(CMS located near the MOH will procure chemicals on an order basis).
In addition the apparatus donated by the ADB also presents these same recurrent cost implications.
The chemicals that were originally contained within the kits are now crystallized and have deteriorated.
There is no safe method of their disposal and some of these chemicals now present possible risks if left.

F.O.P.

The FOP has responsibility for PRESETT for undergraduates and postgraduates,as well as for INSETT provision.
It does not have a science laboratory.
A project proposal for re-habilitation of the science lab has been submitted to the

Japanese Embassy as part of the JGAGRP by PMMU (September 1998).
This proposal was re-written and submitted to Norio Kato at PMMU in May 1998 by CB.
This project could still go ahead at very short notice as plans are already in place.
The re-habilitation plans included the provision of water and electricity.

ADB Kits

Science is currently taught in a normal teaching room – there are no dedicated rooms for the purpose of teaching science.
For health and safety reasons alone it is important that a dedicated room is made available for science due to the nature of the subject and this causes problems where there is a lack of space.
Much of the equipment that is in schools is either displayed in glass cupboards or more commonly is still contained within the packing boxes in which it arrived.
In one school in Kandal Province kits are on the floor of a room that is already dedicated for science but the teachers have no capacity to understand the equipment that it contains and are frightened to touch things that they don't know about.

Before practical science can be introduced using a variety of different resources there is a need for fundamental issues to be considered.
It is misguided to consider that a science lesson is based on 'doing an experiment' and as many science educationalists are aware without logical and sequenced development of concepts and without the practical experience being relevant and embedded within the curriculum there is little or no benefit to the students as learners other than having fun.
In order to run a practical lesson there are major considerations:
1. Classroom Organisation and Management

- Can the teacher organise the classroom furniture and pupil?
- Do they have an awareness of how to facilitate practical work in terms of group work?
- How would they organise the students so that they can access practical work?
- How can they organise the activity safely?
- What needs to be prepared for in advance of the lesson?
- Who is going to organise this?
- Is the room dedicated so that experiments can be set up in advance?
- Can experiments be left e.g. Biology experiments can take up to 3 weeks with
- apparatus left.
- Is there an ethos whereby students are encouraged to access their work on an
- individual basis?

Student/teacher work practices should be established so that they know how each piece of apparatus should be used regardless of the experiment.
E.g. In order to add 30mls of water to a solution the student would need to know that the measuring cylinder is the appropriate piece of apparatus to use for this.
They would need to understand the theory of meniscus and how to read it.
They would need to have learnt specific skills e.g. how does one fill a measuring

Cylinder carefully and how should solutions be poured when mixing with another.
It may not be so important for water but with other chemicals it would be.
Furthermore t is too late to suggest that students experience the bulk of practical science at grades 10,11&12-
Scientific working practices have to be established as part of prior knowledge or taught from scratch , e.g. in the UK a science teacher will spend the first 3 months with students new to science establishing how to do practical work in science.
Established and safe working practices are essential in any science lesson.

2. Health & Safety

- Is there running water or water in quantities available?
- Is the teacher aware of the need to find out about chemical use?
- Can the teacher prepare molar concentrations of chemicals that are appropriate for the students to use safely?
- Teachers are not aware of the need for safe working practices.

Students would need to have an established understanding of the way science should be approached safely.
Teachers would need training in basic first aid to deal with problems e.g. How to treat acid spillage or how to deal with acid/alkali on the skin.

3. Resources that are available.

- Are the relevant chemicals available?
- Is there a need for preparation work?
- Awareness of sets of apparatus and how these can be situated effectively and safely.
- *How are instructions going to be given so that they are clear and free the teacher to be able to manage the practical situation.*

Textbooks

The new textbooks and teaching manuals represent a much-needed improvement in quality.

The writers are generally experienced secondary school teachers although they do not have sufficient training on didactical and pedagogical matters related to producing school textbooks.

Interviews with the science and mathematics teams at P.R.D. indicate the need for support that is targeted to need.

Areas specifically identified are:

- English for scientific purposes in order that reference materials that are currently being used to support the science and maths writers can be accessed and used appropriately.
- Need for input regarding the curriculum development process.

- Establishing specific learning objectives relating to the new curricula and in determining the levels of knowledge required at each stage.
- Exemplar material on how the teachers manual can be structured so that teachers in schools are able to access and use it.
- Input on the process of curriculum mapping so that links between science disciplines can be made apparent and cross subject links exploited to enhance learning.
- Access to support aimed at helping writers with practical work suggestions in order that the writers can understand the demands implicit within suggesting practical work. This would also allow a consideration of the use of naturally occurring materials to support science applications based science.
- Practical work suggestions need to be relevant in terms of the learning outcomes, practical work should not just be tacked onto a piece of text but should be considered in terms of relevance.

Comments received from science and maths teachers indicated that there needed to have been field research and pre-testing of teachers manuals as most teachers report that they are not currently utilising the teachers manuals as they find them difficult to access and to utilise within the context of their classrooms.

The earlier textbooks produced would also frequently contain incorrect information and as teachers in schools are so dependent upon the textbook this was perceived by the teachers interviewed as being a major issue.

Teacher training in textbook utilisation was too short and there has been no system for follow-up following the initial training of approximately 10 days T.O.P.

There is a need for study on the integration of practical work and one approach may be through the BETP Research Component. However specific and focused studies may warrant funding and attention through alternative routes..

Some issues related to this issue remain:

- Would a review of the current TX contain relevant experimental suggestions in relation to learning Objectives?
- Are the writers confident that the experiments are realistic?
- Are the writers aware of the need to develop practical skills in terms of skill sophistication required and is this going to be explicit within the book?

The instructions for practical work contained within the textbook would need to have the above information for teachers and capacity is such that they would need this detail as a **minimum** in order to carry out effective practical work.
This places great responsibility on the textbook, as existing culture is to follow the TX rigidly with little initiative on behalf of the teachers.

Technical assistance for Khmer, Mathematics & Science textbook and teacher manual production take the form of 54 person months, to be concentrated in 1997 & 1998 and

that this technical assistance focus on support for the writers in the production of textbooks and on teacher manual production. (UNICEF component of BETP PAM)

Progress has been made in the area of Khmer and Mathematics but the science input has existed only for the past 2 months and this person has had to advise on all aspects of science.

A continuation or enhancement of this support is important if considered alongside the fact that science is not **one** subject but is in fact **four** separate and distinct subjects, Biology, Chemistry, Physics & Earth Science.

It is not known how long this technical assistance is to continue for but there already exists a disproportionate allocation of support between the three subjects if technical assistance finishes in 1998 as originally indicated.

Given the conditions above it is not suprising that the science textbooks require additional support and in the light of these arguments the writers at PRD should be commended for their proactive and committed approach to their work.

This commitment is more laudable when considered within the context that some members of the writing teams interviewed reported that financial remuneration was not equitably distributed.

The science textbook committees have worked with insufficient supervision for the past three years largely due to the difficulties in locating candidates as international consultants.

In the wider sphere of International technical assistance, there is a requirement for the textbooks to be translated into English in order for a comprehensive analysis to be made and, given that the role of the technical assistance is to support the increase in capacity of the writers, there has to be accurate and valid comment based on textbooks that are well understood.

The writers are loosely following a curriculum that was developed for primary and lower secondary schools (see notes on curriculum). However at the time of reporting production of the Year 10 – 12 textbooks is continuing in accordance with timescale established by MoEYS despite the fact that there is no comprehensive curricula and no syllabi developed for science.

It is not suprising that the writers are struggling as the scientific demands regarding knowledge increase when they have no guidance or framework in the form of curriculum documentation.

CURRICULUM

The Cambodian curriculum is currently based on a subject centred design where the teaching of an established body of content that has been derived from the accumulated wisdom of the academic disciplines.

The implementation of change from the old to the new curriculum has meant a disruption of the status quo and the challenge for all involved is in taking the curriculum documentation and putting it into practice.
In order for the new curriculum in Cambodia to be institutionalised the curriculum needs to be accepted and utilised.
It is to be expected that in the short term any new curriculum will experience difficulties and the extent to which this occurs can generally reflect the effectiveness of the curriculum developers to meet the needs of the teachers in the classroom.
The majority of curriculum implementation fails due to the lack of a systematic implementation procedure or when one or more steps in that procedure is less effective in terms of need delivery.
In order to respond to the challenge of implementation some review and modification will become necessary to take into account:

- the varying nature of students in schools
- differing teacher capabilities
- varying resource levels
- Community support in its widest sense.

Modifications that are made to the science and maths curriculum may be small or substantial dependent upon how well the developers have completed their task and the degree to which adjustments may have to made will reflect the willingness and capabilities of both the developers and those providing support to accommodate change.
To attempt to determine that science curriculum development is a static process would do little to enhance the quality of science education for students in Cambodia.
The main question to be asked when considering modification is to ask whether or not the intervention is meeting the needs of the students and teachers within the school context.
During interviews with school directors and teachers it is apparent that there are a number of issues related to curriculum that need to be addressed if the quality of science education is to be raised both for the students and for the teacher.

The current situation is that there has been little awareness of curriculum design issues in the way in which the new science curriculum has been developed.

The curriculum has been developed with no identification of student learning objectives and this has proved difficult for teachers in schools and for curriculum and textbook writing teams.

Teachers in schools in Cambodia have little awareness of the distinction between the curriculum and the textbook and in their eyes the two are synonymous.

The curriculum content has not provided the structure within which the textbook has been developed, rather it has provided a series of broad headings which have guided writers to find related information from good quality, existing textbooks from the Philippines and Singapore and to transfer information to the new science and mathematics textbooks.

A workshop held at the P.R.D. with writers of the science textbooks and science curriculum committees indicated the confusion that exists surrounding definitions of curriculum, syllabus, and textbook and in a meeting held with the science and

mathematics curriculum teams during September 1998, there was uncertainty expressed about the ways in which a syllabus for science could be developed in addition to the feelings of insecurity about how this could relate to, assessment.

There is a clear lack of a relationship between the existing statement of goals and objectives with what has actually appeared within the textbooks themselves particularly in terms of the application of learning to everyday experience and the use of resources that are naturally occurring and available.

Some of the problems currently presented by the new curriculum relate specifically to the ways in which it has been adopted and it is clear that there has not been a successful sharing of vision; quality innovation programme and funding and resources to support implementation

Many of the innovations in curriculum reform in Cambodia have received artificial support in the form of consultants and finance, particularly during the early stages of implementation and effectiveness of intervention can only be measured in terms of how functional the changes would be if this intervention were to be removed.

Any review of the curriculum in its present form needs to consider the HRD needs of the PRD and the varying way in which these needs can be met.

(Appendix 6 presents a simplified model for thinking initially about the curriculum process)

There are currently a number of expert created curriculum packages but at present teachers do not perceive the value of these materials and have differing perceptions of the reality of their situation, particularly in terms of the need for change and the importance of making it work.

There is little ownership of the new reforms at the classroom level and the priorities for science teachers remain focused on the area of the provision of a quality science experience for students.

The role of the T.O.P. therefore would assume a new significance in that it would serve to inform of this need for change and would introduce the rationale behind it, however the current timeframe for the T.O.P. is quite short and does not provide teachers with the strategies that they need to attempt to teach the new curriculum according to student centred teaching methodologies. This has meant that the T.O.P. has resulted in low methodological outcomes.

Appendix 1

Type of school	Province	Name of school	School code no.	Principal	Dates of visits
Primary	Phnom Penh	Bandoh Vichea	12010801010	Khieu Kola	25.05.98/27.05.98
Lower sec.	Phnom Penh	Prek Liep	12060802703	Vong Sovonn	25.05.98/28.05.98
Upper sec.	Phnom Penh	Preah Sisovath	12030302901	Seng Lime	26.05.98/29.05.98
Primary	Kandal	Kdei Ta Koy	8021201038	Koam Kimny	12.05.98/15.05.98
Lower sec.	Kandal	Prek Sdei	8041002703	Va Meng	13.05.98/18.05.98
Upper sec.	Kandal	Srok Phnom Penh	8080101901	Hang Chhum	12.05.98/19.05.98

Appendix 2

GROUP DISCUSSION - TEACHER'S

Name of School :

Province :

STATISTICS

How many classes do you teach in :

One Day .....

One Week .....

EDUCATIONAL BACKGROUND

What formal qualifications do you have ?

Where did you receive training for teaching ?

Do you consider the training that you received to be adequate preparation for teaching ?

Identify improvements that you feel could be made to teacher training in science & maths

MOTIVATION

What was your motivation for entering teaching ?

CURRICULUM

Are you involved in teaching the new science curriculum ?

What are your opinions about the new science curriculum ?

Do you use the curriculum as a guide to teaching in maths & science?

Does the new curriculum involve suggestions for practical work ?

Have you received any training about how to adapt a curriculum to be taught ?

Do you spend equal amounts of time in teaching science & maths ?

CROSS CURRICULAR LINKS

When teaching science are you aware of the links that can be made with other subjects ?

If yes, do you attempt to incorporate these into your teaching ?

Do you teach aspects of : Health education
Environmental education
Technology
in your science teaching ?

TEXTBOOKS

What textbooks do you use in science & maths ?

Does each student have access to one textbook ?

Has your school received copies of the new textbooks?

What is your opinion of the new textbooks ?

Do you teach any science or maths that is not in the textbooks ?

RESOURCES

Do you have access to any apparatus to support the teaching of science & maths ?

Do you carry out science practical work ?

Do you have dedicated rooms for teaching science & maths ?

Do you ever use resources of your own in science & maths ?

Do you ever use natural or local resources when teaching science & maths?

TEACHING & LEARNING

How would you describe the way that you teach ?

Do you think it is more important for the teacher to talk more than the students ?

Do you use models as a way of teaching in science & maths ?

Do you use practical work as a way of teaching in science & maths ?

Do you feel confident about using practical work in your teaching ?

Have you received any INSETT or support in using practical approaches to teaching science & maths ?

Do you meet as a team of teachers to discuss new ideas or approaches to teaching ?

What teaching techniques do you use when teaching ?

Do you discuss common approaches to teaching science & maths ?

ASSESSMENT

Do you ever ask students to complete work outside of school ?

Do you use tests to establish learning in your students ?

If yes, how often ?

Do you keep a record of these test results ?

Do you feedback to students on specific areas of strength / weakness ?

What support do you offer to students who are having difficulties in learning science or maths ?

Have you been involved in the preparation of questions for the Year 9 & 12 examinations for 1998 ?

What percentage of your students do you think will pass their exams in science & maths ?

Have you been offered support in how to write a test for students ?

Do you feel confident of the ways in which you can test students in class ?

PRIVATE ACTIVITY

Do you teach in a private school ?

How often do you teach privately ?

Do you have any employment other than teaching ?

TARGETS FOR FUTURE CAREER DEVELOPMENT

What are your future plans for career development ?

Would you like to receive training in science & maths teaching ?

Identify areas of INSETT that you would like to see being offered

Quality Indicators for Lesson Observation

A Lesson Plan	The teacher has a realistic plan of what she / he will teach. She / he has a clear objective for the lesson which says what the students are going to learn. She / he uses the plan during the lesson, and afterwards to check if she / he was successful.
A Shape to the Lesson	There is a clear progression to the lesson, a beginning and an end. There are stages which lead the student to greater learning. There is a sense that the students are learning something.
Variety of techniques and activities.	Students' learning styles are different. The teacher recognises this and maintains interest and learning using a variety of activities, teaching techniques and materials (eg. the blackboard and the textbooks). She / he is creative and the lesson has good pace.
Management and control of the class.	The teacher gives clear instructions and checks that they are understood. She / he monitors and moves around the class. She / he uses students names, maintains eye contact and encourages the involvement and purposeful interaction of all students.
Student Involvement	The teacher encourages student involvement by limiting the time she / he talks, inviting students to speak, not interrupting, etc. She / he uses techniques like questioning, problem-solving, etc. that encourage independent thinking, active learning and creativity. She / he uses groupings that encourage participation and interaction between students. She / he develops a positive attitude among the students towards learning.
Ability in the subject taught	The teacher has good competence in what she / he is teaching. She / he knows what the students already know and what they should learn next. She / he shows enthusiasm for the job of teaching and evaluates her / his own teaching.

Appendix 4

CLASSROOM OBSERVATION CHECKLIST

COMMUNICATION			
Number	Question	Yes	No
1	The teacher shows a friendly attitude		
2	The teacher has developed an active listener role		
3	The teacher presents a confident role image		
4	The teacher uses relevant subject matter		
5	The teacher uses everyday language		
6	The teacher explains key concepts		
7	The teacher varies voice, tone & pitch		
8	The teacher uses repetition to emphasise key points		
9	The teacher develops eye contact		
10	The teacher uses the first names of students		
11	The teacher encourages students to express their views		
12	The teacher has taught group skills		
	EXPLANATION		
1	The teacher informs students of learning objectives		
2	The teacher reviews knowledge and concepts		
3	The teacher provides an interesting introduction		
4	The teacher avoids hurrying new content		
5	The teacher avoids technical language		
6	The teacher uses diagrams to illustrate content		
7	The teacher can be seen and heard by students		
8	The teacher insists on close attention		
9	The teacher keeps explanations precise		
10	The teacher demonstrates content in a variety of ways		
11	The teacher encourages students to act as tutors		
12	The teacher varies explanation and demonstration		
13	The teacher has enthusiastic delivery		
14	The teacher has a warm and responsive style		
	MOTIVATION		
1	The teacher sets realistic goals and gives reinforcement		
2	Activities challenge students to achieve		
3	The teacher ensures feelings of success		
4	Teacher uses popular activities		
5	Teacher uses verbal forms of encouragement		
6	Teacher comments positively and avoids criticism		
7	Teacher displays evidence of achievement		
8	Teacher avoids the use of punishment		
	QUESTIONING		
1	The teacher ensures that questions are relevant		
2	The teacher asks questions that can be answered		
3	The teacher uses direct and clear language		
4	The teacher asks questions focused on key points		
5	The teacher asks one question at a time		
6	The teacher asks questions in a logical sequence		

7	The teacher leaves time for answers		
8	The teacher does not favour some students		
9	The teacher questions in a positive way		
10	The teacher encourages students who have difficulty		
11	The teacher will accept alternative answers		
12	The teacher re-phrases questions if necessary		
13	The teacher provides support for incorrect answers		
	WORKTASKS		
1	Tasks involve a range of activities		
2	Work tasks are meaningful		
3	Work tasks are interesting		
4	Work tasks include new content and review old.		
5	Tasks are varied in content and format		
6	Tasks challenge the most capable students		
	FEEDBACK		
1	The teachers use feedback to inform students of levels		
2	Feedback is provided on an individual basis		
3	Feedback is varied to suit individual needs		
4	Feedback is at an appropriate level		
5	Feedback includes suggestions for improvement		
6	Feedback provision is immediate		
	ASSESSMENT		
1	Teacher pre-tests to determine levels of knowledge		
2	Teacher uses continuous assessment strategies		
3	Teacher utilises summative and formative strategies		
4	Teacher uses assigned tasks to assess capability		
5	Teacher tests for a variety of outcomes		
6	Teacher has a complete set of records		
7	Teacher uses assessment to inform planning		
8	Teacher involves students in their assessment		
9	Teacher keeps assessment information confidential		

QUALITY OF TEACHING & LEARNING IN SCIENCE

PREPARATION & OBSERVATION SCHEDULE

27.04.98	Review of literature Introductory section to study
28.04.98	
29.04.98	
30.04.98	
01.05.98	*HOLIDAY*

	am	pm
04.05.98		
05.05.98	Devise group discussion checklist for teachers	
06.05.98	Devise lesson observation sheet	
07.05.98	Devise questionnaire for science data	
08.05.98		

KANDAL PROVINCE

	PRIMARY	LOWER SECONDARY	UPPER SECONDARY
11.05.98	*VISAK BOCHEA DAY*		
12.05.98	Pre-visit / am		Pre - visit / pm
13.05.98		Pre-visit / am	
14.05.98	*CHRAT PREAH NEANG KAL*		
15.05.98	Visit am & pm		

18.05.98		Visit am & pm	
19.05.98			Visit am & pm
20.05.98	Analyse data Write up findings		
21.05.98			
22.05.98			

PHNOM PENH MUNICIPALITY

	PRIMARY	LOWER SECONDARY	UPPER SECONDARY
25.05.98	Pre - visit / am	Pre-visit / am	
26.05.98			Pre - visit / am
27.05.98	Visit am & pm		
28.05.98			
29.05.98			Visit am & pm

01.06.98	
02.06.98	Visit am & pm
03.06.98	
04.06.98	Analyse data
05.06.98	Write up findings

SCHOOLS SELECTED AT RANDOM FOR OBSERVATION

Type of school	Province	Name of school	School code no.	Principal	Dates of Pre-visit	Date of visit
Primary	Phnom Penh	Bandoh Vichea	12010801010	Khieu Kola	25.05.98	~~27.05.98~~
Lower sec.	Phnom Penh	Prek Liep	12060802703	Vong Sovann	~~25.05.98~~	~~28.05.98~~
Upper sec.	Phnom Penh	Preah Sisovath	12030302901	Seng Lime	~~26.05.98~~	~~29.05.98~~
Primary	Kandal	Kdei Ta Koy	8021201038	Koam Kimny	12.05.98	15.05.98
Lower sec.	Kandal	Prek Sdei	8041002703	Va Meng	13.05.98	18.05.98
Upper sec.	Kandal	Srok Phnom Penh	8080101901	Hang Chhun	12.05.98	19.05.98

KANDAL PROVINCE

TIMETABLE OF VISITS

***KDEI TA KOY* - 15.05.98**

TIME	SCHEDULE
7.00	Meet with teachers
7.30	Lesson Observation
9.00	Meet with director

***PREK ANCHANG* - 18.05.98**

TIME	SCHEDULE
7.00	Meet with director
8.00	Lesson Observation
9.00	Meet with teachers

***SROK PHNOM PENH* - 19.05.98**

TIME	SCHEDULE
7.30	Meet with director
8.00	Meet with teachers
9.00	Lesson Observation - Grade 12 Maths
9.30	Lesson Observation - Grade 11 Biology

KANDAL PROVINCE

TIMETABLE OF VISITS

15.05.98

TIME	SCHEDULE
7.00	Meet with teachers
7.30	Lesson Observation
9.00	Meet with director

18.05.98

TIME	SCHEDULE
7.00	Meet with director
8.00	Lesson Observation
9.00	Meet with teachers

19.05.98

TIME	SCHEDULE
7.30	Meet with director
8.00	Meet with teachers
9.00	Lesson Observation Grade 12 Maths
9.30	Lesson Observation Grade 11 Biology

CURRICULUM PROCESS

The model below shows a possible approach to the beginning of the process of curriculum developrnent.
It has been shown that the areas identified in the model below are necessary determinants in establishing a framework within which effective curriculum development can take place.

This is a core ingredient in the curriculum development process and can be seen as a process involving the following componenets :

- ❒ Aims, goals and objectives
- ❒ Subject matter and content
- ❒ Learning activities
- ❒ Evaluation

The ways in which these components are brought together as a unified whole constitute curriculum design.

Curriculum design will normally take place at the beginning of the curriculuim development process and is ususally a deliberate activity.
It is important that although most teachers see curriculum design as only the pattern of content that there is an appreciation of all of the curriculum elements and is an extremely important task.
The science curriculum in Cambodia has been developed from a bottom up approach with little awareness of the expected student competencies that are expected to be achieved by the end of schooling whether at Grade 9 or Grade 12.

The reform of any aspect of reform of secondary education may need to be approached from the relative feasability of implementation and this should always be an important factor in the decision making process.

Whilst it may be argued that facilities it secondary schools may be of a higher standard than at primary level the reality is that there is over-crowding, poorly maintained buildings, paucity of laboratory equipment and other teacher / learner materials.

Therefore the management of the delivery of interventions needed to be made easier in magnitude and relatively more accessible.

Prior to attempting implementation of any change or reform eg. Child centred learning / new curricula - a trial run may be desirable in order to determine and establish the processes involved, namely :

- *Planning*
- *Communications*
- *Delivery*
- *Monitoring*
- *Quality Assurance*
- *Evaluation*
- *Feedback*

These would need to be considered within the parameters of content, procedures, regulations, infra-structure, human resource development, financial outlay, timing and critical path analysis.

A phasing of any further developments in science education needs to take place.

It is undoubtedly the case that updating levels of science knowledge at the secondary level will mean in practice that there needs to be a concurrent update of the knowledge of the curriculum designers, textbook writers and teacher educators so that up to date content will appear in the textbooks and the new teachers being trained will possess this up to date information on content and process.
Whilst the updating of teachers scientific knowledge continues the reforms can continue. The processes for thinking in a scientific context may be developed using existing subject content regardless of how old this content is considered to be.

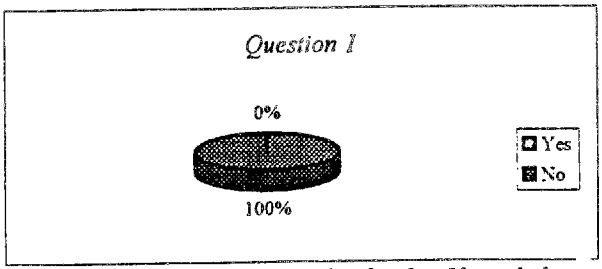
Whilst the updating process has progressed the thinking processes may be applied there too.

This staggered strategy is resource saving, but also the impact of the shock associated with large-scale change can be reduced for many of those involved in the delivery of science education.eg. New curriculum demands on teaching methodologies.

New content and methodology are not necessarily obstacles to be overcome simultaneously.

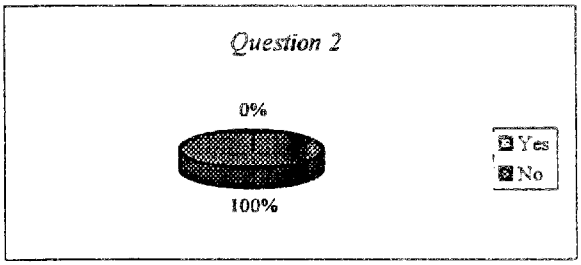
ASSESSMENT

Frequency	Percentage	Tally
Yes	0	0
No	100	28



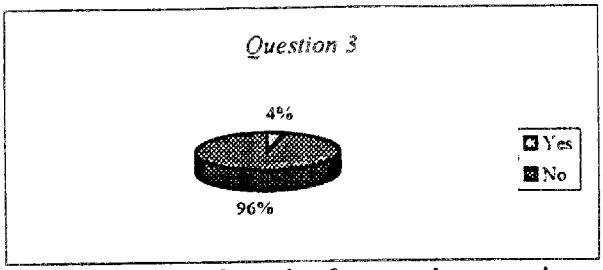
Teacher pre-tests to determine levels of knowledge

Frequency	Percentage	Tally
Yes	0	0
No	100	28



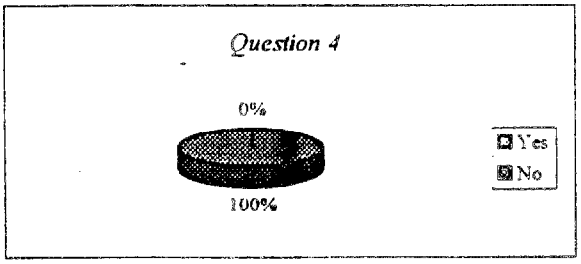
Teacher uses continuous assessment strategies

Frequency	Percentage	Tally
Yes	3.6	1
No	96.4	27



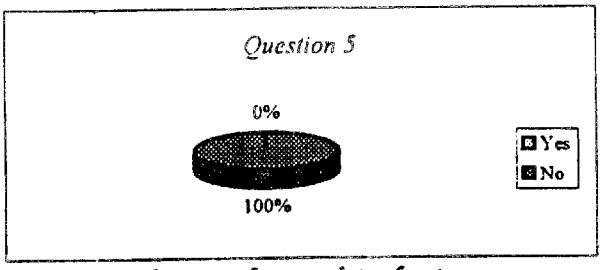
Teacher utilises formative & summative strategies

Frequency	Percentage	Tally
Yes	0	0
No	100	28



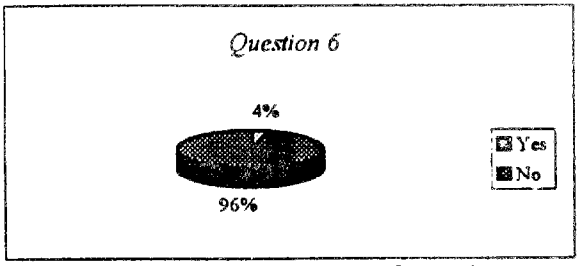
Teacher uses assigned tasks to assess capability

Frequency	Percentage	Tally
Yes	0	0
No	100	28



Teacher tests for a variety of outcomes

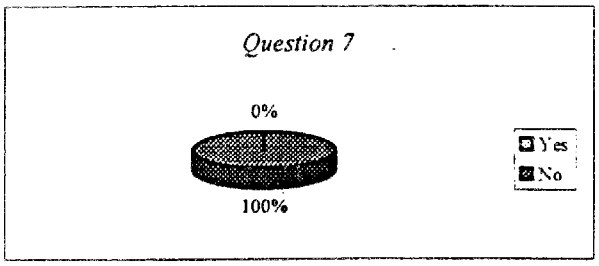
Frequency	Percentage	Tally
Yes	3.6	1
No	96.4	27



Teacher has complete sets of records

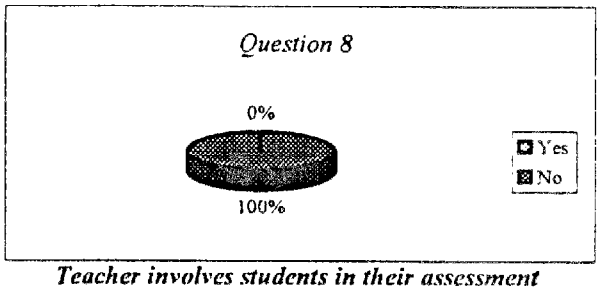
ASSESSMENT

Frequency	Percentage	Tally
Yes	0	0
No	100	28



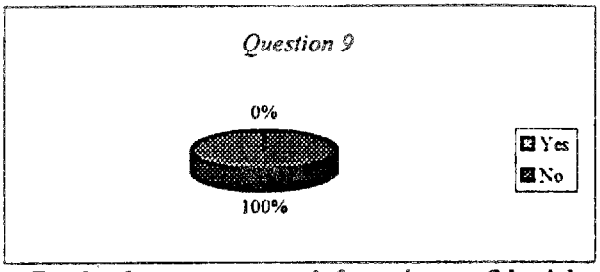
Teacher uses assessment to inform planning

Frequency	Percentage	Tally
Yes	0	0
No	100	28



Teacher involves students in their assessment

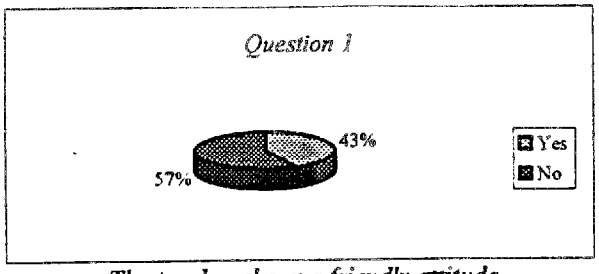
Frequency	Percentage	Tally
Yes	0	0
No	100	28



Teacher keeps assessment information confidential

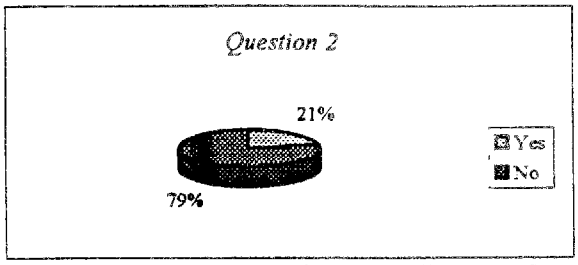
COMMUNICATION

Frequency	Percentage	Tally
Yes	42.9	12
No	57.1	16



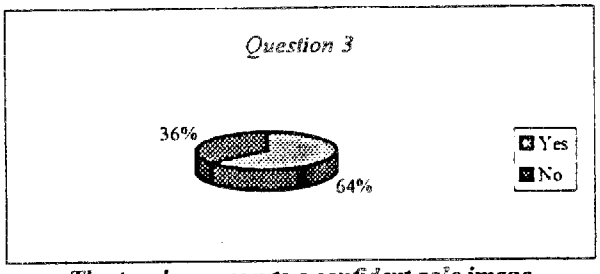
The teacher shows a friendly attitude

Frequency	Percentage	Tally
Yes	21.4	5
No	78.6	22



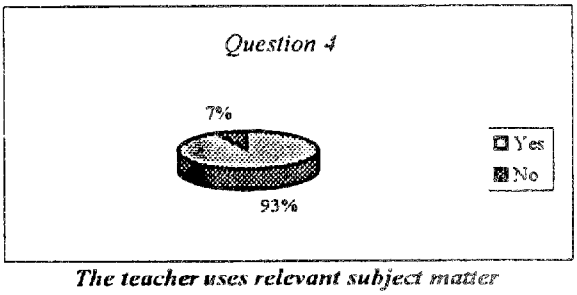
The teacher has developed an active listener role

Frequency	Percentage	Tally
Yes	64.3	18
No	35.7	10



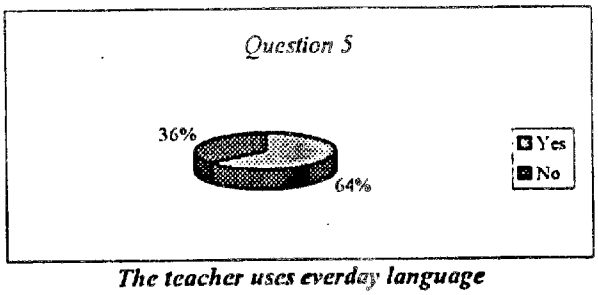
The teacher presents a confident role image

Frequency	Percentage	Tally
Yes	92.9	26
No	7.1	2



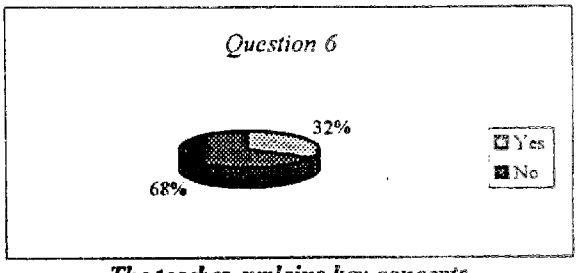
The teacher uses relevant subject matter

Frequency	Percentage	Tally
Yes	64.3	18
No	35.7	10



The teacher uses everday language

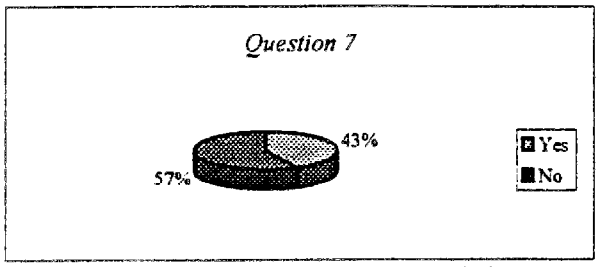
Frequency	Percentage	Tally
Yes	32.1	9
No	67.9	19



The teacher explains key concepts

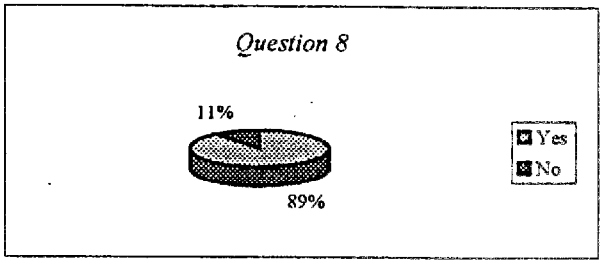
COMMUNICATION

Frequency	Percentage	Tally
Yes	42.9	12
No	57.1	16



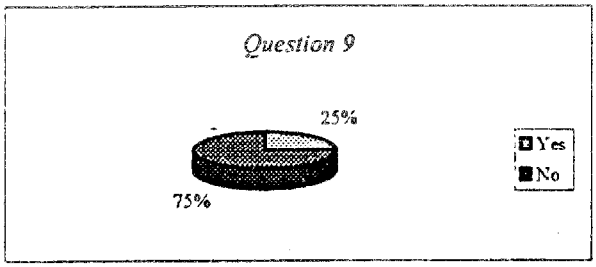
The teacher varies voice, tone & pitch.

Frequency	Percentage	Tally
Yes	89.3	25
No	10.7	3



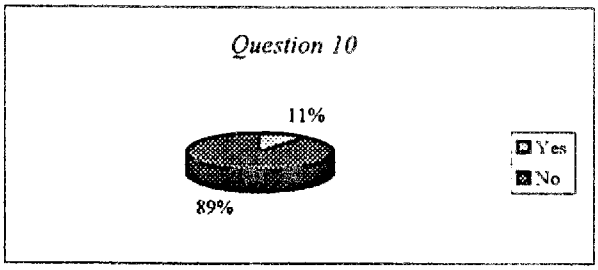
The teacher uses repetition to emphasise key points

Frequency	Percentage	Tally
Yes	25	7
No	75	21



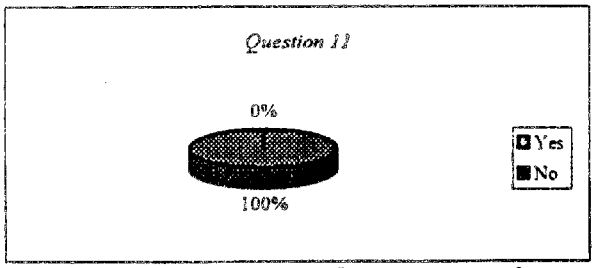
The teacher develops eye contact

Frequency	Percentage	Tally
Yes	10.7	2
No	89.3	25



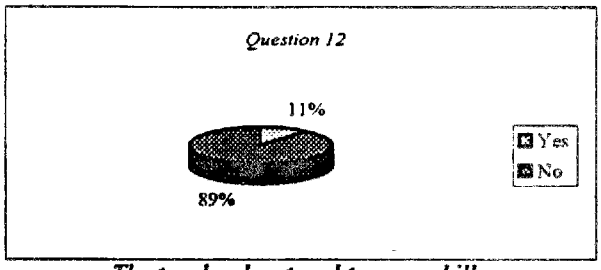
The teacher uses first names of students

Frequency	Percentage	Tally
Yes	0	0
No	100	28



The teacher encourages students to express views

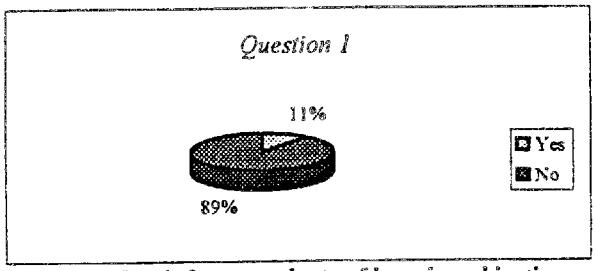
Frequency	Percentage	Tally
Yes	10.7	3
No	89.3	25



The teacher has taught group skills

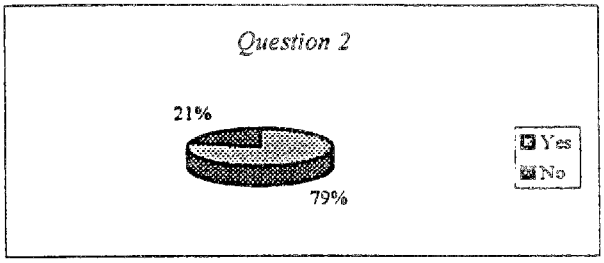
EXPLANATION

Frequency	Percentage	Tally
Yes	10.7	3
No	89.3	25



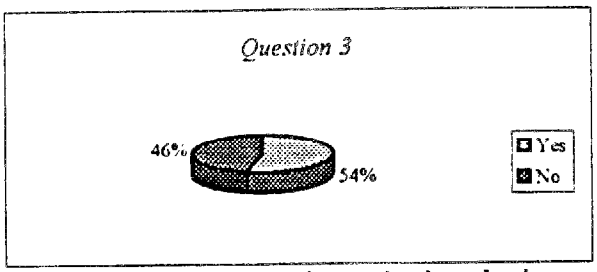
The teacher informs students of learning objectives

Frequency	Percentage	Tally
Yes	79	22
No	21	6



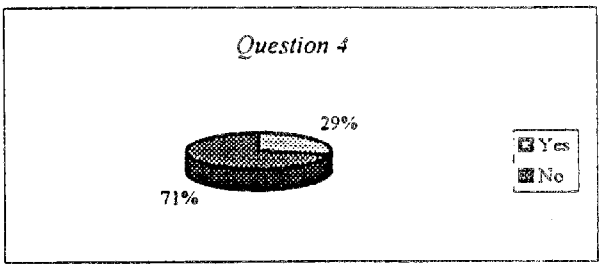
The teacher reviews knowledge & concepts

Frequency	Percentage	Tally
Yes	53.6	15
No	46.4	13



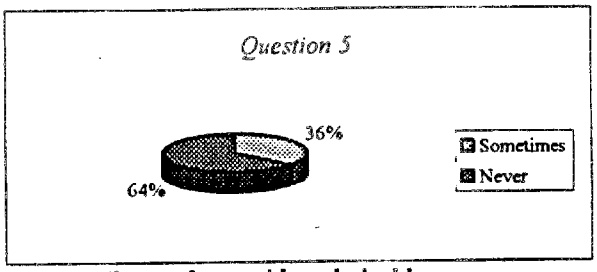
The teacher provides an interesting introduction

Frequency	Percentage	Tally
Yes	28.6	8
No	71.4	20



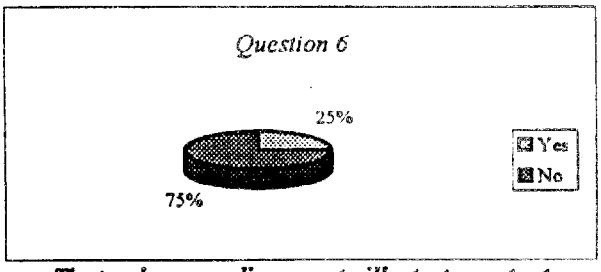
The teacher avoids hurrying new content

Frequency	Percentage	Tally
Sometimes	35.7	10
Never	64.3	18



The teacher avoids technical language

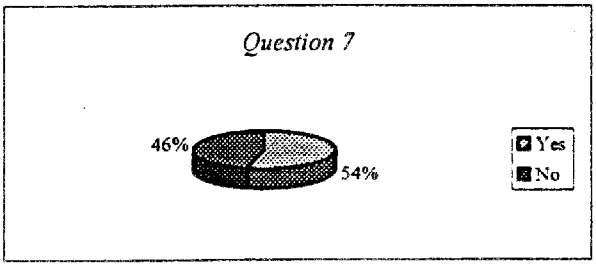
Frequency	Percentage	Tally
Yes	25	7
No	75	21



The teacher uses diagrams to illustrate content

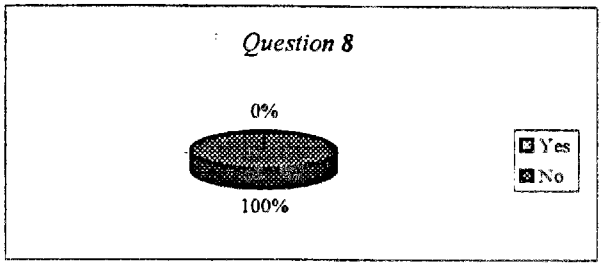
EXPLANATION

Frequency	Percentage	Tally
Yes	53.8	15
No	46.2	13



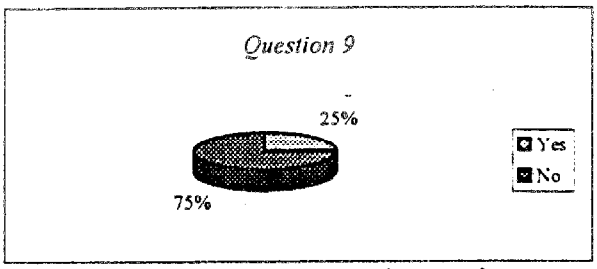
The teacher can be seen & heard by students

Frequency	Percentage	Tally
Yes	0	0
No	100	28



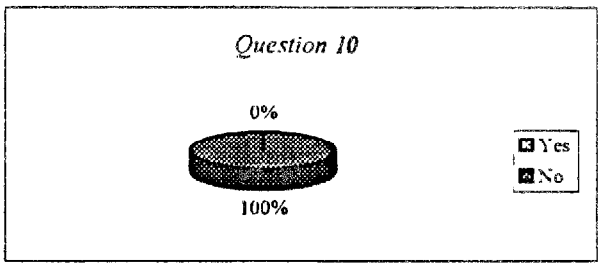
The teacher insists on close attention

Frequency	Percentage	Tally
Yes	25	7
No	75	21



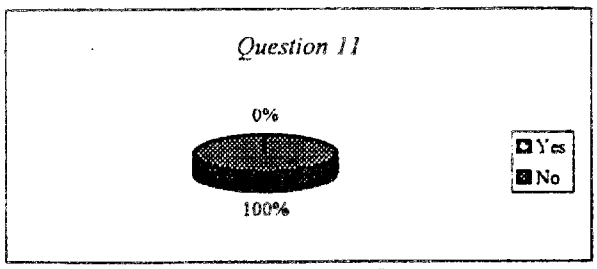
The teacher keeps explanations precise

Frequency	Percentage	Tally
Yes	0	0
No	100	28



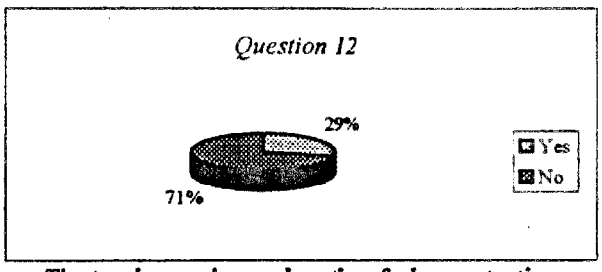
The teacher demonstrates content in a variety of ways

Frequency	Percentage	Tally
Yes	0	0
No	100	28



The teacher encourages students as tutors

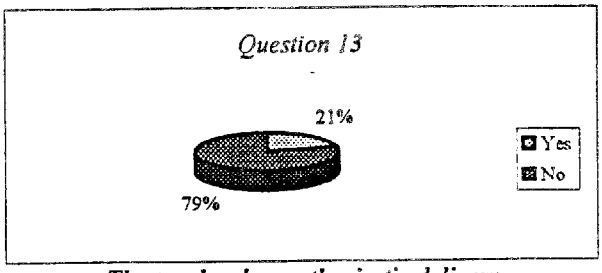
Frequency	Percentage	Tally
Yes	28.6	8
No	71.4	20



The teacher varies explanation & demonstration

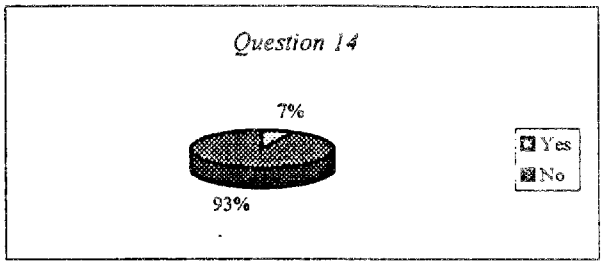
EXPLANATION

Frequency	Percentage	Tally
Yes	21.4	6
No	78.6	22



The teacher has enthusiastic delivery

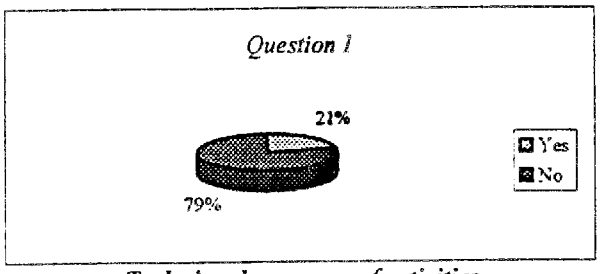
Frequency	Percentage	Tally
Yes	7.1	2
No	92.9	26



The teacher has a warm & responsive style

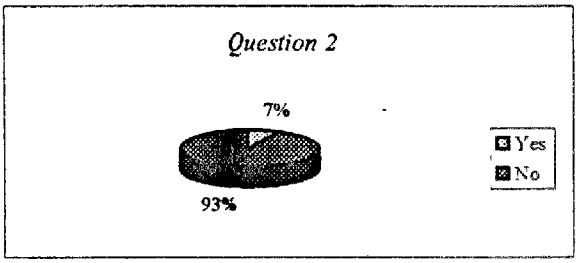
WORK TASKS

Frequency	Percentage	Tally
Yes	21.4	6
No	78.6	22



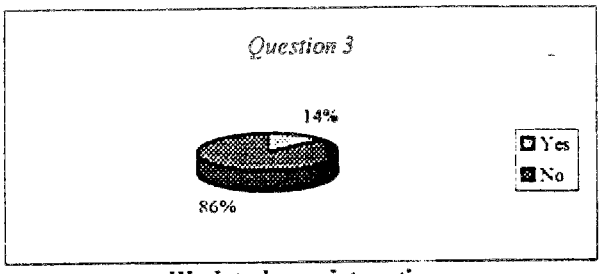
Tasks involve a range of activities

Frequency	Percentage	Tally
Yes	7.1	2
No	92.9	26



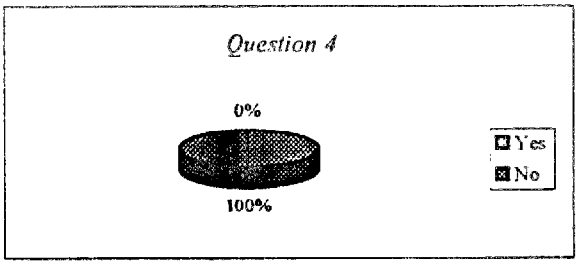
Work tasks are meaningful

Frequency	Percentage	Tally
Yes	14.3	4
No	85.7	24



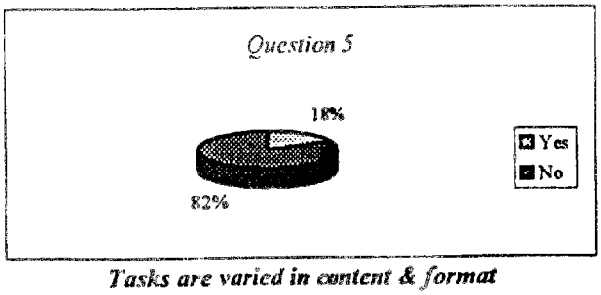
Work tasks are interesting

Frequency	Percentage	Tally
Yes	0	0
No	100	28



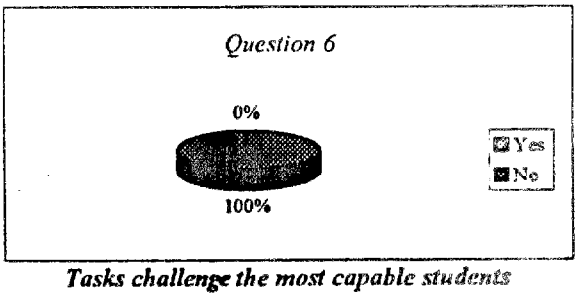
Work tasks include new content & review old

Frequency	Percentage	Tally
Yes	17.9	5
No	82.1	23



Tasks are varied in content & format

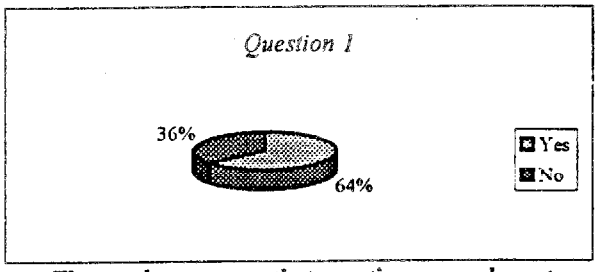
Frequency	Percentage	Tally
Yes	0	0
No	100	28



Tasks challenge the most capable students

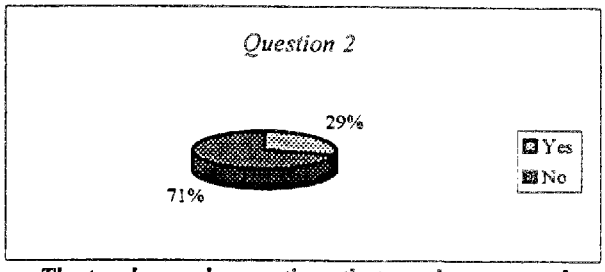
QUESTIONING

Frequency	Percentage	Tally
Yes	64.3	18
No	35.7	10



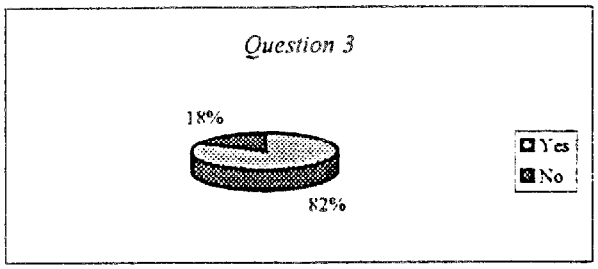
The teacher ensures that questions are relevant

Frequency	Percentage	Tally
Yes	28.6	8
No	71.4	20



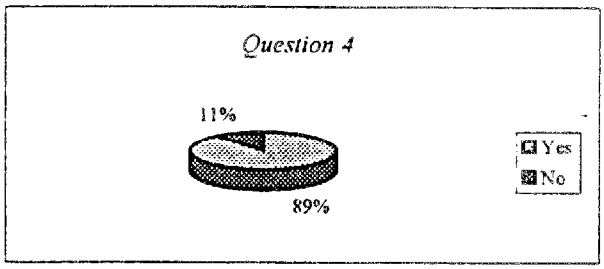
The teachers asks questions that can be answered

Frequency	Percentage	Tally
Yes	82.1	23
No	17.9	5



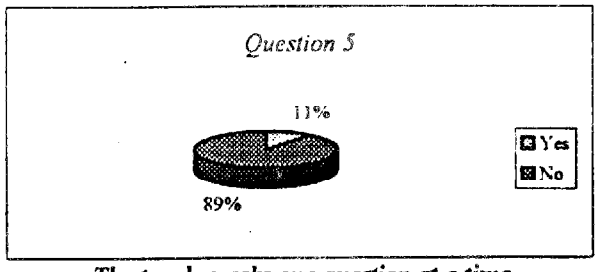
The teacher uses direct and clear language

Frequency	Percentage	Tally
Yes	89.3	25
No	10.7	3



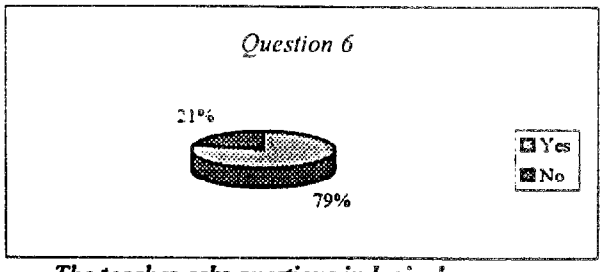
The teacher asks questions focused on key points

Frequency	Percentage	Tally
Yes	10.7	3
No	89.3	25



The teacher asks one question at a time

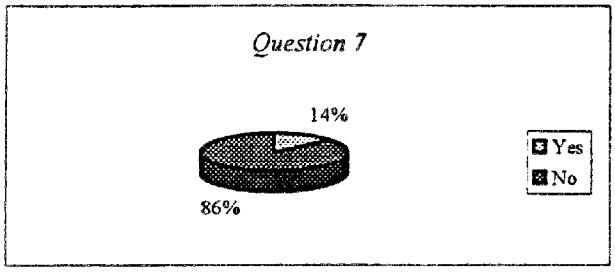
Frequency	Percentage	Tally
Yes	78.6	22
No	21.4	6



The teacher asks questions in logical sequence

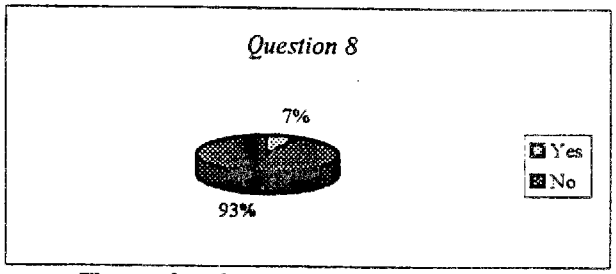
QUESTIONING

Frequency	Percentage	Tally
Yes	14.3	4
No	85.7	24



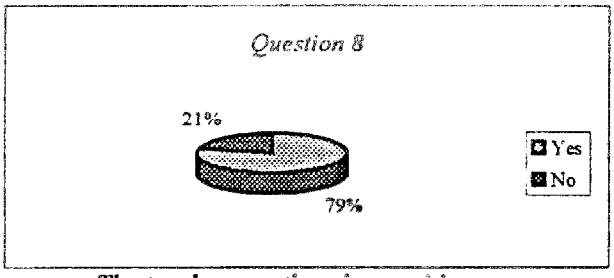
The teacher leaves time for answers

Frequency	Percentage	Tally
Yes	7.1	2
No	92.9	26



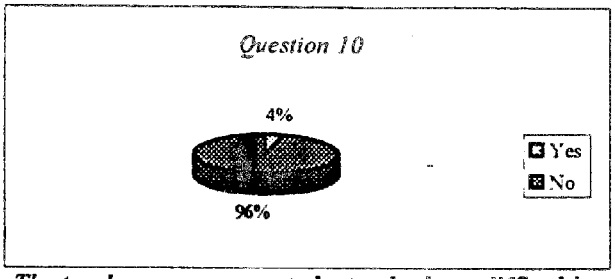
The teacher does not favour some students

Frequency	Percentage	Tally
Yes	78.6	22
No	21.4	6



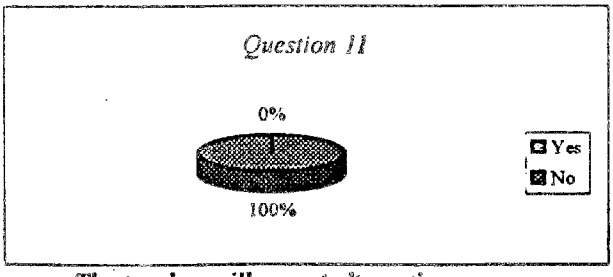
The teacher questions in a positive way

Frequency	Percentage	Tally
Yes	3.6	1
No	96.4	27



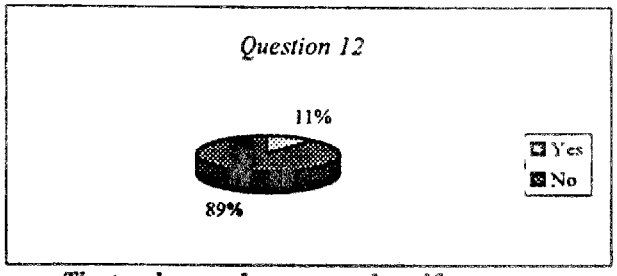
The teacher encourages students who have difficulties

Frequency	Percentage	Tally
Yes	0	0
No	100	28



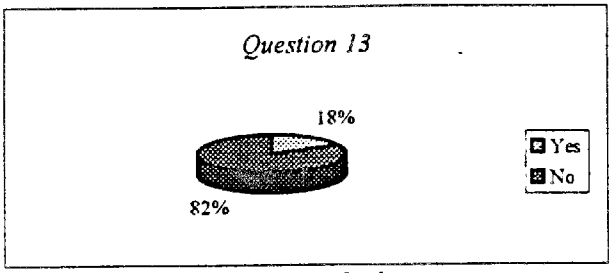
The teacher will accept alternative answers

Frequency	Percentage	Tally
Yes	10.7	3
No	89.3	25



The teacher re-phrases questions if necessary

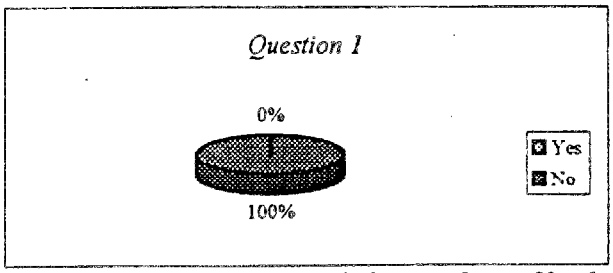
Frequency	Percentage	Tally
Yes	17.9	5
No	82.1	23



The teacher provides support for incorrect answers

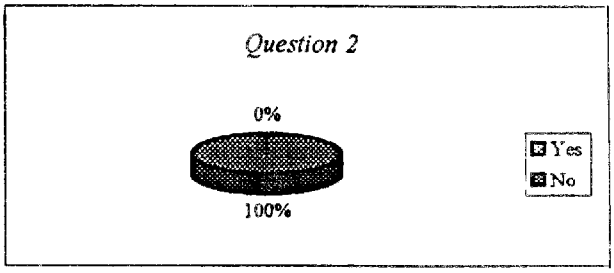
FEEDBACK

Frequency	Percentage	Tally
Yes	0	0
No	100	28



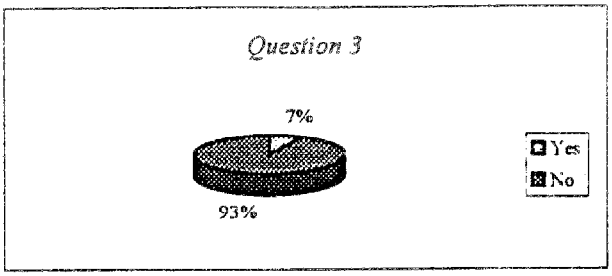
The teacher uses feedback to inform students of level

Frequency	Percentage	Tally
Yes	0	0
No	100	28



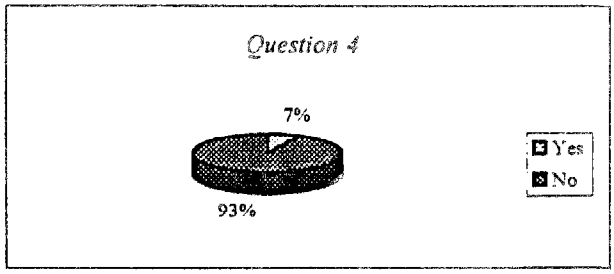
Feedback is provided on an individual basis

Frequency	Percentage	Tally
Yes	7.1	2
No	92.9	26



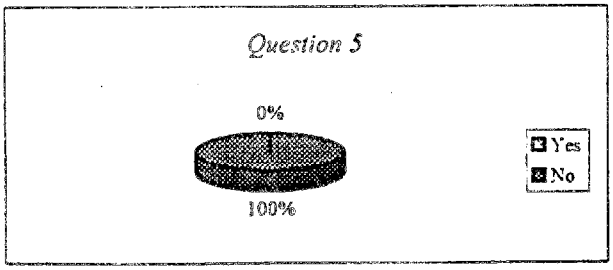
Feedback is varied to suit individual needs

Frequency	Percentage	Tally
Yes	7.1	2
No	92.9	26



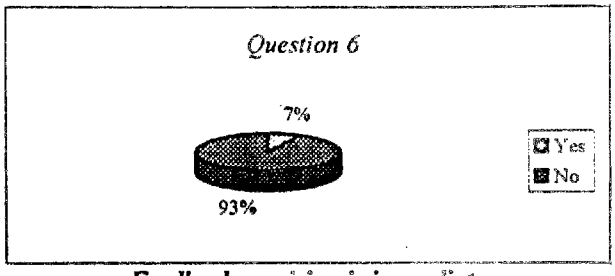
Feedback is at an appropriate level

Frequency	Percentage	Tally
Yes	0	0
No	100	28



Feedback includes suggestions for improvement

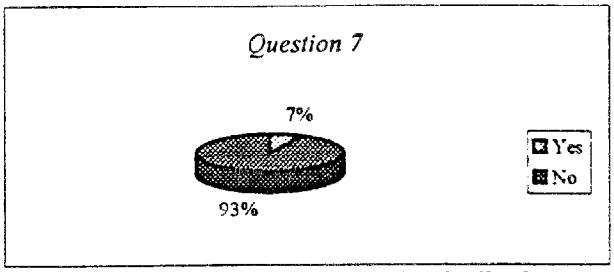
Frequency	Percentage	Tally
Yes	7.1	2
No	92.9	26



Feedback provision is immediate

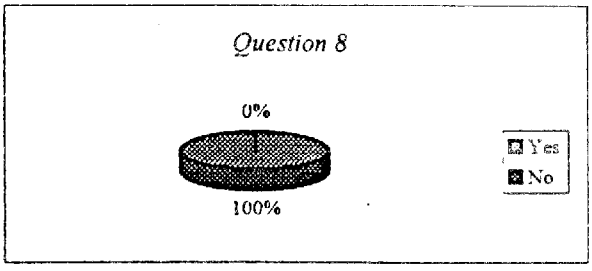
FEEDBACK

Frequency	Percentage	Tally
Yes	7.1	2
No	92.9	26



The teacher provides supportive feedback

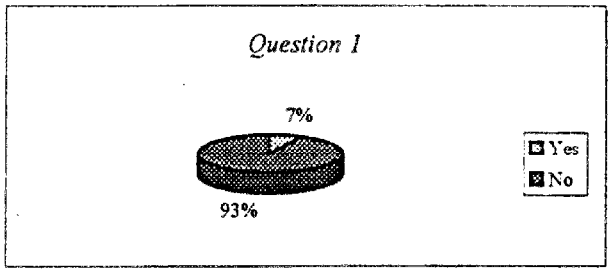
Frequency	Percentage	Tally
Yes	0	0
No	100	28



The teacher keeps records of feedback provided

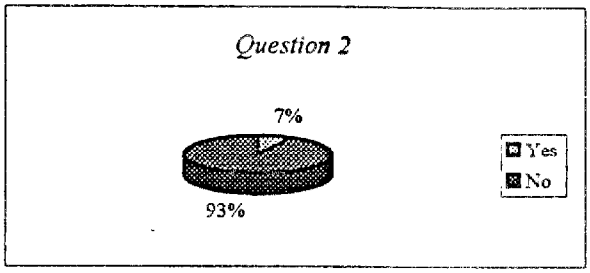
MOTIVATION

Frequency	Percentage	Tally
Yes	7.1	2
No	92.9	27



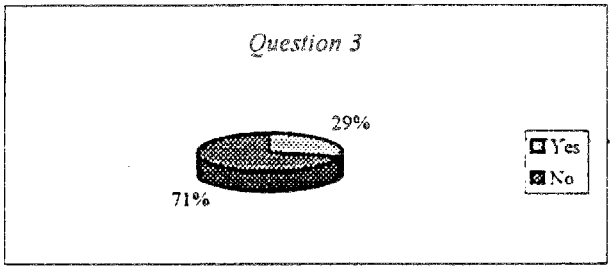
Teacher sets relaistic goals & gives reinforcement

Frequency	Percentage	Tally
Yes	7.1	2
No	92.9	26



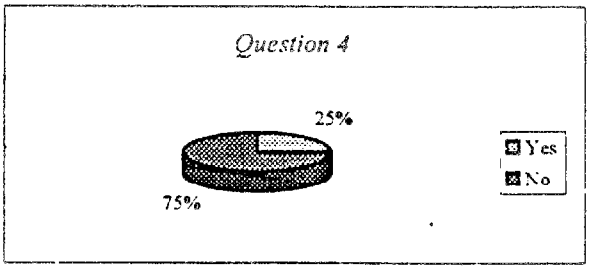
Activities challenge students to acgieve

Frequency	Percentage	Tally
Yes	28.6	8
No	71.4	20



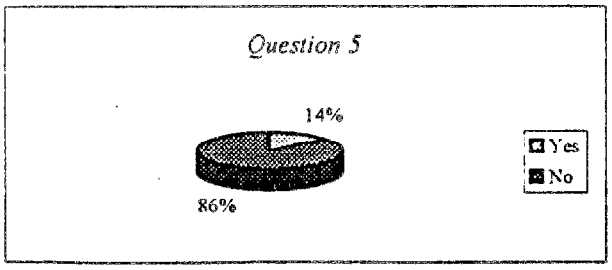
Teacher ensures feelings of success

Frequency	Percentage	Tally
Yes	25	7
No	75	21



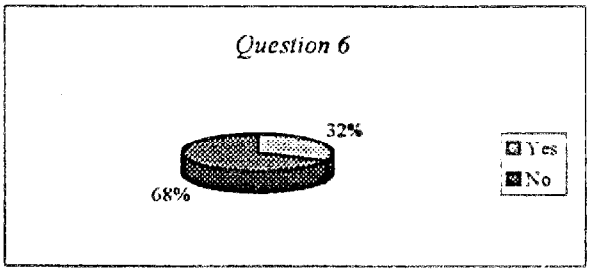
Teacher uses popular activities

Frequency	Percentage	Tally
Yes	14.3	4
No	85.7	24



Teacher uses verbal forms of encouragement

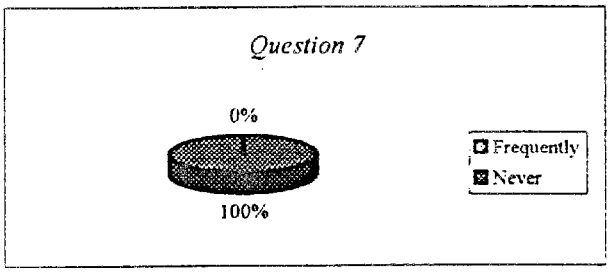
Frequency	Percentage	Tally
Yes	32	9
No	68	19



Teacher comments positively & avoids criticism

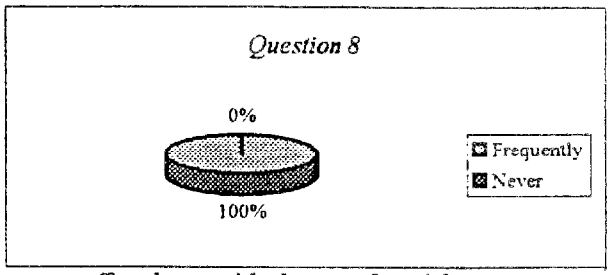
MOTIVATION

Frequency	Percentage	Tally
Frequently	0	0
Never	100	28



Teacher displays evidence of achievement

Frequency	Percentage	Tally
Frequently	100	28
Never	0	0



Teacher avoids the use of punishment

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Kingdom of Cambodia
Ministry of Education, Youth and Sport
Department of Planning

EDUCATION IN CAMBODIA

Training Notes
on Education Planning and Management
(Part 1)

Phnom Penh, December 1998
(supported by UNDP/UNESCO)

Acknowledgements

Among the other achievements it has made in recent years, the RGOC/UNDP/UNESCO Project CMB/91/009: "Capacity Building in Education and Human Resources Sector Management" developed seven training modules on Education Planning and Management, and conducted successive training courses for education administrators at central, provincial and district levels.

To make these modules more applicable and accessible, the Project's national team, in cooperation with UNESCO officials and consultants, extracted salient points from the existing modules and re-edited this content into new manuals for immediate use in the training of educational administrators. The contents were summarized into three parts: (1) Education in Cambodia, (2) Education Planning and (3) Education Management.

The Ministry of Education, Youth and Sport would like reiterate its profound gratitude to UNDP and UNESCO for their financial and technical assistance towards the development of the Cambodian education system, and especially in the successful implementation of this human resources development Project. The Ministry appreciates the publication of such valuable manuals which are useful for Cambodian educational administrators at various levels. Special thanks must go to the National Project Director, Senior Project Coordinator, Training Specialist and all national and international staff for having perseveringly devoted their efforts and time to develop these valuable manuals.

We hope that this booklet entitled "Education in Cambodia" will be considered a useful reference as it provides to all donor agencies working within the education sector general information on the development of education in Cambodia.

Thank you

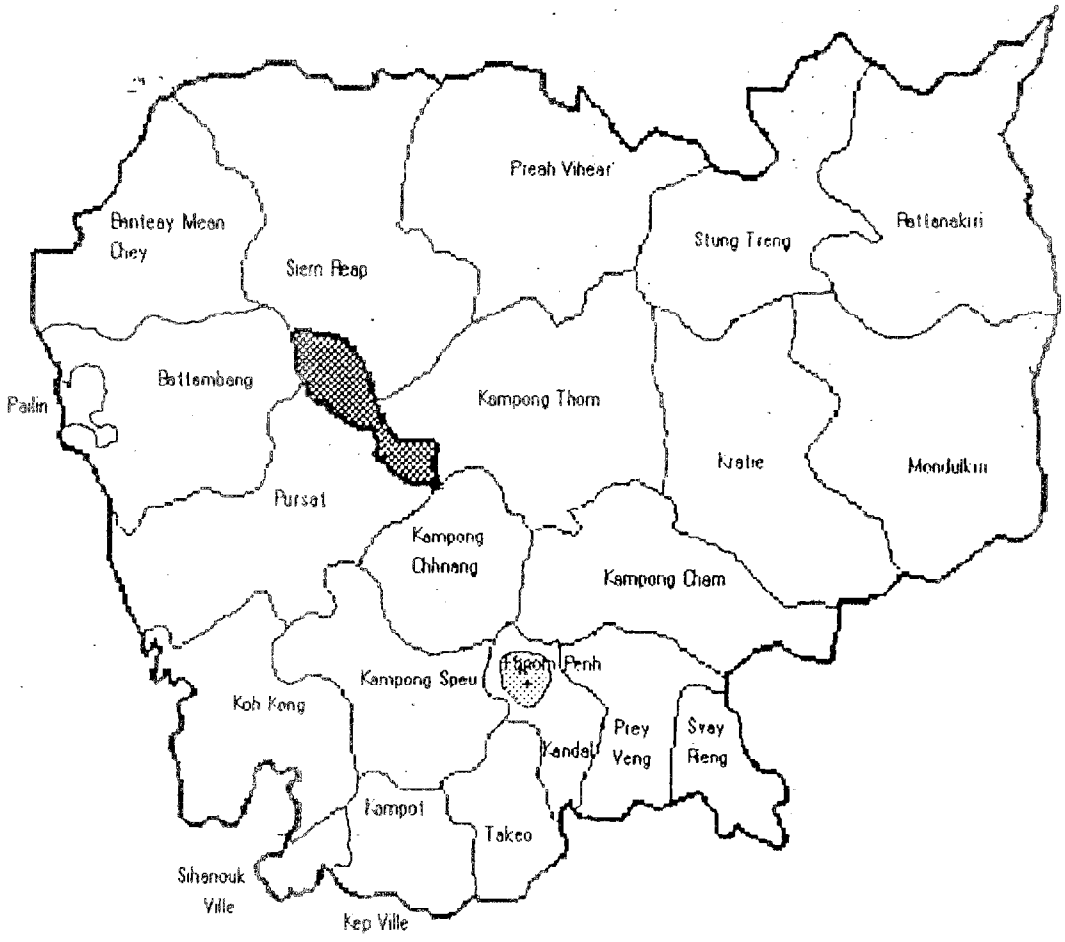
Phnom Penh, December 24, 1998
Minister,
Ministry of Education, Youth and Sport

TOL LAH

TABLE OF CONTENTS

Cambodia

Land area	*181,035 square kms*
Number of provinces and municipalities	*23*
Climate	*Warm and humid*
Seasons	*6 months dry season; November to April* *6 months rainy season; May to November*
Population	*11.4 million*



Natural environment

Cambodia, a country situated in Southeast Asia, shares borders with Vietnam; Laos and Thailand. Cambodia has 440 kilometers of coastal border facing the Gulf of Siam. With a total area of 181,035 square kilometers, the country is about one-third the size of Thailand or 293 times bigger than Singapore.

Cambodia is situated between the Tropic of Cancer and the Equator. The country has a warm and humid climate with an annual average temperature of 28.5°C. There are two different seasons: six months of dry season, from November to April, and six months of rainy season, from May to October. The country enjoys many favorable natural conditions:

- The central low-lying area, which stretches from the northwest to the southeast, is an important agricultural region;
- The chain of mountains standing to the west, to the north and in the eastern plateau shield the country from the effects of various storms and squalls;
- The great lake of Tonle Sap is a natural basin. It is the most important area for river fish;
- The warmth and humidity of the climate bring about the lushness of the vegetation and the forest, which is the habitat of many species of wild animals; and
- Many rich mineral deposits are the future potential resources of the country.

More than 80% of the total population of 11 million live on and derive their incomes from farming based on traditional practices.

Brief history

Period	Events
1st century	Nokor Phnom epoch (or Funan); influenced by Indian civilization
6th-7th centuries	Chen La epoch; split into two regions
9th-13th centuries	Moha Nokor epoch; building of numerous temples
1432	Gave up Angkor; moved to Phnom Penh
1516-1564	Moved to Longvek
From mid-19th century	Cambodia a French protectorate: - 1863 Oudong Treaty - Khmer King deprived of some rights of ruling; - 1884 Phnom Penh Treaty - Khmer King was threatened and forced to accept the French protectorate; Cambodia under the full control of the French
Early 20th century	French General-Governor sent to Indochina; office based in Hanoi and designated to rule five countries: - Tongkin, Annam, Cochinchine, Cambodia and Laos - Resident Superior assigned to supervise each country and assisted by provincial resident administrators
1940-1945	World War II; Japanese forces came to rule Indochina; replaced French rulers
1946	War ended. French administrators re-occupied Indochina and implemented new ruling system
1949	French-Khmer Treaty signed. Cambodia was independent in the framework of Indochine Française
1953	Under the Royal Crusade, Cambodia gained full independence
1954	French colonialists defeated in Indochina war at Dien Bien Phu. Geneva Treaty; French colonialists forced to leave Indochina

Government and administrative structure

- *The Kingdom of Cambodia is an indivisible state*
- *The Kingdom of Cambodia follows a policy of permanent neutrality and non-alignment*
- *Legislative Power: The Assembly*
- *Executive Power: The Royal Government*
- *The Judicial is an independent power*

Administratively, the country comprises 20 provinces and four municipalities. The four municipalities are Phnom Penh, Sihanoukville, Kep, and Pailin. The capital city of Phnom Penh consists of seven precincts and is populated by nearly 1 million people.

Provinces (Khet) are subdivided into districts (Srok), and districts into communes (Khum). The municipalities are subdivided into precincts (Khan) and precincts into quarters (Sangkat). Each commune (or Sangkat) is subdivided into villages (or Monduls) and then into groups of families and households. The central administration is the main body handling administrative affairs at municipal/provincial and district or "khan" levels.

The Constituent Assembly was re-established following the UN-sponsored general elections held in 1993 and this elected Constitutional Assembly later became the National Assembly. The Constitutional Assembly developed new laws for the country with the King as Head of State. Citizens exercise their rights through the National Assembly, the Royal Government and the Courts.

The National Assembly consisted of 122 members, including members of Parliament representing Kep and Pailin. Elected for five years, the National Assembly may not be dissolved before the end of its term unless the Royal Government is deposed twice within a period of 12 months.

The Cabinet is led by one Prime Minister, assisted by Deputy Prime Ministers, along with State Ministers, Ministers and Secretaries of State as its members. All members of the Royal Government take collective responsibility for the general policy of the Royal Government before the Assembly.

The Judiciary is an independent power. The Judiciary guarantees and upholds impartiality and protects the rights and freedoms of the citizens. The authority of the Judiciary is granted to the Supreme Court and to the lower courts of all sectors and levels. The King is the guarantor of the independence of the Judiciary. The Supreme Council of the magistracy assists the King in this matter. Judges may not be dismissed but the Supreme Council of the Magistracy is responsible for disciplinary action against any delinquent judges.

Population and economy

Cambodia had a total population of 11.4 million[1], of which 51.78% are women. The majority of the population lives in rural areas and on agricultural production. Only 15.7% of the total population reside in urban areas or towns. The country has an estimated annual population growth rate of 2.4%. The population is likely to double within less than 30 years.

The proportion of children aged below 18 added up to 51.7% of the total population whereas the economically productive age group (18-60) formed only 43% of the population in the country as a whole[2]. The age distribution of the population shows that 54.3% were under 20 years of age, thus creating a heavy burden on society.

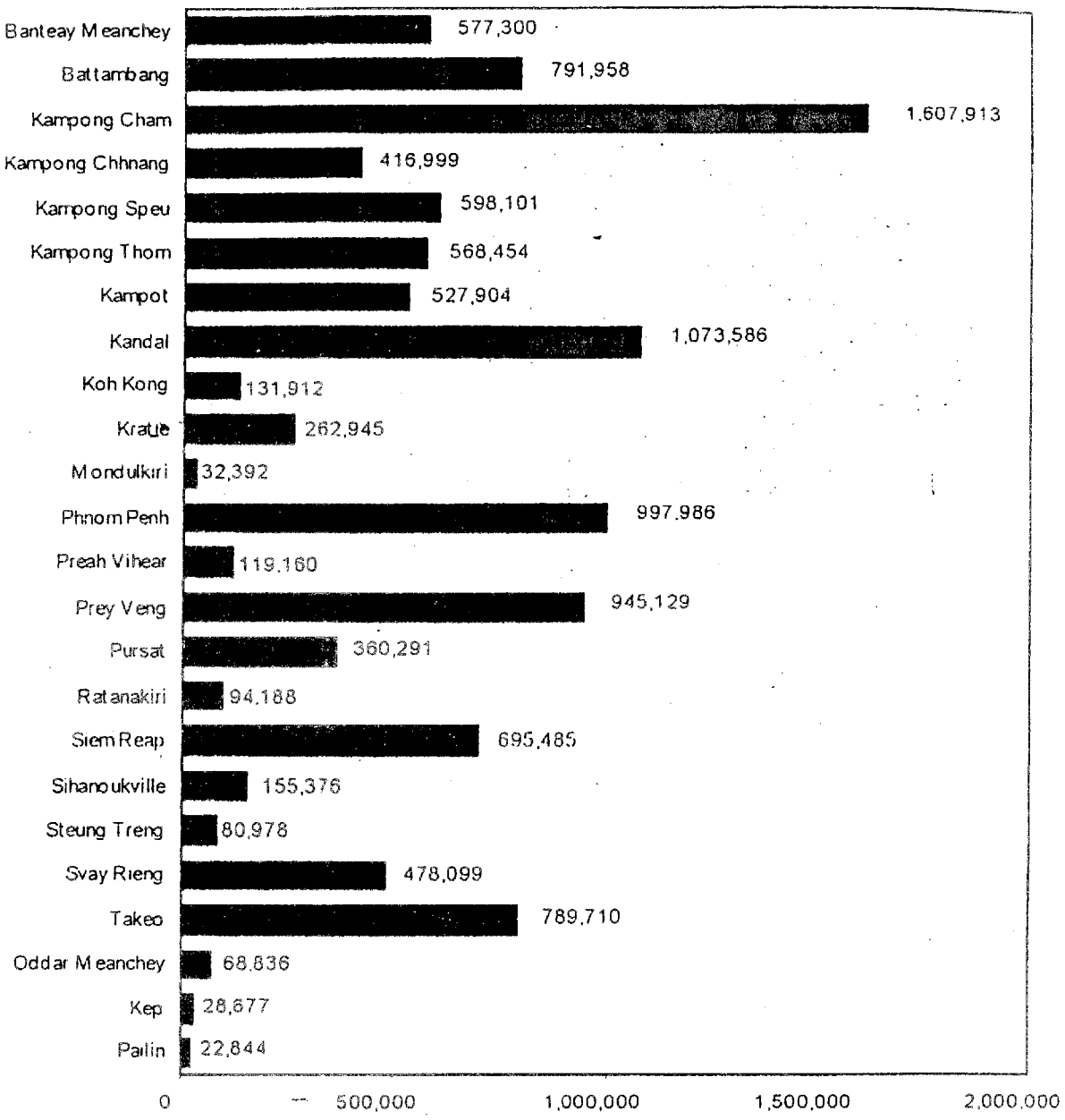
Population by age group

Age Group	Total		
	Both sexes	Male	Female
All ages	100	100	100
0-4	13.4	14.2	12.6
5-9	15.4	16.6	14.4
10-14	15.1	16.3	14.1
15-19	10.4	10.7	10.0

[1] Population statistics quoted from General Population Census of Cambodia 1998: Provisional Population Totals, National Institute of Statistics, Ministry of Planning, July 1998.

[2] Socio-Economic Survey conducted by National Institute of Statistics, Ministry of Planning, 1997.

Results of the national census conducted in March 1998 illustrating the number of population by province



Employment by Sector	
Primary sector	
agriculture: farming, forestry, hunting and fishing:	81.6%
Secondary sector	
industry: mining, factories, manufacturing:	2.8%
Tertiary sector	
services: hotel, trade, education, health	15.6%

A major part of the Cambodian economic output depends on the primary sector. It is an economy based on agriculture using traditional practices and rudimentary tools.

The secondary sector absorbs less than 3% of the labor force as the country still does not have an industrial infrastructure. Most of equipment and materials for local demand are imported from abroad.

It is estimated that the GDP is rising between 7% and 7.5% per annum. However, last year's GDP was considerably decreased. According to economists, the GDP per capita is US $ 270 per annum. Tax revenues collected by the government for use as the national budget are still very low and equal to only 5.9% of the country's GDP. In neighboring countries such as Thailand and Vietnam, national revenues amount to 16.2% and 19.7% of their GDP respectively.

Other Important Statistics	
Infant mortality rate:	90 per thousand live births
Population growth rate:	2.4%
Life expectancy:	53 years old

EDUCATION SYSTEM

National schemes

The objective of the Cambodian education system is to fully develop children in all aspects of qualities, mentally and physically. In order to achieve this objective, schools need to accomplish many tasks. They are obliged to develop in the students the spirit of self-confidence, self-reliance, responsibility, solidarity, national unity and patriotism. Schools must also instill in their students positive attitudes of paying respect to the law and human rights.

Other responsibilities of schools are to nurture children to become good citizens, to live together peacefully, to be able to strengthen their responsibilities towards their families' happiness and to make a contribution to promoting social welfare.

General education strives to meet the above-mentioned objective by delivering knowledge and skills, promoting the personal qualities of the students, and accumulating work experiences and various activities which are beneficial to students, their schoolmates and to society as a whole.

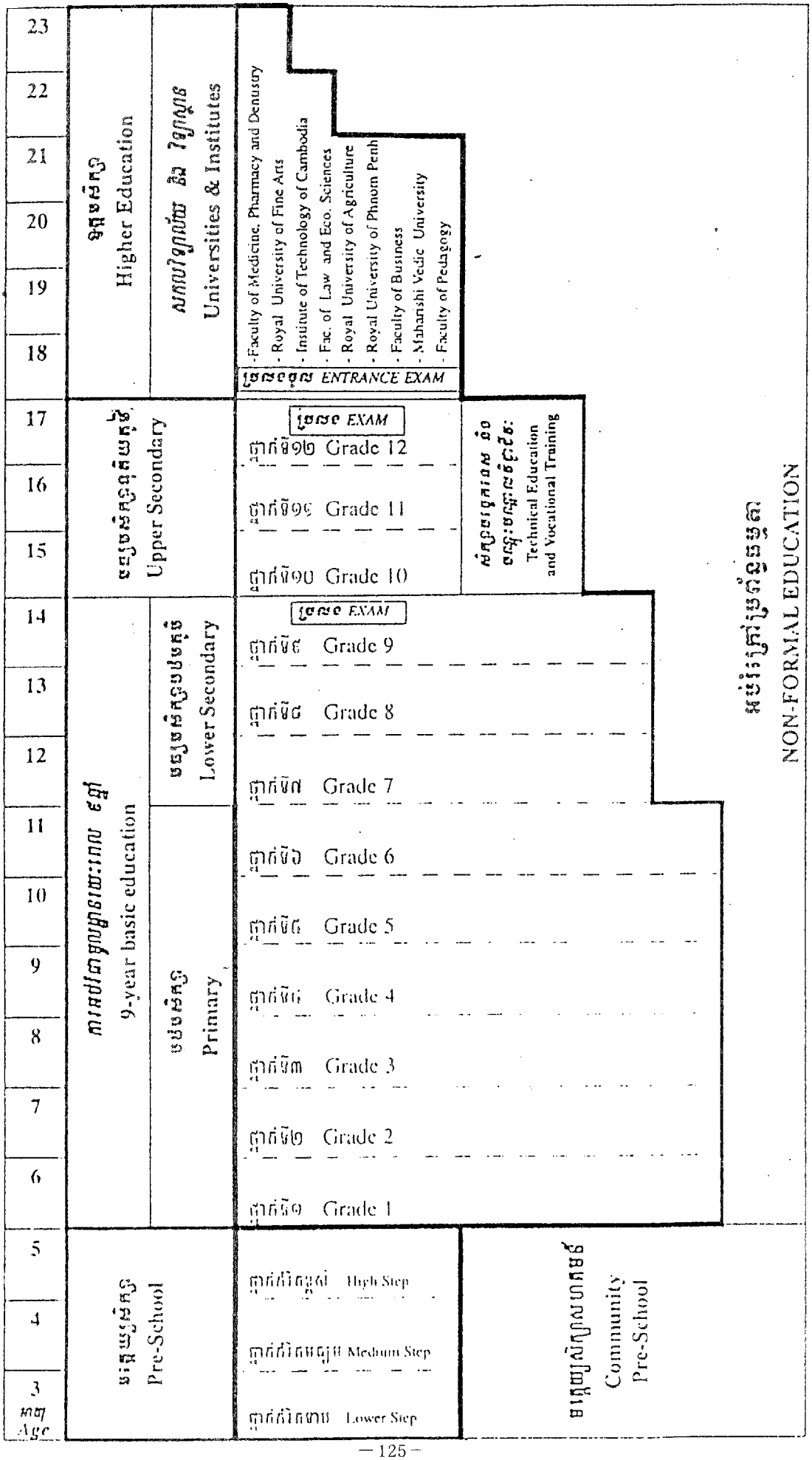
In consideration of their increasing age, the objective of primary education is to focus on the development of children's personalities by helping to upgrade their mental and psychological abilities. By doing so, children will be come capable of translating their basic knowledge (reading, writing, speaking, listening and arithmetic) to solving their immediate problems, and to cherishing a love of learning and doing labor. Through these efforts, they will become useful members of the community and be capable of acquiring simple skills or continuing their study to higher grades.

The prime objective of secondary education is to enhance the knowledge that the students have already acquired at the primary education level. This aims to ensure the development of their freedom of thought and expression, to build their attitude of tolerance, and, at the same time, to develop their talents, individual qualities, creativity, social ethics and skills in order to create a harmonious society.

In short, after receiving basic education students will have grown to full adulthood and be capable of living in society and continuing their study to higher grades as required.

ប្រព័ន្ធអប់រំនៅកម្ពុជា

EDUCATION SYSTEM IN CAMBODIA



Structure of the education system

The Ministry of Education, Youth and Sport (MoEYS) is one of the biggest civil ministries. Activities and services delivered by the Ministry cover the entire country, ranging from central to school levels. The total number of teaching and administrative staff at all levels is about 80,000, or almost half the total number of civil servants in the whole country.

A group of senior officials taking responsibility for political matters and education competencies run the central management or the Office of the Minister. The group includes the Minister, the Secretary of State and Under-Secretaries of State and is assisted by officials with different specializations. The structure is, according to Sub-decree 21 dated 23 March 1998, comprised of four general departments and one general inspectorate with 21 technical departments.

Twenty-three (23) provincial and municipal education services[3] are each headed by one director, and deputy directors and their technical offices follow the central department structure. As yet the number of technical offices at provincial and municipal level varies according to the proportion of staff in each province or municipality. Practically, provincial education services are classified into three categories:

- Large provinces/municipalities with teaching and non-teaching staff of 5,000 and above are authorized to set up between 10 and 12 offices;
- Medium-sized provinces/municipalities with teaching and non-teaching staff of 1,000-5,000 are authorized to set up between 7-9 technical offices; and
- Small provinces/municipalities with less than 1,000 teaching and non-teaching staff can establish between 4 and 6 technical offices.

---

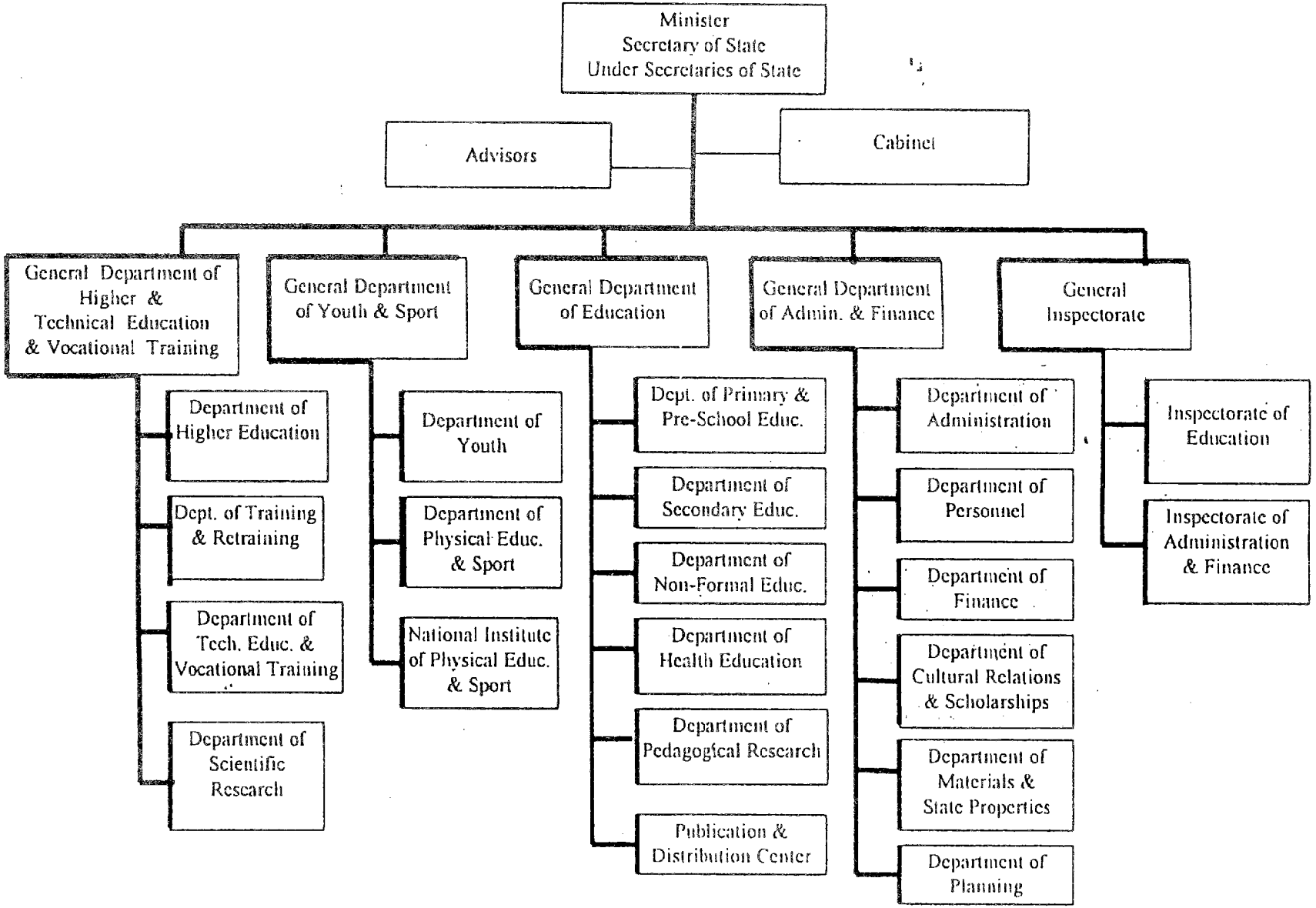
3 In Education, Siem Reap and Ouddar Meanchey constitute one province.

The number of sections under each office at district or "khan" level and the number of staff-members must also be in proportion with the total number of teaching and non-teaching staff within each district or "khan".

In practice, the district or "khan" education office supervises all primary schools in the district or "khan", whereas the provincial/municipal education service mainly provides technical guidance to lower-secondary or upper-secondary schools in the province. With a view to proper implementation of the national curriculum, education administrators at provincial/municipal and district or "khan" levels continuously assign teams to inspect schools, and appraise and rate their performance.

ORGANIZATION CHART OF THE MINISTRY OF EDUCATION, YOUTH AND SPORT

1998



Policies on education development

MoEYS defines four major policies as follows:

- *Making nine years of basic general education available throughout the country, and developing new opportunities for functional literacy*
- *Modernizing and improving the quality of the educational system through effective reforms*
- *Linking education and training development with the socio-economic requirements and the labor market*
- *Rehabilitating and developing the youth and sport sub-sectors in both formal and non-formal education systems*

To adopt the above-mentioned policy, the Ministry is paying due attention to the following priority policy objectives:

- To create equal opportunities for school-age children of all regions and all ethnic groups to attend schools so that they have the chance to complete primary education and receive the full nine years of basic education. In this sense, MoEYS will encourage all schools to have a complete range of grades (Grade 1 to Grade 6) for primary education level and encourage schools in the areas where the school-age population is sparse to apply multi-grade teaching methods. At present, about 50% of schools do not have a complete range of grades in the primary cycle.

- To increase the internal efficiency of the education system. This is done by implementing measures such as retraining teachers; increasing the number of learning hours; providing adequate textbooks and teacher's guides; applying modern teaching methodology; forming inspector teams; reforming methods to evaluate students' achievements; and motivating members of the local community to be more active in educational development.

- To restore the physical infrastructure and build new schools. MoEYS will also continue to construct at least one lower-secondary school attached to the core school of each school cluster.

- To develop other important sub-sectors. In parallel with these efforts, MoEYS will also develop other important sub-sectors, including upper-secondary education, higher education, technical education and vocational training in order that more young people may have a chance to further their study in higher grades or to acquire technical skills according to their own interests and talents.

- To enhance all levels of education administration and management in order to increase efficiency and effectiveness in education sector planning, administration, management, and inspection through the implementation of development of human resources programs. Central and provincial levels receive some modern equipment for their use. A number of basic documents are developed and then put into use step-by-step by central and provincial levels. The Ministry is also beginning the process of staff rationalization and the inception of administrative decentralization.

- To organize functional literacy classes and to launch a campaign aimed at coordinating the activities of the Literacy Commissions at provincial and district levels. To rehabilitate and develop Youth and Sport in the formal system and non-formal education.

- *Literacy rate*
  Both sexes: 68.7%
  Male: 81.8%
  Female: 58.1%

- *Tertiary institutes: 85 students per 100,000 people*

- *Primary schools:*

Schools with Grade I only:	*8%*
Schools with Grades I and II:	*14%*
Schools with Grades I through III:	*10%*
Schools with Grades I through IV:	*8%*
Schools with grades I through V:	*10%*
Schools with a complete range of Grades (Grades I through VI)	*50%*

Education administration and planning

The general administrative structure of the education system can be seen to adopt elements of a centrally-planned public administration structure. While many of the educational administrators in Cambodia have a great deal of experiences in leading and managing their work, they have never completed any standardized training.

At the central level, tasks are divided among general departments and specialized departments. In various domains of management (finance, materials/equipment, personnel, and curriculum), decisions are made on the basis of consent and appointment. Because of the lack of communication means at the horizontal line of authority, education administrators at the grass-root level are obliged to make decisions on many things without referring to higher levels. Consequently, the implementation of the Ministry's guidelines or instructions by each administrative unit varies according to geographical or specific conditions of each locality.

The Ministry of Education, Youth and Sport has four levels, or horizontal lines of authority, consisting of the Ministry at Central level, the provincial/municipal level, the district or "khan" level, and the schools. It should be noted that the school cluster is not a new hierarchical line of authority. A school cluster is a group of schools located near each other that can provide mutual technical and materials assistance to make the teaching-learning process more effective.

Education planning is a major component useful to education administrators at all levels to evaluate the results of their works and to make their decisions more effective. The process of planning requires accurate information on the current situation of each unit or system and involves many steps, including data collection, analysis, diagnosis and identification of priority activities to be subsequently carried out. At the present, the Department of Planning runs an Education Management Information System (EMIS) Center. Its mission is to collect data from all schools across the country for processing, analyzing and then compiling into statistics and indicators yearbooks for distribution to all levels of educational administrators.

CURRENT EDUCATIONAL DEVELOPMENT

Access and participation

Primary education is the first level of education in the country's education system. Schools were reopened in early 1979 after the collapse of the Khmer Rouge regime. Through the strong joint efforts of the community, local authorities and the MoEYS, an education system was re-established.

In the 1997-98 school year, the country has a total of 5,026 primary schools, 350 lower-secondary schools and 125 upper-secondary schools. Of the total number of primary schools, about 50% do not have the complete range of grades (Grades I through VI) for the primary cycle. Children who live far away from a school with the complete range of grades find very hard to continue learning and some of them inevitably become dropouts.

Due to budget constraints there is little hope of ensuring equal opportunity for every child to receive a 9-year basic education in the very near future. Problems are still found in education network, such as poor services of education delivery and a large gap in education quality between urban schools and rural or remote schools.

The school-age population has increased in the 1997-98 school year and the net enrolment rate in primary education for the whole country is 77.8%[4]. In other words, about 22% of the population aged 6-11 remain outside the school. The increasing number of dropouts in lower grades is the cause of the higher rate of illiteracy. The situation is worse in remote provinces as the net enrolment rate is even lower than 50%.

Because of poverty, shortage of labor in the family and the low level of education, certain segments of the population perceive that education is not imperative for themselves nor their families.

[4] EMIS Center, MoEYS, 1998.

Kingdom of Cambodia
Schools, Classes, Students and Staff

Particulars	Number of Schools	Disadv. Schools	Number of Classes	Classes in Pagoda	Enrollment		Repeaters		Teaching Staff		Non-Teaching Staff	
					Total	Girl	Total	Girl	Total	Female	Total	Female
Whole Kingdom	6,294	686	54,415	2,089	2,358,081	1,033,836	551,257	236,034	61,904	22,137	9,751	2,583
By Area of Location:												
- Urban Area	1,090	46	15,590	406	702,620	307,133	128,086	53,254	21,014	10,117	4,445	1,730
- Rural Area	4,537	534	35,725	1,508	1,523,020	668,048	383,861	164,981	38,365	11,703	5,164	849
- Remote Area	667	106	3,100	175	132,441	58,655	39,310	17,799	2,525	317	142	4
By Type of School & Edn. Level:												
- Pre-School	793	57	1,393	102	43,358	21,569	0	0	1,802	1,783	169	155
- Primary School	5,026	614	45,443	1,794	2,011,772	906,827	529,358	230,664	43,282	15,816	5,178	1,100
- College	350	15	3,595	159	132,630	44,774	11,479	2,725	8,385	2,193	2,153	550
- Lycee	125	0	3,984	34	170,321	60,666	10,420	2,645	8,435	2,345	2,251	778
- Lower Secondary Level	467	15	5,926	159	229,102	79,832	20,061	4,951	13,800	3,821	3,599	1,053
- Upper Secondary Level	125	0	1,653	34	73,849	25,608	1,838	419	3,020	717	805	275
Disadvantaged school (All Levels)	686	686	3,864	203	165,069	73,839	45,686	19,979	3,746	1,064	294	37

Source: Education Statistics and Indicators, EMIS Center, Department of Planning, MoEYS, 1998

Quality and efficiency of education

Curriculum reform and expansion of the system

Political and socio-economic changes have led to successive reforms of the country's education system. Before 1975, the country adopted a French-based education system that required 13 years of education (6+4+2+1) with 4 or 5 major examinations. After 1979, the Ministry of Education, in consideration of the country's urgent needs, executed a 10-year education system (4+3+3) and then expanded it to an 11-year education system from 1986 to 1996.

The Ministry has continued to improve the education system. The curriculum was reformed, new textbooks were developed and new teaching skills were provided to teachers to prepare ground for the introduction of a new 12-year education system (6+3+3) in the 1996-97 school year. The new system has increased the number of learning hours for every grade in the cycle of primary education.

In the framework of this new system, one school year lasts 38 learning weeks, with 6 periods of learning per day, and each period of learning lasting 45 minutes. Under the old curriculum, one school year lasted only 32-33 weeks, and pupils attended only 4 hours of learning per day. In reality, the amount of teaching and learning is lower than stipulated by the Ministry, thus causing high rates of wastage (high repetition and dropout rates).

Internal efficiency

As the scale of our new system of education is quite similar to that of neighbouring countries in the region, the MoEYS hopes to be able to reduce the repetition rate and increase learning hours. As yet, the repetition rate in Grade 1 is very high at 41.2%, but the promotion rate is only 46.9%. In general, Grade 1 students have the highest repetition rate.

In the 1997-98 school year, dropout rates were very high, especially in Grade 1, Grade 2 and Grade 3 at 11.9%, 15.25 and 14.9% respectively. There is a fear that these dropouts might become illiterates.

The pupil-teacher ratio is about 46.5 to 1 nation-wide but 33.4 to 1 in urban primary schools. The shortage of classrooms is very critical for schools in the urban areas at 70.5 pupils per classroom, thus forcing some schools to conduct 3 shifts per day.

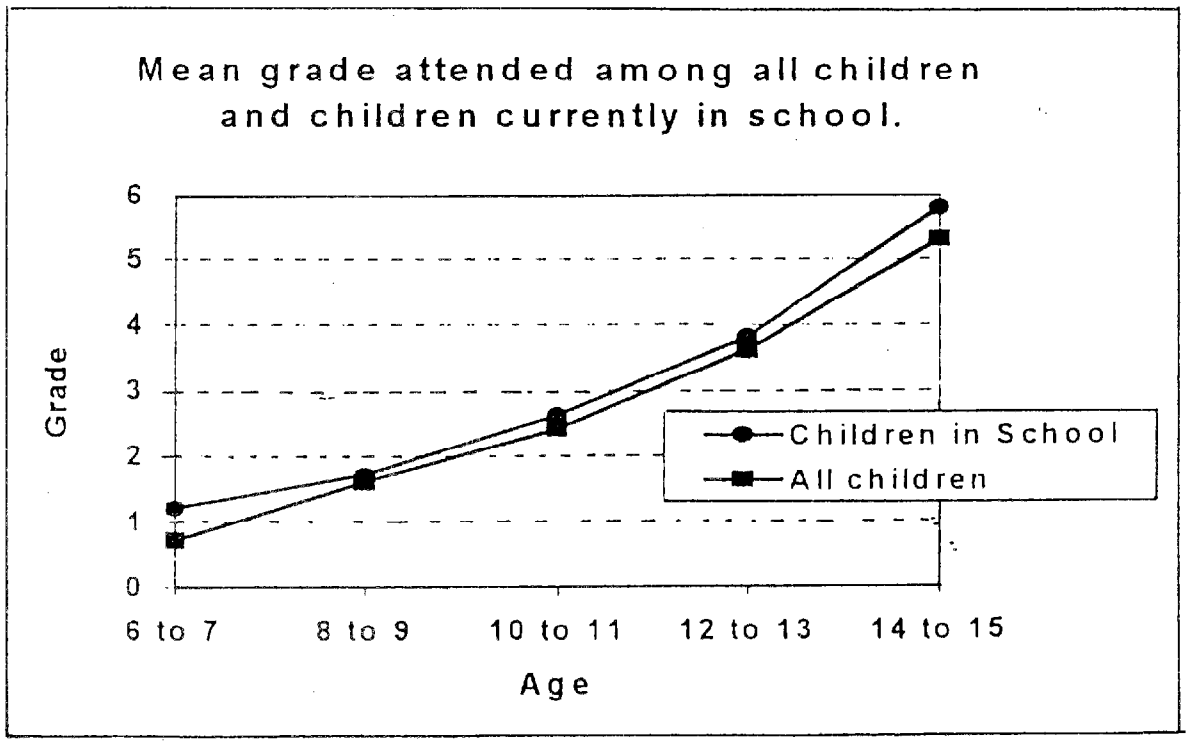
The enrollment rate is relatively low and the learning achievements or internal efficiency of the education system is very low. The low enrollment rate and internal efficiency result in great loss of resources in terms of finance, materials and equipment, and time to the country as a whole. The Ministry of Education, Youth and Sport is striving hard to solve these problems.

Selected Education Indicators, 1997/98[5]	
Gross Admission Rate:	*97.9%*
Net Admission Rate:	*59.8%*
Gross Enrollment Rate:	*88.3%*
Net Enrollment Rate:	*77.8%*

Internal Efficiency of the primary education

Particulars	Promotion	Repetition	Dropout
Grade I	46.9	41.2	11.9
Grade II	58.1	26.7	15.2
Grade III	65.9	19.2	14.9
Grade IV	70.0	12.6	17.9
Grade V	71.3	7.5	21.1
Grade VI	77.6	14.4	18.0

Source: Education Statistics and Indicators, 1998



5 Rate are a bit lower than the previous years' figures due the larger size of school-age population and the integration of a number of municipalities, districts or "khans".

Non-formal education

In parallel with the development of the formal education system, the MoEYS also focusses on the non-formal education system, which is an indispensable component of the education system, particularly in the attempt to increase literacy rates.

In Cambodia, the definition of a literate person is someone who has the ability to read and write *to a certain extent only*.. The literacy rate of those 15 years and over is 67%. Compared to other developing countries in the region, the literacy rate in Cambodia is relatively high. In the light of previous literacy campaigns, the literacy rate rose to 68.7%: 81.8% for males and 58% for females. However, the literacy rate in rural and remote areas is far lower than in the towns. To improve the situation, the Royal Government has reshaped the National Literacy Committee with the view of further intensifying nationwide literacy activities.

Higher education

Higher education is a sub-sector that has objectives and operations quite different from other education sub-sectors. The General Department of Higher & Technical Education and Vocational Training is in charge of coordinating higher education development while concerned ministries handle management aspects by their respective specializations. The Ministry of Education, Youth and Sport directly supervises six higher education institutions and the Ministries of Health, Agriculture and Culture & Fine Arts supervise three others.

The MoEYS is doing its best to use all available resources and seeking financial, technical and material assistance from different sources to improve education quality at all education levels. With these efforts, the MoEYS hopes that it can bring about a positive change to the national education system, especially higher promotion rate in lower grades.

Finance and community participation in education

As Buddhists, Cambodians have a long tradition of organizing merit-making festivals to build pagodas, schools and roads. After the collapse of the Pol Pot regime, the Cambodian people enthusiastically made large contributions, according to their own means and resources, to the construction of schools to benefit the local community. The "riel" (local currency) had not yet been put back into circulation following the Pol Pot era, so Cambodians committed themselves to continuing to strengthen the education system through contributions either in terms of materials or labor.

Education surveys have shown that Cambodia is one of the countries in the world in which a very high proportion of the resources for primary education come from the local community. This has perhaps resulted from the fact that the Cambodian people had suffered greatly through a murderous regime, thus boosting their desire to restore their country's education system.

To keep schools functioning well, the community has to, through "Parents' Associations" or "School Supporting Committees", raise money to cover not only the recurrent expenses, but also to sponsor all sport and art activities.

The national budget for education can cover staff salaries (teachers and education administrators) and a small part of recurrent expenditures incurred by central and provincial levels. For the current year 1998, the government has allocated 147 billion riels (about $US 40 million at current exchange rate) to the education sector, thus representing 10.3% of the national budget or about 1.5% of the GDP. In contrast, in 1997 the education budget was 8.1% of the national budget. Nevertheless, the value of the 1998 budget is far lower than the actual needs of the MoEYS.

International co-operation

Non-refundable aid and low-interest loans are the practices of international cooperation. International cooperation can be seen in the form of multilateral or bilateral aid and the aid channeled through non-governmental organizations. In most cases, donors themselves are the executors of these aid projects and entrust their consultants or certain organizations to manage and execute the project.

The agencies that provide multilateral aid to the education system include:

- The Asian Development Bank (ADB), which provides assistance with textbook development and technical training;
- The UN system, including UNDP, UNICEF and UNESCO. Parts of their respective country programs are implemented by ILO and UNDP/CARERE;
- The World Bank, which is studying the feasibility of granting loans to Cambodia; and
- EU/PASEC, which has just completed the first phase of its country program.

Bilateral donors include:

- AusAID (Australia);
- CIDA (Canada);
- "Sida" (Sweden);
- GTZ (Germany)
- ACCT (Agence de Cooperation Culturelle et Technique);
- AUPELF-UREF (Association des Universités Partiellement et Entièrement de Langue Française – Union des Réseaux d'Expression Française) – France
- JICA (Japan)
- ODA/UK (United Kingdom)

Aid is also channeled through NGOs such as:

- Redd Barna (Norway);
- CARE (USA);
- JSRC (Japan)
- CONCERN (Ireland);
- SIPAR (France);
- TOPS (Taiwan).

Recent reforms and future orientation

The main purposes of curriculum reform are:

- to improve students' competencies by building up their knowledge of the surrounding environment;
- to adapt the current situation of the education system to the prevailing trend; and
- to cut down wastage within the education system, i.e. to reduce repetition and drop-out rates.

Although there has been no systematic research on students' competencies conducted after the implementation of the new curriculum, the preliminary findings of recent surveys suggest that the new curriculum is more comprehensive. However, it requires teachers to invest more energy in their lesson preparation and teaching methodologies.

The content of the new curriculum will inspire students to better understand their surrounding environment, apply methods of problem-solving and enrich their spirit of innovation. Student-centered and other participatory methods are encouraged, through which students can exchange their views on the topics they learn, demonstrate their abilities in either small or big groups and put their perceptions into concrete actions. The teacher plays the role of facilitator, team leader, or resource person and is ready to improve and adjust to the situation and give students advice on practical solutions.

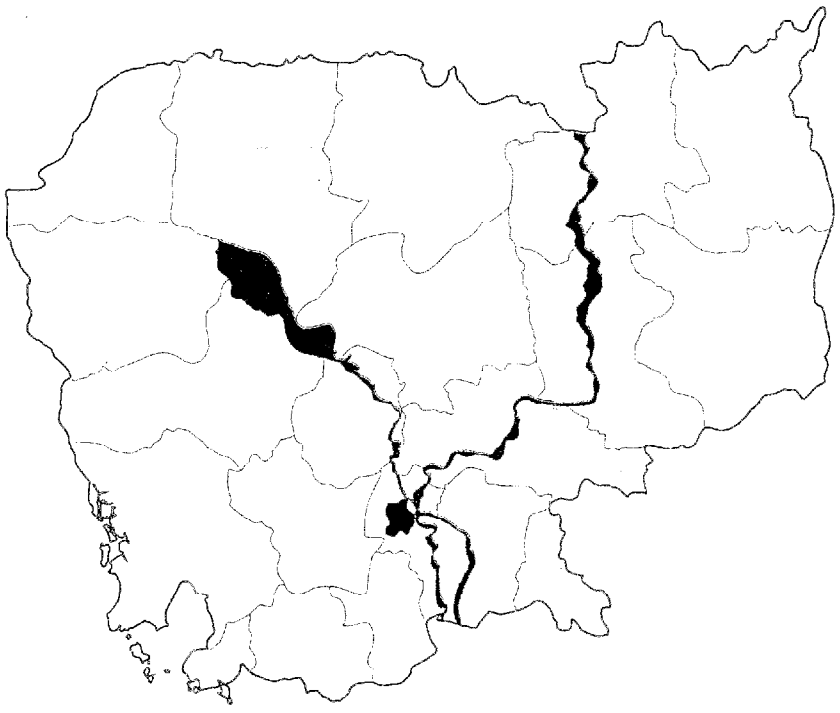
In line with the process of curriculum reform, the Ministry is also concerned with staff development in order to prepare the ground for the decentralization of the education administration. These efforts are aimed at delegating more authority to lower levels, especially education administrators at grass-roots level, so that they are capable of completing tasks assigned by the Ministry and taking responsibility for the Ministry. Each level of authority, down to school level, will slowly adapt to this new trend while the Ministry will continue to develop education policies and policy objectives for each sub-sector, issue instructions, disseminate resources and monitor the work done by local administrative units.

4. Education Indicators 1997/1998

ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ
ក្រសួងអប់រំ យុវជន និងកីឡា

Kingdom of Cambodia
Nation - Religion - King
Ministry of Education, Youth & Sport

អំពីការអប់រំ
១៩៩៧_៩៨



1997-98
Education Indicators

គាំទ្រដោយ
Supported by
UNESCO/UNDP and UNICEF/Sida

គោលនយោបាយរបស់ក្រសួងអប់រំ យុវជន និងកីឡា

១. សកលកម្មចំនេះដឹងទៅមូលដ្ឋានចំនួន ៩ឆ្នាំ និងបង្កឱកាសអភិវឌ្ឍអក្ខរកម្មវិជ្ជាជីវៈ
២. ទំនើបកម្ម និងកែលំអគុណភាពអប់រំ តាមរយៈការកែទំរង់ដែលមានប្រសិទ្ធភាព
៣. ការផ្សារភ្ជាប់ការអប់រំ ការបណ្តុះបណ្តាលទៅនឹងទីផ្សារពលកម្ម និងសង្គម
៤. ការស្តារ និងអភិវឌ្ឍន៍ការងារយុវជន និងកីឡា

POLICY OF THE MINISTRY OF EDUCATION, YOUTH & SPORT

1. Universalizing 9 years of basic education and developing opportunities for functional literacy
2. Modernizing and improving the quality of education through effective reform
3. Linking education/training with labor market and society
4. Rehabilitating and developing Youth and Sport sub-sector

ពត៌មានទូទៅ

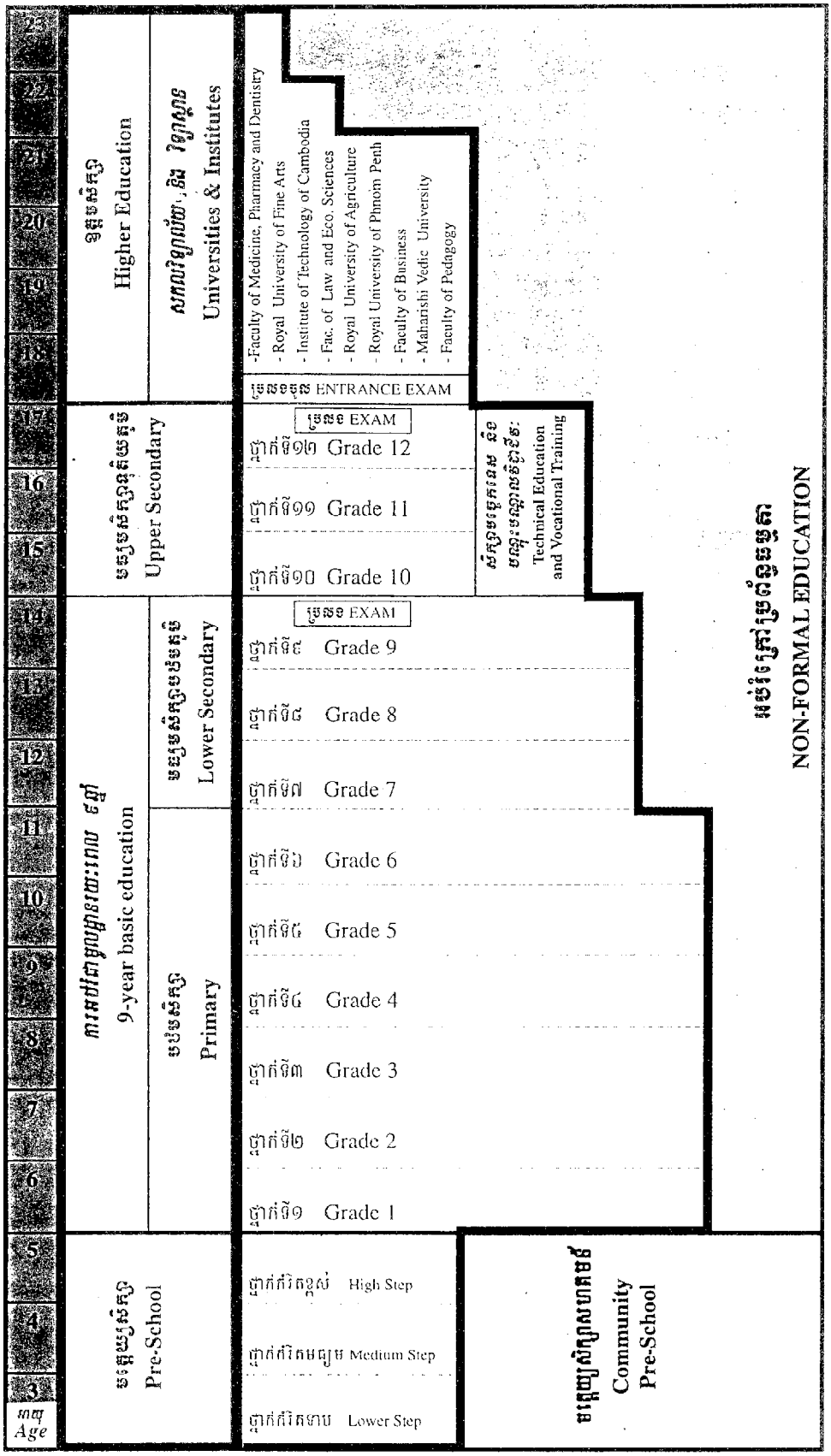
GENERAL INFORMATION

- ផ្ទៃដី Land area (គម^{2}, km^{2})			181,035
- ចំនួនខេត្ត/ក្រុង Number of provinces/municipalities			23
- ប្រជាជន Population			10.7 million
(ប្រុស/Male: 48%, ស្រី/Female: 52%)			
- ចំនួនក្រុមគ្រួសារ Number of households			2.0 million
- អត្រាកំណើនប្រជាជនប្រចាំឆ្នាំ Population growth rate			2.4%
- ប្រជាជនអាយុក្រោម ១៥ ឆ្នាំ Population under 15 years			43%
- អត្រាមរណៈទារក (ក្រោម១ឆ្នាំ) Infant mortality rate			90‰
- អាយុសង្ឃឹមរស់ជាមធ្យម Life expectancy at birth (ឆ្នាំ / years)			53
(ប្រុស/Male: 50, ស្រី/Female: 59)			
- ភាគរយនៃប្រជាជនមានការងារធ្វើ Percentage of employed persons:			
• ផ្នែកទី១ : កសិកម្ម Primary sector: Agriculture...			81.6%
• ផ្នែកទី២ : ឧស្សាហកម្ម Secondary sector: Industry...			2.8%
• ផ្នែកទី៣ : សេវាកម្ម Tertiary sector: Services...			15.6%
- ផលទុនសរុបសំរាប់ប្រជាជន ១នាក់ GDP per capita ($US)			270
- អត្រាអក្ខរជន (អាយុ ១៥ ឆ្នាំឡើង) Literacy rate (15 years old & over)			67%
(ប្រុស/Male: 78%, ស្រី/Female: 57%)			
- សាលាវិជ្ជាជីវៈ Vocational Schools	24	(និស្សិត students)	5,300*
- ស្ថាប័នឧត្តមសិក្សា Tertiary Institutions	9	(និស្សិត students)	8,901*

Source: - Demographic Survey of Cambodia, 1996, NIS, Ministry of Planning
* EMIS Center, MoEYS (1998)

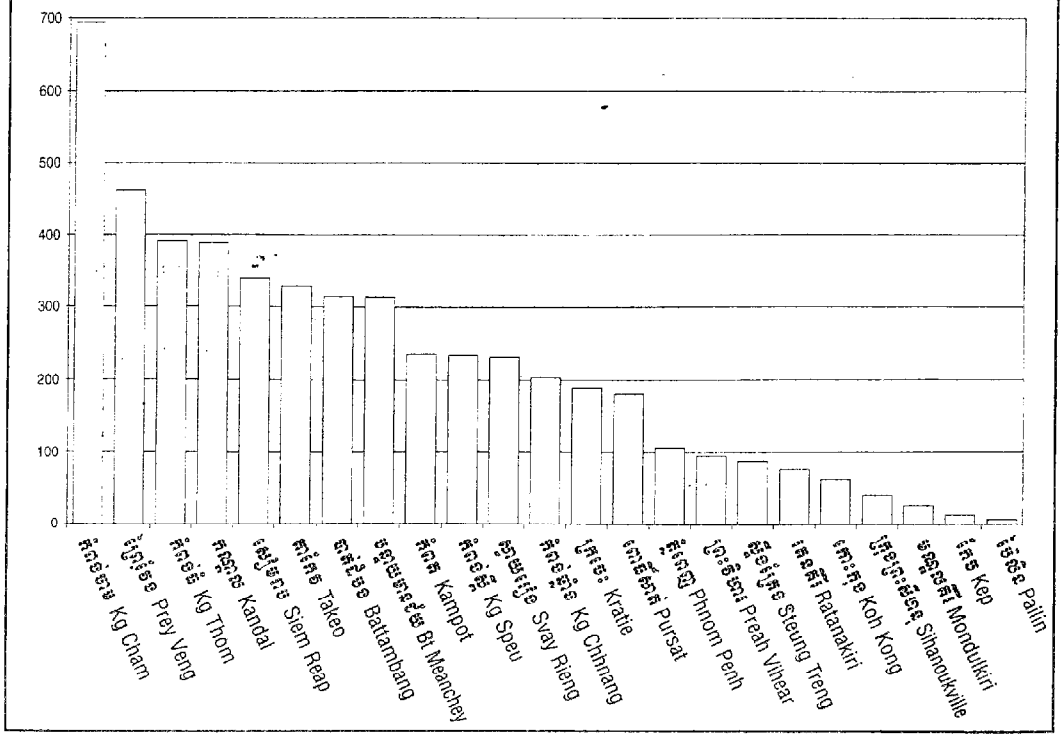
ប្រព័ន្ធអប់រំនៅកម្ពុជា

EDUCATION SYSTEM IN CAMBODIA



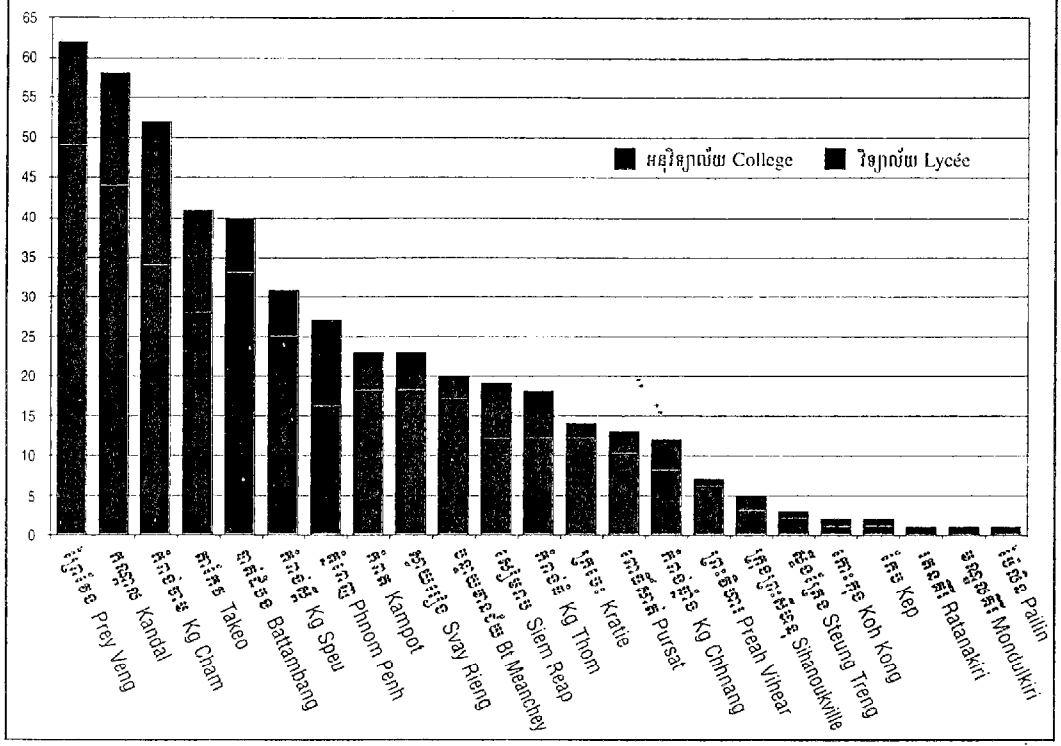
ចំនួន សាលាបឋមសិក្សា នៅក្នុងខេត្តនីមួយៗ

Number of Primary Schools in Each Province



ចំនួន អនុវិទ្យាល័យ និង វិទ្យាល័យ នៅក្នុងខេត្តនីមួយៗ

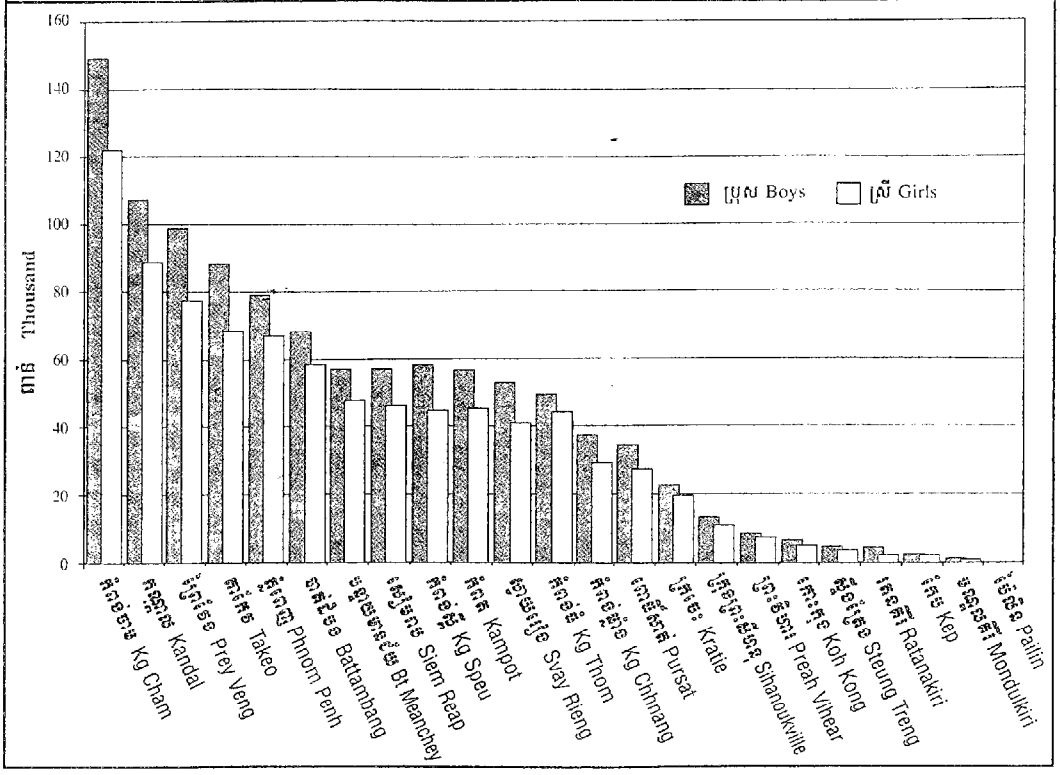
Number of Colleges & Lycées in Each Province



ដំបិតដោយ មជ្ឈមណ្ឌលប្រព័ន្ធគតិមានគ្រប់គ្រងអប់រំ នាយកដ្ឋានវែងឆាយ ក្រសួងអប់រំ យុវជន និងកីឡា

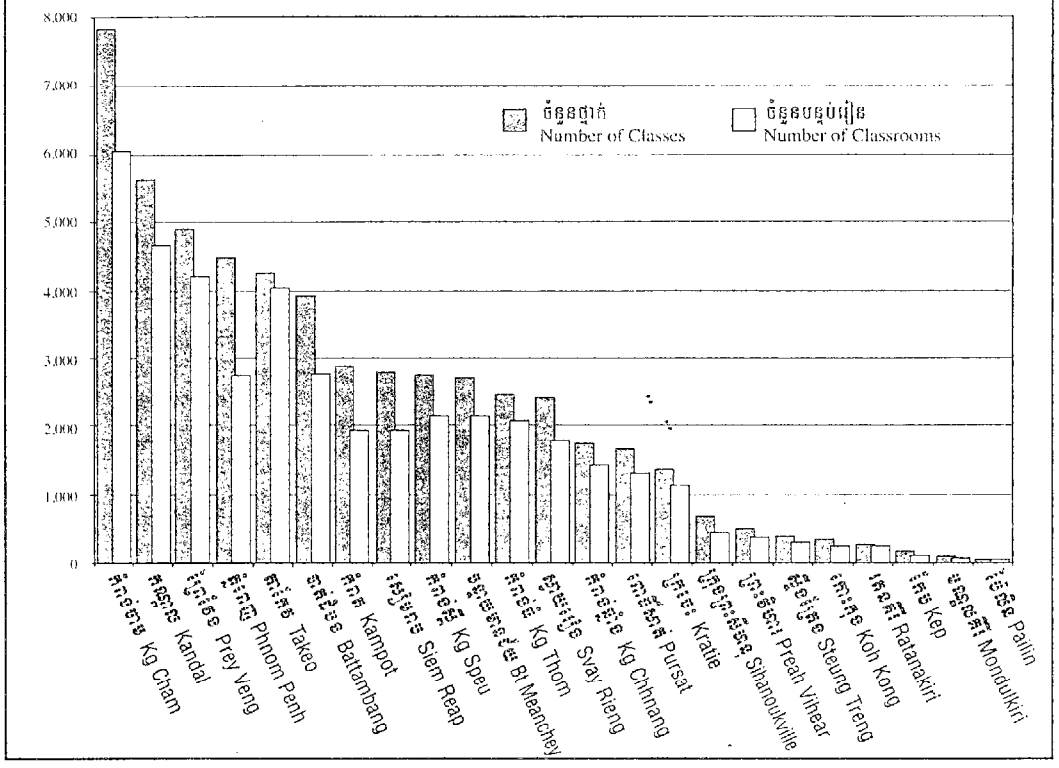
ចំនួនសិស្សក្នុងបឋមសិក្សា នៅក្នុងខេត្តនីមួយៗ

Number of Primary Students in Each Province



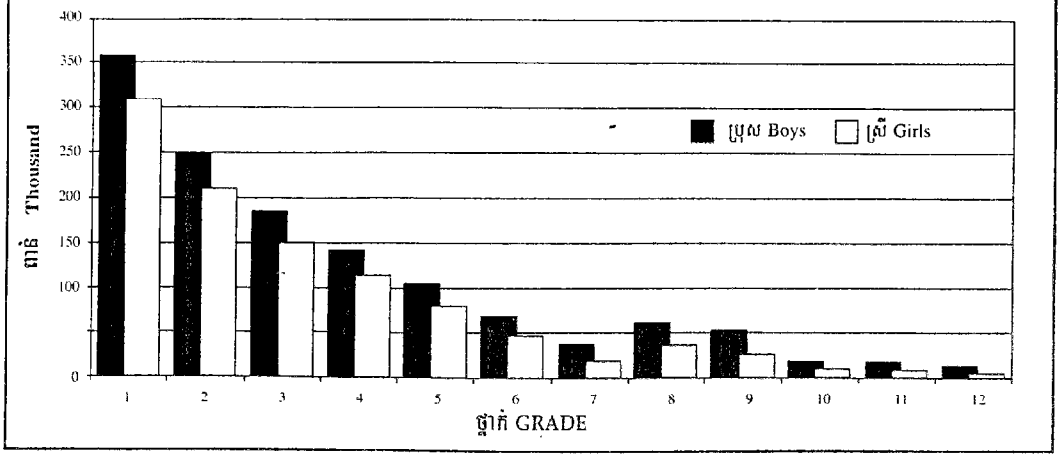
ចំនួនថ្នាក់រៀន និងបន្ទប់រៀន ក្នុងខេត្តនីមួយៗ

Number of Classes and Classrooms in Each Province



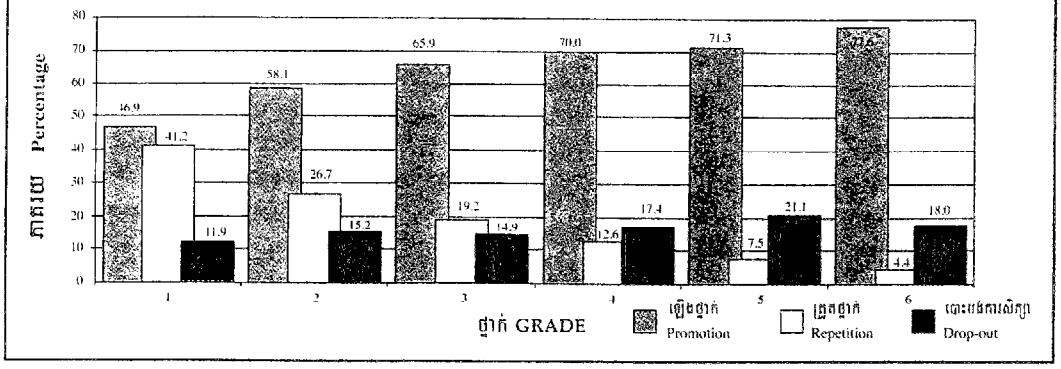
ចំនួនសិស្ស នៅតាមកំរិតថ្នាក់នីមួយៗ

Number of Students in Each Grade



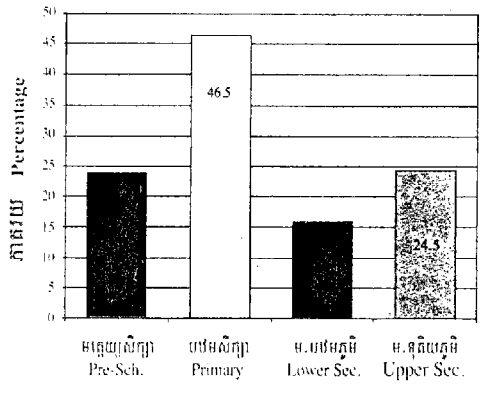
អត្រាឡើងថ្នាក់ ត្រួតថ្នាក់ & បោះបង់ការសិក្សា ពីថ្នាក់ទី១ ដល់ថ្នាក់ទី៦

Promotion, Repetition and Drop-out Rates from Grade 1 to 6



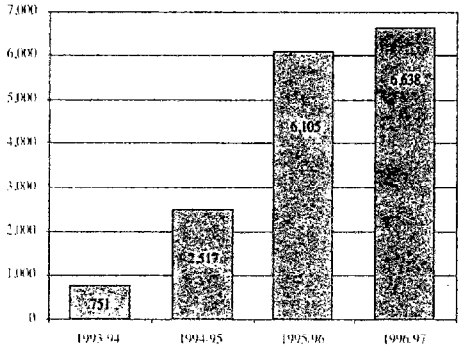
ផលធៀបសិស្ស-គ្រូ

Students-Teacher Ratio



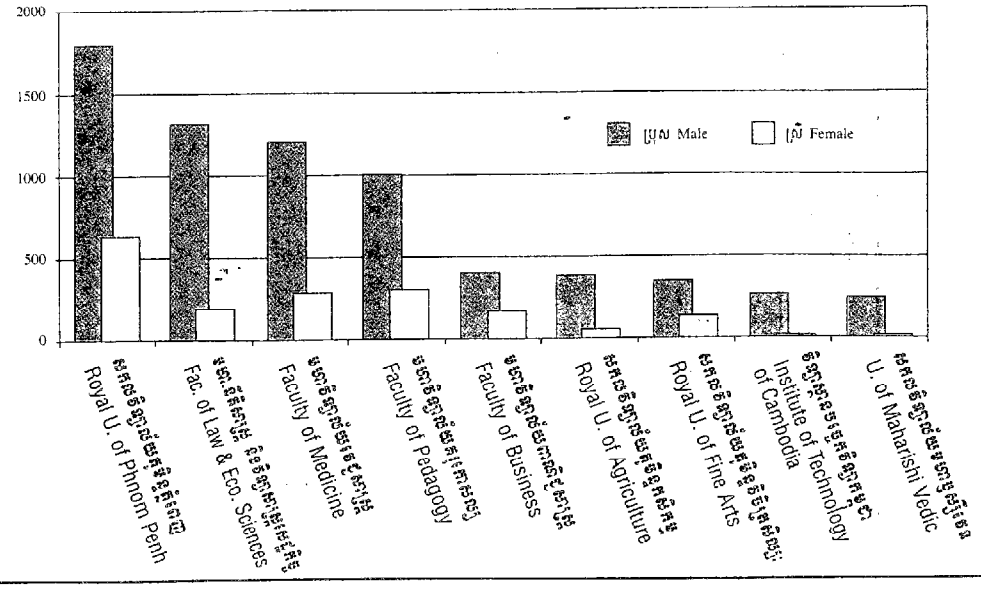
សិស្សប្រឡងជាប់ ម.ទុតិយភូមិ

Upper Secondary Graduates



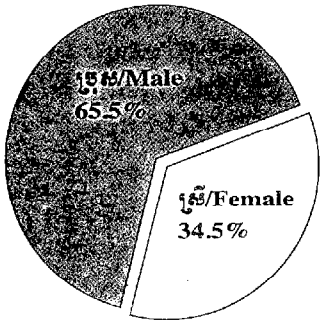
ចំនួននិស្សិត នៅតាមស្ថាប័នឧត្តមសិក្សា

Number of Students by Higher Education Institution



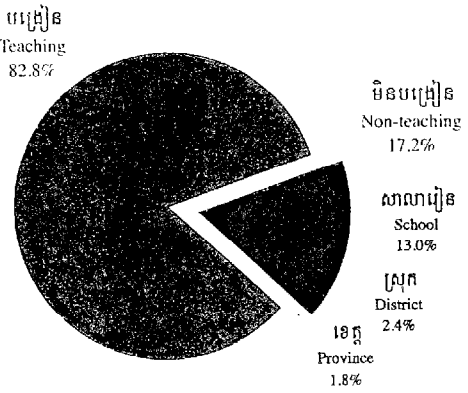
មន្ត្រីអប់រំសរុបតាមភេទ

Staff by Gender



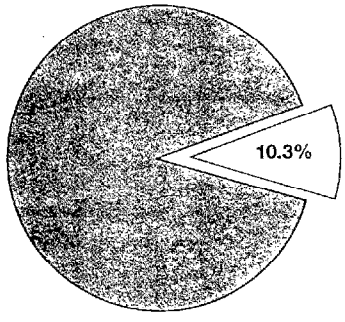
មន្ត្រីអប់រំតាមតួនាទី

Staff by Role



តាគរយនៃថវិកាជាតិសំរាប់អប់រំ

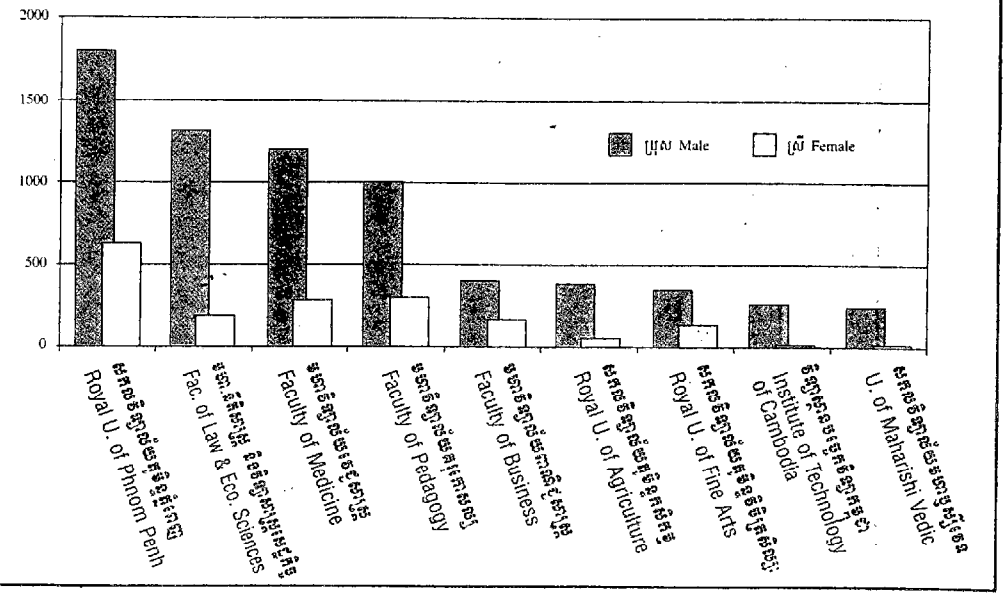
Percentage of National Budget for Education



Produced by EMIS Center, Department of Planning, MoEYS

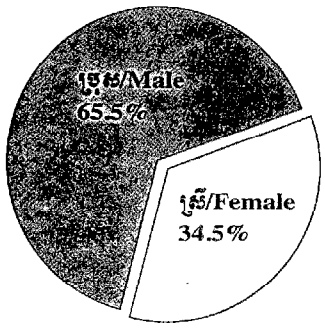
ចំនួននិស្សិត នៅតាមស្ថាប័នឧត្តមសិក្សា

Number of Students by Higher Education Institution



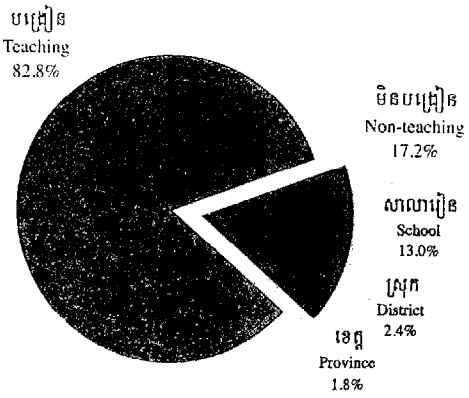
មន្ត្រីអប់រំសរុបតាមភេទ

Staff by Gender



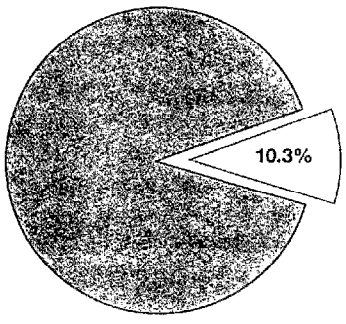
មន្ត្រីអប់រំតាមតួនាទី

Staff by Role



ភាគរយនៃថវិកាជាតិសំរាប់អប់រំ

Percentage of National Budget for Education



Produced by EMIS Center, Department of Planning, MoEYS

គោលនយោបាយរបស់ក្រសួងអប់រំ យុវជន និងកីឡា

១. សកលកម្មចំនេះទូទៅមូលដ្ឋានចំនួន ៩ឆ្នាំ និងបង្កឱកាសអភិវឌ្ឍអក្ខរកម្មវិជ្ជាជីវៈ

២. ទំនើបកម្ម និងកែលំអគុណភាពអប់រំ តាមរយៈការកែទំរង់ដែលមានប្រសិទ្ធភាព

៣. ការផ្សារភ្ជាប់ការអប់រំ ការបណ្តុះបណ្តាលទៅនឹងទីផ្សារពលកម្ម និងសង្គម

៤. ការស្តារ និងអភិវឌ្ឍន៍ការងារយុវជន និងកីឡា

POLICY OF THE MINISTRY OF EDUCATION, YOUTH & SPORT

1. Universalizing 9 years of basic education and developing opportunities for functional literacy
2. Modernizing and improving the quality of education through effective reform
3. Linking education/training with labor market and society
4. Rehabilitating and developing Youth and Sport sub-sector

ពត៌មានទូទៅ

GENERAL INFORMATION

- ផ្ទៃដី Land area (គម^2, km^2)			181,035
- ចំនួនខេត្ត/ក្រុង Number of provinces/municipalities			23
- ប្រជាជន Population			10.7 million
(ប្រុស/Male: 48%, ស្រី/Female: 52%)			
- ចំនួនក្រុមគ្រួសារ Number of households			2.0 million
- អត្រាកំណើនប្រជាជនប្រចាំឆ្នាំ Population growth rate			2.4%
- ប្រជាជនអាយុក្រោម ១៥ ឆ្នាំ Population under 15 years			43%
- អត្រាមរណៈទារក (ក្រោម១ឆ្នាំ) Infant mortality rate			90‰
- អាយុសង្ឃឹមរស់ជាមធ្យម Life expectancy at birth (ឆ្នាំ / years)			53
(ប្រុស/Male: 50, ស្រី/Female: 59)			
- ភាគរយនៃប្រជាជនមានការងារធ្វើ Percentage of employed persons:			
• ផ្នែកទី១ : កសិកម្ម Primary sector: Agriculture...			81.6%
• ផ្នែកទី២ : ឧស្សាហកម្ម Secondary sector: Industry...			2.8%
• ផ្នែកទី៣ : សេវាកម្ម Tertiary sector: Services...			15.6%
- ផលទុនសរុបសំរាប់ប្រជាជន ១នាក់ GDP per capita ($US)			270
- អត្រាអក្ខរជន (អាយុ ១៥ ឆ្នាំឡើង) Literacy rate (15 years old & over)			67%
(ប្រុស/Male: 78%, ស្រី/Female: 57%)			
- សាលាវិជ្ជាជីវៈ Vocational Schools	24	(និស្សិត students)	5,300*
- ស្ថាប័នឧត្តមសិក្សា Tertiary Institutions	9	(និស្សិត students)	8,901*

Source: - Demographic Survey of Cambodia, 1996, NIS, Ministry of Planning
* EMIS Center, MoEYS (1998)

5. Education Statistics & Indicators 1997/1998, May 1998, EMIS Center, MoEYS

KINGDOM OF CAMBODIA

NATION RELIGION KING

ព្រះរាជាណាចក្រកម្ពុជា

ជាតិ សាសនា ព្រះមហាក្សត្រ

ក្រសួងអប់រំ យុវជន និង កីឡា

MINISTRY OF EDUCATION, YOUTH AND SPORT

ស្ថិតិ និង អំណឺកាន់អប់រំ

Education Statistics & Indicators

1997 / 98

មន្ទីរស្ថិតិ ក្រសួងផែនការ

EMIS Center, Department of Planning

Phnom Penh, May 1998

(Sponsored by UNESCO/UNDP and UNICEF/Sida)

ស្ថិតិ និង អំណឺកាទ័រអប់រំ

Education Statistics & Indicators

1997 / 98

About "Education Statistics and Indicators, 1997-98"

What it is about,

The **"Education Statistics"** part is a collection of statistical information on schools in Cambodia for the school year 1997-1998. It includes information on students, teachers, textbooks, buildings and facilities, and community participation and financing for all Pre-Schools, Primary Schools, and Secondary Schools.

The **"Education Indicators"** part provides selected indicators on enrollment, repetition, promotion, transition and other rates that are standards in measuring the efficiency of the education system.

What it is for

The **"Education Statistics and Indicators, 1997/98"** is primarily intended for professionals, administrators, and managers at various levels of Ministry of Education Youth and Sports (MoEYS) and the users among different organizations. It provides essential and identical information to all administrators at various levels. It also provides a sound basis for policy analysis and planning in education activities, and in conducting future specific surveys to obtain additional in-depth information.

How it was collected

The Department of Planning (DOP) of the MoEYS developed a 4-page "Annual School Census Form" and distributed to all schools throughout the country via the Provincial and District Education Service Offices. The School Principals takes responsibility to complete the forms and the District and Provincial Offices checked the data and send back to DOP in time.

Separate survey forms were used to collect information for Teacher Training, Higher and Technical Education and Nonformal Education. This information will be processed and disseminated separately.

How it was processed

The EMIS Center (Education Management Information System Center) at DOP/MoEYS received all forms, checked, collated, edited and coded manually before data were entered into the computer. Specially prepared computer programs check errors and accept only if data were logically correct. Forms were sent back to the previous step down the process if data were not complete or reasonable, sometimes to the provinces to check with the schools.

National staff trained in data processing and computer technology operates the EMIS Center. The Center is equipped with Ethernet LAN with a number of workstations, and uses Visual dBase 5.5 for database, SPSS 6 for analysis, and Microsoft EXCEL 7 for outputting information.

Selection of Indicators

Statistical indicators were selected from the array of standard educational indicators used by UNESCO and related agencies for measurement in educational development. The selection of indicators was based as much as possible on the usability in planning, monitoring and evaluating the educational goals and targets set by the MoEYS

How it is disseminated

The **"Education Statistics and Indicators, 1997/98"** is disseminated to all Education departments at the Central, Provincial and District levels and Cluster School for their planning, monitoring and evaluation purposes. Limited copies are made available to education-related ministries and organizations upon request.

ACKNOWLEDGEMENT

This booklet provides basic school information on Pre-School and General Education in Cambodia. The Principals of the Schools are the main contributors who supply the basic school data. The District and Provincial level offices also provided help in securing accurate and timely data.

However, it is important to note that prior to the availability of the Census figures, calculations were made on the population figures provided by the district educational offices, which are also estimated figures based on the head count survey. The Broader base of population figure for this year is due to the wider coverage of districts and provinces.

This effected the quality of information produced in this booklet. It is suggested that caution should be used in interpreting some of the tables like, gross and net enrolment, gross and net admission rates, and the student flow rates.

The UNESCO/UNDP Project, in collaboration with the UNICEF/Sida program, provided assistance in establishing an EMIS Center and in enabling it to produce information on general education in Cambodia.

Department of Planning
Ministry of Education, Youth and Sports

Phnom Penh, May, 1998

CONTENTS

Education Statistics

Education Indicators

Explanatory Notes on Table 1: Schools, Classes, Students and Staff

Number of Schools: Total number of schools in the specified area or with specific characteristics.

Disadvantaged Schools: A disadvantaged school is defined as the school with all the following 5 conditions:

(i) at least 50 per cent of its rooms do not have good roof;
(ii) at least 50 per cent of its rooms do not have good floor;
(iii) at least 50 per cent of its rooms do not have good wall;
(iv) does not have drinking water supply; and
(v) does not have latrine facilities.

Number of Classes: Total number of classes in the schools.

Classes in Pagoda: Total number of classes, which are situated in the pagoda compound, irrespective of the location of the schools. The school itself may be inside or outside the pagoda compound.

Enrollment (Total): Total enrollment of both gender in schools.

Enrollment (Girls): Total female enrollment in schools.

Repeaters (Total): Total repeaters of both gender in schools.

Repeaters (Girls): Total female repeaters in schools.

Teaching staff (Total): Total teaching staff (teachers) of both gender in schools. A principal of the school with all grades for the school cycle is classified as teaching staff whether he/she is teaching or not; but the principal of the school without all grades for the school cycle is classified as teaching staff only if he/she is taking at least 1/3 of the normal teaching load prescribed for a teacher.

Teaching staff (Female): Total female teaching staff (teachers) in schools.

Non-teaching staff (Total): Total non-teaching staff of both gender in schools. Non-teaching staff are the school staff who do not directly involve in regular teaching activities in the classrooms. Most school principals, secretary, surveillant, and home economics, workshop and sports teachers together with the clerks and guards are non-teaching staff of a school. A school principal may only be teaching staff if he takes regular teaching duty in a class.

Non-teaching staff (Female): Total female non-teaching staff in schools.

Urban, Rural, Remote Area: Which school is in urban, rural or remote area is defined and used by the respective district education office (DEO) and also used by provincial education services (PES). Normally, the schools located in the large towns or cities are classified as urban schools and those located in isolation, that is, very difficult in communication and transport to the schools, are mentioned as remote. The rest are rural schools.

Pre-school: Schools under Pre-School and General Education Department, for children aged 3-5 years old.

Primary school: Schools which are providing at least one grade of primary education. It can be a full school with Grade 1 to Grade 6 or a small school with few grades.

College: Lower Secondary School with grades 7 through 9, but some may not have all grades (Total College = 350).

Lycee: Upper Secondary School with grades 10 through 12. Some Lycee also have Lower Secondary grades (Total Lycee = 125).

Lower Secondary Level: Counting those schools that provide Lower Secondary level education, that is, the total of all College and Lycee with lower secondary level (Total schools providing Lower Secondary education = 467).

Upper Secondary Level: Counting those schools that provide Upper Secondary level education (Total schools = 125).

Cluster - core school: The core (main) school of a primary school cluster.

Cluster - satellite school: The member school in a primary school cluster but not the core school.

School not in cluster: The primary school which is neither core nor satellite school of a primary school cluster.

Annex school: An annex school is a branch of a school but located in different village and administered by a parent school. Usually the Vice-Principal or a senior teacher is assigned as "in-charge". Annex schools normally do not have all 6 primary grades and located in different village from their parent school.

School in Pagoda: The schools which are totally located in pagoda compound.

EDUCATION

STATISTICS

Kingdom of Cambodia

Table 1: Schools, Classes, Students and Staff

Particulars	Number of Schools	Disadv. Schools	Number of Classes	Classes in Pagoda	Enrollment		Repeaters		Teaching Staff		Non-Teaching Staff	
					Total	Girl	Total	Girl	Total	Female	Total	Female
Whole Kingdom	6,294	686	54,415	2,089	2,358,081	1,033,836	551,257	236,034	61,904	22,137	9,751	2,583
By Area of Location:												
- Urban Area	1,090	46	15,590	406	702,620	307,133	128,086	53,254	21,014	10,117	4,445	1,730
- Rural Area	4,537	534	35,725	1,508	1,523,020	668,048	383,861	164,981	38,365	11,703	5,164	849
- Remote Area	667	106	3,100	175	132,441	58,655	39,310	17,799	2,525	317	142	4
By Type of School & Edn. Level:												
- Pre-School	793	57	1,393	102	43,358	21,569	0	0	1,802	1,783	169	155
- Primary School	5,026	614	45,443	1,794	2,011,772	906,827	529,358	230,664	43,282	15,816	5,178	1,100
- College	350	15	3,595	159	132,630	44,774	11,479	2,725	8,385	2,193	2,153	550
- Lycee	125	0	3,984	34	170,321	60,666	10,420	2,645	8,435	2,345	2,251	778
- Lower Secondary Level	467	15	5,926	159	229,102	79,832	20,061	4,951	13,800	3,821	3,599	1,053
- Upper Secondary Level	125	0	1,653	34	73,849	25,608	1,838	419	3,020	717	805	275
Characteristics of Primary Schools:												
- Cluster - core school	719	50	12,186	399	563,298	253,594	141,046	60,109	12,097	5,288	2,109	499
- Cluster - satellite school	4,302	563	33,231	1,389	1,447,400	652,760	387,994	170,417	31,157	10,517	3,069	601
- School not in cluster	5	1	26	6	1,074	473	318	138	28	11	0	0
- Annex school	1,613	262	6,037	392	253,357	116,500	76,151	34,590	5,149	1,211	210	31
- School in Pagoda	1,140	132	10,634	1,201	466,137	208,506	124,532	53,623	9,964	3,483	1,059	184
Disadvantaged school (All Level)	686	686	3,864	203	165,069	73,839	45,686	19,979	3,746	1,064	294	37

Table 2: Schools, Classes, Students and Staff by Province

Province	Number of Schools	Disadv. Schools	Number of Classes	Classes in Pagoda	Enrollment		Repeaters		Teaching Staff		Non-Teaching Staff	
					Total	Girl	Total	Girl	Total	Female	Total	Female
Banteay Meanchey	357	28	2,723	62	122,151	54,756	30,355	13,513	2,894	793	527	97
Battambang	430	31	3,939	153	165,116	75,308	32,649	14,145	4,451	1,885	775	214
Kampong Cham	835	68	7,868	278	322,094	142,744	76,649	32,947	8,384	3,072	1,633	451
Kampong Chhnang	247	22	1,752	43	79,376	34,681	20,463	8,654	2,064	650	314	94
Kampong Speu	296	41	2,768	104	124,106	52,926	30,091	12,928	3,214	763	316	50
Kampong Thom	447	97	2,464	98	108,801	50,091	25,243	11,473	2,907	1,016	422	113
Kampot	316	42	2,895	179	122,688	53,728	30,259	12,952	3,222	1,135	417	95
Kandal	537	33	5,636	208	247,242	108,226	62,613	26,138	6,408	2,553	908	228
Kep	19	0	146	5	5,869	2,498	1,210	558	127	41	16	3
Koh Kong	65	11	331	5	14,742	6,430	3,746	1,781	312	53	19	2
Kratie	230	32	1,357	161	50,955	23,012	14,534	6,335	1,644	709	254	66
Mondulkiri	29	6	87	1	3,147	1,336	1,156	476	99	22	6	1
Pailin	8	0	40	7	2,434	985	0	0	48	18	0	0
Phnom Penh	170	1	4,503	90	226,629	100,981	35,710	14,764	6,164	3,238	1,268	596
Preah Vihear	106	19	501	0	18,161	8,175	6,996	3,172	538	150	62	16
Prey Veng	604	59	4,925	307	202,658	85,662	48,593	20,925	5,555	1,437	773	126
Pursat	211	30	1,675	23	69,651	30,159	16,661	7,061	1,989	603	283	52
Ratanakiri	79	3	248	-2	7,786	2,771	2,283	766	230	50	14	3
Siem Reap	379	76	2,796	158	121,435	53,565	29,976	13,102	2,868	1,155	492	183
Sihanoukville	55	1	673	0	30,786	13,500	7,307	2,938	761	272	103	38
Steung Treng	92	7	380	17	12,860	5,696	4,314	1,905	397	109	28	5
Svay Rieng	298	44	2,427	77	111,119	46,872	28,317	12,051	2,829	612	430	62
Takeo	484	35	4,281	111	188,275	79,734	42,132	17,450	4,799	1,301	691	88
Whole Kingdom	6,294	686	54,415	2,089	2,358,081	1,033,836	551,257	236,034	61,904	22,137	9,751	2,583
- Urban Area	1,090	46	15,590	406	702,620	307,133	128,086	53,254	21,014	10,117	4,445	1,730
- Rural Area	4,537	534	35,725	1,508	1,523,020	668,048	383,861	164,981	38,365	11,703	5,164	849
- Remote Area	667	106	3,100	175	132,441	58,655	39,310	17,799	2,525	317	142	4

Table 3: Primary Schools, Classes, Students and Staff by Province

Province	Number of Schools	Disadv. Schools	Number of Classes	Classes in Pagoda	Enrollment		Repeaters		Teaching Staff		Non-Teaching Staff	
					Total	Girl	Total	Girl	Total	Female	Total	Female
Banteay Meanchey	314	25	2,425	60	110,051	50,450	29,879	13,395	2,333	619	351	37
Battambang	316	23	3,249	94	140,951	65,314	30,895	13,667	2,979	1,309	456	93
Kampong Cham	693	58	6,768	231	281,341	127,651	73,633	32,175	6,120	2,319	1,012	238
Kampong Chhnang	203	20	1,505	39	70,851	31,500	20,192	8,592	1,470	439	142	24
Kampong Speu	234	37	2,402	101	109,844	48,603	29,147	12,756	2,233	527	121	9
Kampong Thom	391	95	2,096	94	95,139	44,760	24,401	11,220	2,088	734	193	30
Kampot	236	39	2,488	149	107,101	48,113	29,336	12,752	2,320	817	184	31
Kandal	388	24	4,588	159	207,147	93,788	59,534	25,393	4,347	1,895	485	98
Kep	14	0	127	4	5,153	2,256	1,197	553	95	32	8	1
Koh Kong	62	11	308	5	13,665	6,090	3,658	1,761	258	42	14	2
Kratie	189	30	1,159	105	43,982	20,110	14,167	6,219	1,129	500	125	21
Mondulkiri	27	6	78	1	2,882	1,243	1,147	472	83	17	5	1
Pailin	7	0	38	7	2,380	968	0	0	39	14	0	0
Phnom Penh	107	0	3,011	86	154,583	71,061	30,404	13,279	3,278	2,408	656	301
Preah Vihear	95	17	463	0	16,909	7,680	6,923	3,155	433	114	33	4
Prey Veng	462	55	4,109	297	175,941	77,370	47,472	20,724	4,034	980	353	29
Pursat	181	27	1,468	23	62,436	27,601	16,153	6,961	1,450	437	141	18
Ratanakiri	77	2	232	2	7,184	2,575	2,232	755	203	46	12	1
Siem Reap	339	75	2,484	144	109,356	49,231	28,997	12,839	2,239	919	299	87
Sihanoukville	41	1	553	0	25,755	11,658	6,948	2,874	494	196	41	16
Steung Treng	88	7	348	17	11,681	5,288	4,130	1,856	331	97	21	3
Svay Rieng	233	39	2,037	76	96,684	42,539	27,463	11,927	2,025	426	186	27
Takeo	329	23	3,507	100	160,756	70,978	41,450	17,339	3,301	929	340	29
Whole Kingdom	5,026	614	45,443	1,794	2,011,772	906,827	529,358	230,664	43,282	15,816	5,178	1,100
- Urban Area	710	36	11,081	308	514,363	234,771	115,780	50,066	11,519	6,490	1,972	716
- Rural Area	3,667	474	31,303	1,315	1,366,202	613,808	374,299	162,809	29,307	9,027	3,079	380
- Remote Area	649	104	3,059	171	131,207	58,248	39,279	17,789	2,456	299	127	4

Table 4: Secondary Schools, Classes, Students and Staff by Province

Province	Number of Schools	Disadv. Schools	Number of Classes	Classes in Pagoda	Enrollment		Repeaters		Teaching Staff		Non-Teaching Staff	
					Total	Girl	Total	Girl	Total	Female	Total	Female
Banteay Meanchey	20	2	263	0	11,080	3,811	476	118	507	120	166	52
Battambang	40	1	563	57	20,682	8,198	1,754	478	1,324	433	299	103
Kampong Cham	52	0	961	35	36,226	12,875	3,016	772	2,081	575	612	204
Kampong Chhnang	12	0	170	0	6,428	2,084	271	62	499	116	159	57
Kampong Speu	31	2	322	0	12,721	3,558	944	172	910	165	188	35
Kampong Thom	18	0	293	0	11,082	4,001	842	253	700	163	223	77
Kampot	23	0	314	19	12,320	4,049	923	200	808	224	231	62
Kandal	58	2	892	35	34,459	11,689	3,079	745	1,895	492	417	124
Kep	2	0	16	0	591	184	13	5	29	6	8	2
Koh Kong	2	0	22	0	1,035	320	88	20	53	10	5	0
Kratie	14	1	155	43	5,631	2,224	367	116	451	145	125	41
Mondulkiri	1	0	8	0	205	62	9	4	15	4	1	0
Pailin	1	0	2	0	54	17	0	0	9	4	0	0
Phnom Penh	27	1	1,369	0	68,959	28,412	5,306	1,485	2,661	1,113	559	249
Preah Vihear	7	2	30	0	984	349	73	17	91	22	26	9
Prey Veng	62	1	679	4	22,658	6,284	1,121	201	1,368	304	417	94
Pursat	13	0	167	0	6,117	2,010	508	100	485	112	134	26
Ratanakiri	1	0	13	0	517	150	51	11	25	2	1	1
Siem Reap	19	1	254	0	10,556	3,596	979	263	557	164	183	86
Sihanoukville	5	0	107	0	4,571	1,635	359	64	246	55	59	19
Steung Treng	3	0	29	0	1,108	374	184	49	59	5	5	1
Svay Rieng	23	0	335	0	13,027	3,586	854	124	722	105	239	31
Takeo	41	2	615	0	21,940	5,972	682	111	1,325	199	347	55
Whole Kingdom	475	15	7,579	193	302,951	105,440	21,899	5,370	16,820	4,538	4,404	1,328
- Urban Area	153	3	3,988	69	173,127	64,748	12,306	3,188	8,672	2,812	2,339	893
- Rural Area	314	12	3,563	122	129,021	40,479	9,562	2,172	8,092	1,721	2,050	435
- Remote Area	8	0	28	2	803	213	31	10	56	5	15	0

Table 5: Characteristics of School and School Principal

Province	Number of Schools				2 - Shift	Floating	Schools	Attached	Schools Without		Characteristics of School Principal (Incharge)			
	Pre-Sch.	Primary	College	Lycee	School	School	in Pagoda	Pre-Sch.	Water Sup.	Latrine	Avg. Age	Avg.Service	U.Sec- Ed.	Female
Banteay Meanchey	23	314	17	3	162	5	21	19	295	264	43.2	14.5	39	29
Battambang	74	316	33	7	256	4	55	55	291	249	42.3	16.0	56	51
Kampong Cham	90	693	34	18	404	1	160	81	628	653	45.2	15.7	63	63
Kampong Chhnang	32	203	8	4	88	3	42	11	138	154	40.2	14.7	16	49
Kampong Speu	31	234	25	6	138	1	47	27	215	206	45.7	16.4	19	7
Kampong Thom	38	391	12	6	156	3	60	33	383	380	44.3	16.0	23	35
Kampot	57	236	18	5	189	2	185	51	186	236	45.3	17.1	15	28
Kandal	91	388	44	14	270	6	170	79	405	333	45.1	17.7	53	58
Kep	3	14	1	1	14	0	7	3	10	13	45.1	15.4	1	2
Koh Kong	1	62	1	1	27	1	3	1	63	58	34.3	11.8	12	3
Kratie	27	189	12	2	78	0	62	24	179	201	43.2	14.7	14	28
Mondulkiri	1	27	0	1	8	0	1	0	26	27	33.4	10.4	4	5
Pailin	0	7	1	0	2	0	2	0	8	8	45.5	8.0	1	0
Phnom Penh	36	107	16	11	110	0	32	15	86	35	46.9	21.6	35	48
Preah Vihear	4	95	6	1	20	0	1	1	102	102	42.9	15.6	5	7
Prey Veng	80	462	49	13	199	12	195	61	475	487	45.4	16.2	46	41
Pursat	17	181	10	3	96	4	8	14	168	139	42.1	15.1	10	19
Ratanakiri	1	77	0	1	20	1	5	0	75	76	33.7	11.4	2	5
Siem Reap	21	339	12	7	201	4	58	4	289	302	42.8	15.3	26	55
Sihanoukville	9	41	3	2	30	0	9	5	43	35	42.1	15.8	7	11
Steung Treng	1	88	2	1	24	1	13	0	73	75	39.3	13.2	1	4
Svay Rieng	42	233	18	5	154	2	66	38	182	218	45.6	16.2	8	12
Takeo	114	329	28	13	121	5	187	105	295	295	45.9	17.7	57	25
Whole Kingdom	793	5,026	350	125	2,767	55	1,389	627	4,615	4,546	44.0	16.0	513	585
- Urban Area	227	710	83	70	558	6	160	147	652	527	44.1	17.3	183	225
- Rural Area	556	3,667	259	55	1,978	27	1,074	471	3,368	3,397	44.4	16.0	309	336
- Remote Area	10	649	8	0	231	22	155	9	595	622	41.5	14.0	21	24

Table 6: Number of Schools by Highest Grade Taught

Province	Preschools		Primary School						College			Lycee		
	Total	Mixed Step	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
Banteay Meanchey	23	14	18	45	36	36	49	130	0	0	17	0	0	3
Battambang	74	28	15	46	48	26	35	146	0	1	32	1	0	6
Kampong Cham	90	17	60	105	73	42	46	367	0	1	33	3	4	11
Kampong Chhnang	32	1	14	31	33	30	31	64	0	0	8	3	0	1
Kampong Speu	31	11	5	13	20	19	16	161	0	1	24	1	0	5
Kampong Thom	38	0	101	82	51	22	29	106	0	0	12	2	1	3
Kampot	57	25	5	11	10	15	30	165	0	2	16	0	0	5
Kandal	91	26	17	23	18	18	39	273	0	0	44	1	2	11
Kep	3	1	1	0	1	1	2	9	0	1	0	0	1	0
Koh Kong	1	1	10	18	9	8	7	10	0	0	1	0	0	1
Kratie	27	5	17	50	23	16	12	71	0	0	12	0	0	2
Mondulkiri	1	0	10	7	5	1	2	2	0	0	0	0	0	1
Pailin	0	0	3	1	1	1	0	1	0	1	0	0	0	0
Phnom Penh	36	8	2	4	1	6	2	92	0	0	16	0	0	11
Preah Vihear	4	1	14	30	18	9	10	14	0	0	6	0	0	1
Prey Veng	80	28	12	32	33	18	37	330	0	0	49	1	0	12
Pursat	17	6	6	22	26	22	39	66	0	0	10	1	1	1
Ratanakiri	1	0	16	33	9	5	3	11	0	0	0	0	0	1
Siem Reap	21	5	23	76	52	43	55	90	0	1	11	1	5	1
Sihanoukville	9	4	5	1	4	2	3	26	0	0	3	0	0	2
Steung Treng	1	0	18	27	10	8	10	15	0	0	2	0	0	1
Svay Rieng	42	30	22	22	23	16	11	139	0	0	18	1	0	4
Takeo	114	21	4	15	17	15	22	256	1	1	26	1	1	11
Whole Kingdom	793	232	398	694	521	379	490	2,544	1	9	340	16	15	94
- Urban Area	227	71	35	45	39	45	44	502	0	2	81	8	10	52
- Rural Area	556	159	286	456	371	265	374	1,915	1	6	252	8	5	42
- Remote Area	10	2	77	193	111	69	72	127	0	1	-	0	0	0

Table 7: Enrollment by Level of Education, 1996/97

Province	Number of Schools	Pre-school Enrollment		Primary Enrollment		Lower Sec. Enrollment		Upper Sec. Enrollment		Total Enrollment		% Female Enrollment	
		Total	Girl	Total	Girl	Total	Girl	Total	Girl	Total	Girl	Primary	All Level
Banteay Meanchey	351	1,128	547	104,932	47,820	10,036	3,590	1,969	638	118,065	52,595	45.6	44.5
Battambang	400	3,679	1,874	126,502	58,351	20,107	7,969	4,954	1,706	155,242	69,900	46.1	45.0
Kampong Cham	824	4,829	2,403	271,129	122,051	35,173	13,516	6,003	2,014	317,134	139,984	45.0	44.1
Kampong Chhnang	244	2,372	1,172	66,696	29,452	5,776	2,017	1,110	335	75,954	32,976	44.2	43.4
Kampong Speu	287	1,798	914	102,664	44,711	11,447	3,427	1,406	354	117,315	49,406	43.6	42.1
Kampong Thom	450	2,452	1,281	93,579	43,995	9,731	3,758	1,969	617	107,731	49,651	47.0	46.1
Kampot	319	3,503	1,709	102,137	45,392	10,799	3,913	1,973	582	118,412	51,596	44.4	43.6
Kandal	522	5,075	2,410	196,101	88,847	32,460	11,931	6,063	1,964	239,699	105,152	45.3	43.9
Kep	19	122	51	4,958	2,239	402	157	29	10	5,511	2,457	45.2	44.6
Koh Kong	67	68	41	12,075	5,387	911	290	129	36	13,183	5,754	44.6	43.6
Kratie	232	1,265	668	42,310	19,511	5,256	2,221	815	311	49,646	22,711	46.1	45.7
Mondulkiri	15	85	45	1,753	788	203	68	21	5	2,062	906	45.0	43.9
Pailin	n. a	n. a	n. a	n. a	n. a	n. a	n. a	n. a	n. a	n. a	n. a	n. a	n. a
Phnom Penh	173	3,181	1,588	146,249	66,914	51,935	23,128	22,935	9,618	224,300	101,248	45.8	45.1
Preah Vihear	108	261	147	16,072	7,369	856	315	102	23	17,291	7,854	45.8	45.4
Prey Veng	608	4,330	2,155	176,317	77,399	20,939	6,054	2,830	709	204,416	86,317	43.9	42.2
Pursat	206	1,107	548	61,786	27,517	6,446	2,203	1,029	313	70,368	30,581	44.5	43.5
Ratanakiri	81	125	60	6,652	2,312	385	125	89	24	7,251	2,521	34.8	34.8
Siem Reap	365	1,731	844	103,372	46,319	8,564	3,142	2,209	764	115,876	51,069	44.8	44.1
Sihanoukville	54	501	254	23,886	10,798	3,883	1,464	1,022	344	29,292	12,860	45.2	43.9
Steung Treng	62	71	46	8,716	3,857	971	345	244	90	10,002	4,338	44.3	43.4
Svay Rieng	303	1,560	863	94,181	41,216	11,105	3,246	1,383	355	108,229	45,680	43.8	42.2
Takeo	478	5,601	2,706	156,918	68,455	18,510	5,598	3,387	793	184,416	77,552	43.6	42.1
Whole Kingdom	6,168	44,844	22,326	1,918,985	860,700	265,895	98,477	61,671	21,605	2,291,395	1,003,108	44.9	43.8
- Urban Area	912	16,987	8,436	487,170	222,004	152,699	59,720	53,605	19,146	710,461	309,306	45.6	43.5
- Rural Area	4,531	27,413	13,671	1,289,836	575,844	111,143	38,147	8,066	2,459	1,436,458	630,121	44.6	43.9
- Remote Area	725	444	219	141,979	62,852	2,053	610	0	0	144,476	63,681	44.3	44.1

Table 8: Enrollment by Level of Education, 1997/98

Province	Number of Schools	Pre-school Enrollment		Primary Enrollment		Lower Sec. Enrollment		Upper Sec. Enrollment		Total Enrollment		% Female Enrollment	
		Total	Girl	Total	Girl	Total	Girl	Total	Girl	Total	Girl	Primary	All Level
Banteay Meanchey	357	1,020	495	110,051	50,450	8,589	3,028	2,491	783	122,151	54,756	45.8	44.8
Battambang	430	3,483	1,796	140,951	65,314	15,602	6,170	5,080	2,028	165,116	75,308	46.3	45.6
Kampong Cham	835	4,527	2,218	281,341	127,651	28,977	10,454	7,249	2,421	322,094	142,744	45.4	44.3
Kampong Chhnang	247	2,097	1,097	70,851	31,500	5,057	1,658	1,371	426	79,376	34,681	44.5	43.7
Kampong Speu	296	1,541	765	109,844	48,603	10,791	3,086	1,930	472	124,106	52,926	44.2	42.6
Kampong Thom	447	2,580	1,330	95,139	44,760	8,545	3,189	2,537	812	108,801	50,091	47.0	46.0
Kampot	316	3,267	1,566	107,101	48,113	9,920	3,332	2,400	717	122,688	53,728	44.9	43.8
Kandal	537	5,636	2,749	207,147	93,788	26,478	9,190	7,981	2,499	247,242	108,226	45.3	43.8
Kep	19	125	58	5,153	2,256	501	156	90	28	5,869	2,498	43.8	42.6
Koh Kong	65	42	20	13,665	6,090	843	261	192	59	14,742	6,430	44.6	43.6
Kratie	230	1,342	678	43,982	20,110	4,784	1,925	847	299	50,955	23,012	45.7	45.2
Mondulkiri	29	60	31	2,882	1,243	166	50	39	12	3,147	1,336	43.1	42.5
Pailin	8	0	0	2,380	968	54	17	0	0	2,434	985	40.7	40.5
Phnom Penh	170	3,087	1,508	154,583	71,061	43,259	17,778	25,700	10,634	226,629	100,981	46.0	44.6
Preah Vihear	106	268	146	16,909	7,680	841	312	143	37	18,161	8,175	45.4	45.0
Prey Veng	604	4,059	2,008	175,941	77,370	19,135	5,365	3,523	919	202,658	85,662	44.0	42.3
Pursat	211	1,098	548	62,436	27,601	4,658	1,514	1,459	496	69,651	30,159	44.2	43.3
Ratanakiri	79	85	46	7,184	2,575	406	117	111	33	7,786	2,771	35.8	35.6
Siem Reap	379	1,523	738	109,356	49,231	7,770	2,667	2,786	929	121,435	53,565	45.0	44.1
Sihanoukville	55	460	207	25,755	11,658	3,299	1,190	1,272	445	30,786	13,500	45.3	43.9
Steung Treng	92	71	34	11,681	5,288	861	292	247	82	12,860	5,696	45.3	44.3
Svay Rieng	298	1,408	747	96,684	42,539	11,048	3,098	1,979	488	111,119	46,872	44.0	42.2
Takeo	484	5,579	2,784	160,756	70,978	17,518	4,983	4,422	989	188,275	79,734	44.2	42.3
Whole Kingdom	6,294	43,358	21,569	2,011,772	906,827	229,102	79,832	73,849	25,608	2,358,081	1,033,836	45.1	43.8
- Urban Area	1,090	15,130	7,614	514,363	234,771	115,917	43,777	57,210	20,971	702,620	307,133	45.6	43.7
- Rural Area	4,537	27,797	13,761	1,366,202	613,808	112,382	35,842	16,639	4,637	1,523,020	668,048	44.9	43.9
- Remote Area	667	431	194	131,207	58,248	803	213	0	0	132,441	58,655	44.4	44.3

Table 9: Pre-School Enrollment

Province	Lowest Step		Medium Step		Highest Step		Mixed Step	
	Total	Girl	Total	Girl	Total	Girl	Total	Girl
Banteay Meanchey	94	52	164	77	320	147	442	219
Battambang	159	92	755	403	1,598	830	971	471
Kampong Cham	114	62	486	220	3,238	1,577	689	359
Kampong Chhnang	261	138	617	319	1,189	623	30	17
Kampong Speu	110	48	328	181	658	328	445	208
Kampong Thom	292	152	693	336	1,595	842	0	0
Kampot	172	86	495	234	1,167	549	1,433	697
Kandal	524	257	1,239	630	2,916	1,398	957	464
Kep	0	0	0	0	75	34	50	24
Koh Kong	0	0	0	0	0	0	42	20
Kratie	135	78	361	200	667	312	179	88
Mondulkiri	2	2	0	0	0	0	58	29
Pailin	0	0	0	0	0	0	0	0
Phnom Penh	525	265	975	498	1,182	542	405	203
Preah Vihear	69	43	70	34	70	38	59	31
Prey Veng	408	191	951	438	1,484	763	1,216	616
Pursat	117	57	177	86	642	315	162	90
Ratanakiri	20	8	30	18	35	20	0	0
Siem Reap	233	110	413	197	752	361	125	70
Sihanoukville	40	15	105	51	130	70	185	71
Steung Treng	16	5	37	21	18	8	0	0
Svay Rieng	62	32	159	94	307	164	880	457
Takeo	219	117	961	471	3,364	1,683	1,035	513
Whole Kingdom	3,572	1,810	9,016	4,508	21,407	10,604	9,363	4,647
- Urban Area	1,795	910	3,863	1,967	6,624	3,295	2,848	1,442
- Rural Area	1,769	897	5,039	2,489	14,549	7,204	6,440	3,171
- Remote Area	8	3	114	52	234	105	75	34

Table 10: Enrollment and Repeaters by Grade

Province	Enrollment in Grade 1		Repeaters in Grade 1		Enrollment in Grade 2		Repeaters in Grade 2		Enrollment in Grade 3		Repeaters in Grade 3	
	Total	Girl	Total	Girl	Total	Girl	Total	Girl	Total	Girl	Total	Girl
Banteay Meanchey	39,413	18,452	17,060	7,823	25,800	11,997	7,184	3,193	17,912	8,325	3,491	1,553
Battambang	47,601	22,226	18,381	8,262	32,472	15,059	6,728	2,942	23,057	10,691	3,410	1,519
Kampong Cham	90,695	42,401	38,165	17,602	64,644	29,250	17,911	7,699	47,800	21,512	10,570	4,277
Kampong Chhnang	25,436	11,727	11,916	5,331	16,710	7,578	4,898	2,081	11,617	5,004	2,202	803
Kampong Speu	39,087	17,769	17,195	7,686	24,771	11,109	6,332	2,827	18,036	8,110	3,064	1,276
Kampong Thom	35,901	17,234	14,841	7,042	21,154	9,979	5,284	2,332	14,485	6,880	2,539	1,127
Kampot	35,405	16,239	16,809	7,529	24,824	11,356	6,980	2,972	17,893	7,986	3,424	1,418
Kandal	63,905	29,313	30,785	13,594	46,099	21,028	14,860	6,345	36,284	16,379	8,148	3,233
Kep	1,711	731	752	351	1,214	552	264	118	885	411	93	46
Koh Kong	6,249	2,929	2,419	1,221	3,162	1,384	667	305	1,923	809	322	131
Kratie	15,341	7,192	7,754	3,576	10,364	4,803	3,339	1,452	7,267	3,173	1,926	754
Mondulkiri	1,635	718	861	364	499	212	165	64	286	139	46	19
Pailin	1,389	599	0	0	414	161	0	0	280	96	0	0
Phnom Penh	38,533	17,988	14,182	6,411	31,533	14,503	7,501	3,199	26,619	12,060	4,452	1,911
Preah Vihear	8,115	3,763	4,845	2,216	4,067	1,881	1,452	668	2,267	978	422	185
Prey Veng	55,801	26,051	25,740	11,651	39,870	17,982	10,383	4,560	30,405	13,389	6,272	2,652
Pursat	22,615	10,420	9,708	4,381	14,279	6,494	3,638	1,563	10,126	4,520	1,726	668
Ratanakiri	4,004	1,453	1,594	517	1,609	555	454	175	655	251	114	42
Siem Reap	41,210	19,181	16,729	7,636	27,215	12,184	7,180	3,149	17,101	7,689	3,033	1,260
Sihanoukville	8,779	3,997	3,965	1,690	5,814	2,615	1,597	635	4,207	1,883	692	279
Steung Treng	5,082	2,382	2,570	1,194	2,687	1,235	865	416	1,654	738	449	174
Svay Rieng	30,377	14,021	14,986	6,812	22,680	10,328	6,522	2,834	16,606	7,329	3,460	1,414
Takeo	48,453	22,412	22,881	10,097	37,049	16,848	10,215	4,255	27,970	12,325	5,247	1,987
Whole Kingdom	666,737	309,198	294,138	132,986	458,930	209,093	124,419	53,784	335,330	150,677	65,102	26,728
- Urban Area	146,547	68,065	58,335	26,298	110,065	50,289	28,659	12,123	87,874	39,928	15,688	6,404
- Rural Area	460,427	213,528	209,347	94,545	316,239	144,080	87,846	38,045	229,472	102,846	46,384	19,000
- Remote Area	59,763	27,605	26,456	12,143	32,626	14,724	7,914	3,616	17,984	7,903	3,030	1,324

Table 10: Enrollment and Repeaters by Grade (Continued)

Province	Enrollment in Grade 4		Repeaters in Grade 4		Enrollment in Grade 5		Repeaters in Grade 5		Enrollment in Grade 6		Repeaters in Grade 6	
	Total	Girl	Total	Girl	Total	Girl	Total	Girl	Total	Girl	Total	Girl
Banteay Meanchey	12,862	5,785	1,375	571	8,922	3,837	565	183	5,142	2,054	204	72
Battambang	17,463	8,120	1,545	649	12,525	5,730	689	257	7,833	3,488	142	38
Kampong Cham	36,317	16,224	4,856	1,881	26,012	11,530	1,690	592	15,873	6,734	441	124
Kampong Chhnang	8,352	3,707	889	292	5,573	2,277	215	69	3,163	1,207	72	16
Kampong Speu	13,160	5,743	1,642	643	9,021	3,762	634	234	5,769	2,110	280	90
Kampong Thom	11,255	5,179	1,257	549	7,842	3,595	397	141	4,502	1,893	83	29
Kampot	13,322	5,976	1,570	621	9,415	4,023	464	180	6,242	2,533	89	32
Kandal	27,874	12,810	3,937	1,546	20,650	9,103	1,545	584	12,335	5,155	259	91
Kep	626	266	54	25	416	193	32	13	301	103	2	0
Koh Kong	1,234	522	148	57	722	295	66	34	375	151	36	13
Kratie	5,007	2,211	816	314	3,660	1,692	241	91	2,343	1,039	91	32
Mondulkiri	247	87	46	18	167	69	29	7	48	18	0	0
Pailin	121	56	0	0	138	49	0	0	38	7	0	0
Phnom Penh	23,470	10,756	2,697	1,118	20,204	9,380	1,329	549	14,224	6,374	243	91
Preah Vihear	1,301	578	148	68	743	324	48	13	421	156	8	5
Prey Veng	22,811	9,580	3,181	1,223	16,212	6,601	1,249	453	10,842	3,767	647	185
Pursat	7,450	3,115	711	254	5,095	1,959	314	85	2,871	1,093	56	10
Ratanakiri	429	137	32	12	310	116	20	3	177	63	18	6
Siem Reap	11,777	5,261	1,425	578	7,859	3,299	496	180	4,194	1,617	134	36
Sihanoukville	3,199	1,507	371	148	2,150	963	211	91	1,606	693	112	31
Steung Treng	1,075	445	152	53	781	322	80	13	402	166	14	6
Svay Rieng	12,612	5,290	1,736	610	8,902	3,556	650	221	5,507	2,015	109	36
Takeo	21,869	9,434	2,212	715	15,893	6,411	718	225	9,522	3,548	177	60
Whole Kingdom	253,833	112,789	30,800	11,945	183,212	79,086	11,682	4,218	113,730	45,984	3,217	1,003
- Urban Area	72,982	33,271	8,536	3,484	58,258	26,427	3,658	1,438	38,637	16,791	904	319
- Rural Area	169,957	75,112	21,049	8,021	118,355	50,146	7,552	2,595	71,752	28,096	2,121	603
- Remote Area	10,894	4,406	1,215	440	6,599	2,513	472	185	3,341	1,097	192	81

Table 10: Enrollment and Repeaters by Grade (Continued)

Province	Enrollment in Grade 7		Repeaters in Grade 7		Enrollment in Grade 8		Repeaters in Grade 8		Enrollment in Grade 9		Repeaters in Grade 9	
	Total	Girl	Total	Girl	Total	Girl	Total	Girl	Total	Girl	Total	Girl
Banteay Meanchey	2,424	829	77	18	3,448	1,278	69	20	2,717	921	286	72
Battambang	3,855	1,429	259	50	6,299	2,764	150	33	5,448	1,977	1,230	381
Kampong Cham	7,192	2,513	309	66	11,384	4,312	244	45	10,401	3,629	2,216	604
Kampong Chhnang	1,087	324	42	8	2,048	693	35	5	1,922	641	173	49
Kampong Speu	3,289	1,071	80	24	3,703	1,070	58	11	3,799	945	787	135
Kampong Thom	2,448	928	63	25	3,171	1,248	99	30	2,926	1,013	616	183
Kampot	2,647	891	83	11	3,968	1,395	83	26	3,305	1,046	736	163
Kandal	6,178	2,204	497	113	10,974	4,025	325	82	9,326	2,961	2,153	533
Kep	244	84	0	0	174	45	0	0	83	27	12	4
Koh Kong	264	92	29	9	347	116	20	5	232	53	39	6
Kratie	1,224	454	69	20	2,100	888	30	9	1,460	583	266	87
Mondulkiri	33	9	3	1	64	18	0	0	69	23	6	3
Pailin	29	10	0	0	25	7	0	0	0	0	0	0
Phnom Penh	6,247	2,245	1,497	310	21,101	9,137	503	127	15,911	6,396	2,446	807
Preah Vihear	253	97	4	2	312	137	3	2	276	78	62	12
Prey Veng	5,908	1,693	142	32	7,285	2,142	72	13	5,942	1,530	858	151
Pursat	915	293	44	5	1,724	634	40	7	2,019	587	408	88
Ratanakiri	95	30	0	0	102	45	0	0	209	42	42	6
Siem Reap	2,129	714	139	37	3,685	1,338	71	21	1,956	615	618	164
Sihanoukville	934	327	95	7	1,205	466	54	11	1,160	397	186	42
Steung Treng	125	40	9	3	333	115	21	7	403	137	148	39
Svay Rieng	3,430	1,003	121	16	4,982	1,438	49	11	2,636	657	640	95
Takeo	4,725	1,287	126	18	7,516	2,329	61	8	5,277	1,367	458	79
Whole Kingdom	55,675	18,567	3,688	775	95,950	35,640	1,987	473	77,477	25,625	14,386	3,703
- Urban Area	24,176	8,510	2,541	506	50,141	20,198	1,252	291	41,600	15,069	6,921	2,015
- Rural Area	31,151	9,961	1,146	268	45,488	15,359	730	181	35,743	10,522	7,440	1,680
- Remote Area	348	96	1	1	321	83	5	1	134	34	25	8

Table 10: Enrollment and Repeaters by Grade (Continued)

Province	Enrollment in Grade 10		Repeaters in Grade 10		Enrollment in Grade 11		Repeaters in Grade 11		Enrollment in Grade 12		Repeaters in Grade 12	
	Total	Girl	Total	Girl	Total	Girl	Total	Girl	Total	Girl	Total	Girl
Banteay Meanchey	1,071	348	12	3	935	302	7	1	485	133	25	4
Battambang	2,059	853	46	3	1,943	760	15	2	1,078	415	54	9
Kampong Cham	3,174	1,085	74	13	2,016	645	30	7	2,059	691	143	37
Kampong Chhnang	518	162	16	0	506	161	2	0	347	103	3	0
Kampong Speu	942	222	7	0	588	133	2	0	400	117	10	2
Kampong Thom	1,088	361	12	1	849	279	3	0	600	172	49	14
Kampot	932	304	17	0	1,021	276	3	0	447	137	1	0
Kandal	3,545	1,078	17	1	2,850	909	6	2	1,586	512	81	14
Kep	60	20	1	1	30	8	0	0	0	0	0	0
Koh Kong	93	31	0	0	47	15	0	0	52	13	0	0
Kratie	268	109	1	0	273	86	0	0	306	104	1	0
Mondulkiri	18	8	0	0	17	3	0	0	4	1	0	0
Pailin	0	0	0	0	0	0	0	0	0	0	0	0
Phnom Penh	8,754	3,729	357	67	9,751	4,123	129	42	7,195	2,782	374	132
Preah Vihear	62	14	0	0	46	12	0	0	35	11	4	1
Prey Veng	1,552	413	7	0	1,128	291	0	0	843	215	42	5
Pursat	634	225	12	0	438	147	4	0	387	124	0	0
Ratanakiri	35	12	0	0	31	7	0	0	45	14	9	5
Siem Reap	1,094	391	43	14	1,025	349	24	4	667	189	84	23
Sihanoukville	518	173	12	2	386	135	3	1	368	137	9	1
Steung Treng	54	18	3	0	123	47	0	0	70	17	3	0
Svay Rieng	1,068	250	24	1	535	147	4	0	376	91	16	1
Takeo	1,761	387	8	1	1,638	388	3	1	1,023	214	26	4
Whole Kingdom	29,300	10,193	669	107	26,176	9,223	235	60	18,373	6,192	934	252
- Urban Area	21,774	8,060	624	104	20,617	7,725	223	57	14,819	5,186	745	215
- Rural Area	7,526	2,133	45	3	5,559	1,498	12	3	3,554	1,006	189	37
- Remote Area	0	0	0	0	0	0	0	0	0	0	0	0

Table 11: New Intake and Enrollment by Level and Age (Both Sexes)

Province	Grade 1 Intake		Primary Enrollment		Grade 7 Intake		L. Sec. Enrollment		Grade 10 Intake		U. Sec. Enrollment		% Over-age Enrollment in		
	Total	Aged 6	Total	Aged 11+	Total	Aged 12	Total	Aged 14+	Total	Aged 15	Total	Aged 17+	Primary	L. Sec	U. Sec
Banteay Meanchey	22,353	8,350	110,051	26,444	2,347	422	8,589	3,839	1,059	531	2,491	434	24.0	44.7	17.4
Battambang	29,220	12,373	140,951	28,113	3,596	934	15,602	6,272	2,013	774	5,080	1,216	19.9	40.2	23.9
Kampong Cham	52,530	34,792	281,341	25,629	6,883	2,471	28,977	8,732	3,100	1,288	7,249	1,303	9.1	30.1	18.0
Kampong Chhnang	13,520	9,838	70,851	5,092	1,045	383	5,057	1,393	502	230	1,371	217	7.2	27.5	15.8
Kampong Speu	21,892	12,034	109,844	13,407	3,209	1,033	10,791	3,750	935	419	1,930	358	12.2	34.8	18.5
Kampong Thom	21,060	11,027	95,139	12,281	2,385	869	8,545	2,304	1,076	598	2,537	334	12.9	27.0	13.2
Kampot	18,596	14,326	107,101	7,313	2,564	880	9,920	2,023	915	571	2,400	391	6.8	20.4	16.3
Kandal	33,120	23,897	207,147	25,514	5,681	1,955	26,478	8,442	3,528	1,653	7,981	1,200	12.3	31.9	15.0
Kep	959	570	5,153	308	244	163	501	69	59	40	90	2	6.0	13.8	2.2
Koh Kong	3,830	1,834	13,665	1,748	235	39	843	352	93	25	192	36	12.8	41.8	18.8
Kratie	7,587	4,854	43,982	5,012	1,155	254	4,784	1,519	267	102	847	247	11.4	31.8	29.2
Mondulkiri	774	252	2,882	328	30	3	166	58	18	3	39	8	11.4	34.9	20.5
Pailin	1,389	262	2,380	265	29	1	54	41	0	0	0	0	11.1	75.9	0.0
Phnom Penh	24,351	17,802	154,583	17,181	4,750	2,014	43,259	12,600	8,397	3,965	25,700	3,335	11.1	29.1	13.0
Preah Vihear	3,270	1,418	16,909	2,382	249	32	841	367	62	62	143	48	14.1	43.6	33.6
Prey Veng	30,061	21,185	175,941	15,514	5,766	2,082	19,135	5,484	1,545	760	3,523	680	8.8	28.7	19.3
Pursat	12,907	10,168	62,436	3,608	871	237	4,658	1,878	622	329	1,459	202	5.8	40.3	13.8
Ratanakiri	2,410	816	7,184	1,434	95	16	406	198	35	19	111	36	20.0	48.8	32.4
Siem Reap	24,481	7,789	109,356	16,991	1,990	452	7,770	2,246	1,051	535	2,786	519	15.5	28.9	18.6
Sihanoukville	4,814	2,554	25,755	2,175	839	331	3,299	842	506	300	1,272	138	8.4	25.5	10.8
Steung Treng	2,512	1,468	11,681	1,476	116	47	861	291	51	41	247	30	12.6	33.8	12.1
Svay Rieng	15,391	11,285	96,684	7,601	3,309	1,046	11,048	2,488	1,044	535	1,979	297	7.9	22.5	15.0
Takeo	25,572	18,624	160,756	18,234	4,599	1,056	17,518	6,545	1,753	805	4,422	779	11.3	37.4	17.6
Whole Kingdom	372,599	227,518	2,011,772	238,050	51,987	16,720	229,102	71,733	28,631	13,585	73,849	11,810	11.8	31.3	16.0
- Urban Area	88,212	54,529	514,363	68,723	21,635	7,476	115,917	36,963	21,150	10,053	57,210	8,885	13.4	31.9	15.5
- Rural Area	251,080	158,005	1,366,202	155,037	30,005	9,205	112,382	34,428	7,481	3,532	16,639	2,925	11.3	30.6	17.6
- Remote Area	33,307	14,984	131,207	14,290	347	39	803	342	0	0	0	0	10.9	42.6	9.0

Table 12: New Intake and Enrollment by Level and Age (Female)

Province	Grade 1 Intake		Primary Enrollment		Grade 7 Intake		L. Sec. Enrollment		Grade 10 Intake		U. Sec. Enrollment		% Over-age Enrollment in		
	Total	Aged 6	Total	Aged 11+	Total	Aged 12	Total	Aged 14+	Total	Aged 15	Total	Aged 17+	Primary	L. Sec.	U. Sec.
Banteay Meanchey	10,629	4,008	50,450	11,143	811	183	3,028	1,129	345	221	783	77	22.1	37.3	9.8
Battambang	13,964	5,877	65,314	12,276	1,379	405	6,170	2,153	850	365	2,028	395	18.8	34.9	19.5
Kampong Cham	24,799	16,533	127,651	10,635	2,447	978	10,454	2,596	1,072	550	2,421	329	8.3	24.8	13.6
Kampong Chhnang	6,396	4,696	31,500	1,865	316	129	1,658	419	162	103	426	45	5.9	25.3	10.6
Kampong Speu	10,083	5,626	48,603	5,315	1,047	354	3,086	808	222	126	472	50	10.9	26.2	10.6
Kampong Thom	10,192	5,565	44,760	5,324	903	352	3,189	708	360	229	812	66	11.9	22.2	8.1
Kampot	8,710	6,811	48,113	3,063	880	346	3,332	609	304	216	717	97	6.4	18.3	13.5
Kandal	15,719	11,514	93,788	10,515	2,091	834	9,190	2,293	1,077	618	2,499	245	11.2	25.0	9.8
Kep	380	225	2,256	123	84	59	156	16	19	15	28	0	5.5	10.3	0.0
Koh Kong	1,708	845	6,090	704	83	16	261	89	31	12	59	5	11.6	34.1	8.5
Kratie	3,616	2,335	20,110	2,142	434	99	1,925	543	109	57	299	60	10.7	28.2	20.1
Mondulkiri	354	119	1,243	124	8	0	50	24	8	1	12	1	10.0	48.0	8.3
Pailin	599	119	968	98	10	0	17	12	0	0	0	0	10.1	70.6	0.0
Phnom Penh	11,577	8,439	71,061	7,214	1,935	971	17,778	4,567	3,662	1,801	10,634	1,179	10.2	25.7	11.1
Preah Vihear	1,547	681	7,680	1,027	95	12	312	91	14	14	37	5	13.4	29.2	13.5
Prey Veng	14,400	10,148	77,370	5,835	1,661	643	5,365	1,272	413	272	919	102	7.5	23.7	11.1
Pursat	6,039	4,826	27,601	1,372	288	97	1,514	509	225	129	496	25	5.0	33.6	5.0
Ratanakiri	936	358	2,575	451	30	8	117	37	12	9	33	8	17.5	31.6	24.2
Siem Reap	11,545	3,680	49,231	6,988	677	179	2,667	591	377	236	929	97	14.2	22.2	10.4
Sihanoukville	2,307	1,211	11,658	939	320	153	1,190	242	171	125	445	42	8.1	20.3	9.4
Steung Treng	1,188	700	5,288	611	37	15	292	95	18	15	82	10	11.6	32.5	12.2
Svay Rieng	7,209	5,307	42,539	2,966	987	350	3,098	568	249	167	488	42	7.0	18.3	8.6
Takeo	12,315	8,922	70,978	7,142	1,269	367	4,983	1,597	386	204	989	114	10.1	32.0	11.5
Whole Kingdom	176,212	108,545	906,827	97,872	17,792	6,550	79,832	20,968	10,086	5,485	25,608	2,994	10.8	26.3	11.7
- Urban Area	41,767	26,047	234,771	28,794	8,004	3,200	43,777	11,832	7,956	4,289	20,971	2,451	12.3	27.0	11.7
- Rural Area	118,983	75,496	613,808	63,397	9,693	3,339	35,842	9,055	2,130	1,196	4,637	543	10.3	25.3	11.7
- Remote Area	15,462	7,002	58,248	5,681	95	11	213	81	0	0	0	0	9.8	38.0	0.0

Table 13: Number of Schools and Schools Receiving Teachers' Guides for 4 Main Subjects

Province	Grade 1		Grade 2		Grade 6		Grade 7		Grade 8	
	Schools	Recd. Guide	Schools	Recd. Guide	Schools	Recd. Guide	Schools	Recd. Guide	Schools	Recd. Guide
Banteay Meanchey	314	145	295	114	130	31	20	9	20	7
Battambang	315	234	301	176	146	50	40	25	40	24
Kampong Cham	692	360	633	141	367	85	52	24	52	29
Kampong Chhnang	203	110	188	48	64	19	11	4	12	4
Kampong Speu	234	154	229	90	161	61	29	18	29	15
Kampong Thom	387	240	288	87	106	33	18	12	18	12
Kampot	236	179	231	136	165	43	21	10	21	10
Kandal	388	247	370	141	273	110	58	31	58	34
Kep	14	11	13	10	9	4	2	1	2	1
Koh Kong	62	24	51	19	10	4	2	1	2	1
Kratie	189	83	171	46	71	17	13	7	13	4
Mondulkiri	27	13	17	5	2	1	1	1	1	0
Pailin	7	1	4	1	1	0	1	0	1	0
Phnom Penh	106	66	104	27	92	30	27	21	27	18
Preah Vihear	95	19	81	12	14	2	7	3	7	3
Prey Veng	461	242	449	128	330	73	62	33	62	32
Pursat	181	110	175	65	66	15	12	5	12	5
Ratanakiri	77	31	61	14	11	3	1	1	1	0
Siem Reap	336	228	315	133	90	26	18	11	18	12
Sihanoukville	41	28	36	20	26	11	4	1	4	1
Steung Treng	88	37	69	14	15	3	3	0	3	0
Svay Rieng	233	151	211	67	139	61	23	19	23	18
Takeo	329	176	325	76	256	83	41	22	40	20
Whole Kingdom	5,015	2,889	4,617	1,570	2,544	765	466	259	466	250
- Urban Area	707	434	671	237	502	152	148	82	148	77
- Rural Area	3,659	2,139	3,375	1,170	1,915	570	310	173	310	169
- Remote Area	649	316	571	163	127	43	8	4	8	4

Table 14: Textbooks Collected and Reusable by Level and Newly Received in Primary Level

Province	Primary Level		Secondary Level		% Reusable		Newly Received in Primary Level					
	Collected	Reusable	Collected	Reusable	Primary	Secondary	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
Banteay Meanchey	236,242	203,317	15,437	14,761	86.1	95.6	40,386	60,155	7,614	5,970	6,039	4,748
Battambang	308,794	275,548	23,386	22,107	89.2	94.5	58,993	85,599	8,957	8,441	6,533	6,845
Kampong Cham	600,361	525,644	43,673	39,274	87.6	89.9	123,956	154,611	16,506	17,347	14,747	17,504
Kampong Chhnang	153,742	142,760	12,716	11,890	92.9	93.5	42,312	45,348	6,792	5,827	4,420	3,699
Kampong Speu	212,238	184,157	4,983	3,382	86.8	67.9	58,171	69,799	9,597	9,643	7,244	5,005
Kampong Thom	227,941	195,380	13,120	9,743	85.7	74.3	38,938	60,160	6,475	6,201	5,277	4,152
Kampot	244,034	215,553	17,442	16,517	88.3	94.7	50,331	60,727	5,922	7,326	5,982	5,592
Kandal	488,205	441,848	38,487	35,305	90.5	91.7	91,109	119,414	20,186	19,464	18,792	17,743
Kep	12,575	11,481	245	237	91.3	96.7	1,494	4,502	302	146	164	224
Koh Kong	17,054	13,667	17	10	80.1	58.8	3,605	7,163	374	405	171	190
Kratie	87,769	79,496	5,597	5,482	90.6	97.9	19,741	26,815	1,596	914	907	3,169
Mondulkiri	4,786	3,175	60	60	66.3	100.0	2,931	290	244	187	132	109
Pailin	0	0	0	0	0.0	0.0	549	264	81	24	12	9
Phnom Penh	384,438	343,039	45,301	37,555	89.2	82.9	66,012	88,796	18,339	20,079	25,677	27,353
Preah Vihear	9,644	7,074	894	876	73.4	98.0	6,734	3,908	631	224	275	192
Prey Veng	396,505	346,319	16,963	14,643	87.3	86.3	71,680	93,338	15,524	16,455	15,082	10,904
Pursat	145,222	132,303	8,801	8,714	91.1	99.0	33,273	42,336	2,792	2,214	2,495	3,023
Ratanakiri	9,190	7,349	224	224	80.0	100.0	5,205	4,464	334	487	379	371
Siem Reap	228,049	208,662	13,030	12,330	91.5	94.6	43,583	74,539	4,267	4,960	3,167	3,761
Sihanoukville	61,926	57,351	3,411	3,324	92.6	97.4	10,614	21,300	573	493	293	912
Steung Treng	18,214	14,464	76	22	79.4	28.9	9,082	5,186	862	516	372	411
Svay Rieng	236,632	207,924	21,898	21,346	87.9	97.5	70,829	52,211	12,801	13,718	13,389	12,485
Takeo	329,745	290,614	58,528	50,217	88.1	85.8	70,002	89,080	12,746	14,493	12,558	7,594
Whole Kingdom	4,413,306	3,907,125	344,289	308,019	88.5	89.5	919,530	1,170,005	153,515	155,534	144,107	135,995
- Urban Area	1,239,367	1,116,171	180,136	158,933	90.1	88.2	203,128	305,921	43,085	47,896	49,252	50,857
- Rural Area	2,966,012	2,613,457	163,425	148,381	88.1	90.8	643,187	794,604	102,145	101,651	89,794	81,545
- Remote Area	207,927	177,497	728	705	85.4	96.8	73,215	69,480	8,285	5,987	5,061	3,593

Table 15: School Staff by Age

Province	No. of Teaching-Staff: Total				No. of Teaching-Staff: Female				No. of Non-Teaching-Staff: Total				No. of Non-Teaching-Staff: Female			
	< 30 yrs.	30 - 39	40 - 49	50+	< 30 yrs.	30 - 39	40 - 49	50+	< 30 yrs.	30 - 39	40 - 49	50+	< 30 yrs.	30 - 39	40 - 49	50+
Banteay Meanchey	1,574	545	594	181	520	130	126	17	151	86	226	64	50	14	28	5
Battambang	2,533	744	951	223	1,189	340	307	49	207	149	300	119	88	52	62	12
Kampong Cham	4,791	1,057	1,843	693	1,967	438	581	86	515	252	616	250	238	89	91	33
Kampong Chhnang	1,184	304	464	112	355	155	131	9	138	49	95	32	55	15	20	4
Kampong Speu	1,739	483	709	283	449	181	119	14	74	51	150	41	19	10	18	3
Kampong Thom	1,353	566	707	281	537	247	194	38	136	59	164	63	58	17	33	5
Kampot	1,645	476	787	314	636	213	246	40	131	55	163	68	51	8	29	7
Kandal	2,951	1,114	1,930	413	1,226	576	664	87	191	147	451	119	77	52	77	22
Kep	89	13	19	6	28	5	6	2	5	2	5	4	1	1	1	0
Koh Kong	186	69	45	12	36	7	9	1	5	4	7	3	0	1	1	0
Kratie	986	185	322	151	509	87	97	16	66	28	109	51	29	11	20	6
Mondulkiri	70	15	10	4	18	2	2	0	3	2	1	0	1	0	0	0
Pailin	27	3	15	3	11	1	5	1	0	0	0	0	0	0	0	0
Phnom Penh	3,286	1,422	1,173	283	1,960	919	721	138	382	302	412	172	216	164	160	56
Preah Vihear	248	128	129	33	101	31	15	3	22	12	21	7	9	3	3	1
Prey Veng	2,779	730	1,509	537	905	251	252	29	201	104	365	103	70	27	27	2
Pursat	1,200	357	320	112	374	111	101	17	95	44	104	40	23	14	13	2
Ratanakiri	126	67	30	7	34	13	3	0	4	7	0	3	1	2	0	0
Siem Reap	1,530	429	641	268	735	191	193	36	192	99	141	60	79	44	42	18
Sihanoukville	532	100	97	32	188	42	34	8	44	18	31	10	17	6	11	4
Steung Treng	251	59	59	28	83	20	6	0	5	4	11	8	2	1	0	2
Svay Rieng	1,374	409	705	341	346	125	114	27	158	56	142	74	40	9	7	6
Takeo	2,048	1,072	1,263	416	547	405	300	49	158	110	321	102	33	18	36	1
Whole Kingdom	32,502	10,347	14,322	4,733	12,754	4,490	4,226	667	2,883	1,640	3,835	1,393	1,157	558	679	189
- Urban Area	12,552	3,884	3,712	866	5,843	2,160	1,825	289	1,710	864	1,352	519	782	396	426	126
- Rural Area	18,933	6,094	9,845	3,493	6,725	2,269	2,343	366	1,150	758	2,413	843	375	162	251	61
- Remote Area	1,017	369	765	374	186	61	58	12	23	18	70	31	0	0	2	2

Table 16: School Staff by Service

Province	Teaching-Staff: Total				Teaching-Staff: Female				Non-Teaching-Staff: Total				Non-Teaching-Staff: Female			
	< 5 yrs.	5 - 14	15 - 24	25+	< 5 yrs.	5 - 14	15 - 24	25+	< 5 yrs.	5 - 14	15 - 24	25+	< 5 yrs.	5 - 14	15 - 24	25+
Banteay Meanchey	607	1,684	574	29	179	477	131	6	30	260	214	23	8	61	22	6
Battambang	1,028	2,499	878	46	430	1,055	383	17	36	388	307	44	11	109	84	10
Kampong Cham	1,416	4,898	2,028	42	509	1,865	691	7	120	720	755	38	48	259	134	10
Kampong Chhnang	324	1,125	610	5	89	364	195	2	13	155	144	2	3	58	33	0
Kampong Speu	565	1,635	1,013	1	109	462	192	0	10	122	176	8	1	28	19	2
Kampong Thom	344	1,649	886	28	121	648	240	7	6	193	202	21	0	69	40	4
Kampot	507	1,627	1,068	20	128	671	328	8	15	157	224	21	8	50	31	6
Kandal	908	3,126	2,323	51	295	1,349	900	9	73	274	538	23	32	85	100	11
Kep	70	32	25	0	16	15	10	0	3	5	8	0	1	1	1	0
Koh Kong	94	171	47	0	11	31	11	0	1	6	11	1	0	1	1	0
Kratie	282	989	367	6	120	497	92	0	12	106	129	7	4	39	21	2
Mondulkiri	22	66	11	0	5	14	3	0	0	4	2	0	0	0	1	0
Pailin	23	15	8	2	12	1	4	1	0	0	0	0	0	0	0	0
Phnom Penh	1,229	3,439	1,260	236	633	2,165	819	121	113	605	422	128	52	298	199	47
Preah Vihear	34	320	182	2	7	119	24	0	3	29	30	0	1	9	6	0
Prey Veng	681	3,149	1,701	24	159	978	297	3	25	324	405	19	12	76	36	2
Pursat	321	1,228	433	7	78	366	157	2	4	138	133	8	0	34	17	1
Ratanakiri	43	138	49	0	11	36	3	0	3	9	2	0	0	3	0	0
Siem Reap	474	1,453	930	11	232	639	277	7	40	244	203	5	18	101	63	1
Sihanoukville	255	401	105	0	80	149	43	0	7	52	41	3	2	17	16	3
Steung Treng	73	245	77	2	14	86	9	0	2	6	19	1	1	1	2	1
Svay Rieng	405	1,413	1,004	7	80	358	174	0	42	180	208	0	5	37	20	0
Takeo	607	2,492	1,667	33	107	742	449	3	21	246	399	25	7	37	41	3
Whole Kingdom	10,312	33,794	17,246	552	3,425	13,087	5,432	193	579	4,223	4,572	377	214	1,373	887	109
- Urban Area	4,397	12,111	4,145	361	1,884	5,857	2,210	166	354	2,276	1,581	234	145	936	563	86
- Rural Area	5,502	20,587	12,092	184	1,494	7,059	3,123	27	218	1,909	2,897	140	69	437	321	22
- Remote Area	413	1,096	1,009	7	47	171	99	0	7	38	94	3	0	0	3	1

Table 17: School Staff by Education and Pedagogical Training

Province	Education Level of Teaching Staff				Education Level of Non-Teaching Staff				Teaching Staff without Pedagogy Training			
	Primary	L.Sec.	U.Sec.	Graduate	Primary	L.Sec.	U.Sec.	Graduate	Primary	L.Sec.	U.Sec.	Graduate
Banteay Meanchey	349	2,112	375	58	54	399	58	16	141	100	2	0
Battambang	263	3,166	809	213	69	595	98	13	25	61	3	0
Kampong Cham	444	7,130	654	156	89	1,380	142	22	84	192	29	0
Kampong Chhnang	177	1,583	242	62	36	254	18	6	49	24	3	0
Kampong Speu	420	2,342	317	135	42	230	26	18	142	76	12	0
Kampong Thom	184	2,273	380	70	34	339	40	9	49	8	0	0
Kampot	94	2,408	588	132	12	292	94	19	40	22	7	0
Kandal	212	5,132	819	245	40	738	106	24	32	75	9	0
Kep	5	62	42	18	1	12	2	1	3	0	0	0
Koh Kong	53	195	40	24	1	18	0	0	10	8	2	0
Kratie	197	1,205	189	53	23	211	18	2	56	18	1	0
Mondulkiri	49	41	5	4	4	2	0	0	5	5	1	0
Pailin	29	12	6	1	0	0	0	0	0	0	0	0
Phnom Penh	202	3,614	1,418	930	139	776	277	76	41	71	15	1
Preah Vihear	342	173	13	10	37	24	0	1	36	4	0	0
Prey Veng	328	4,627	474	126	56	636	70	11	39	81	8	0
Pursat	51	1,561	322	55	18	231	31	3	11	17	0	0
Ratanakiri	133	79	10	8	7	7	0	0	17	17	0	0
Siem Reap	584	1,834	432	18	75	351	66	0	330	109	16	0
Sihanoukville	13	449	235	64	8	44	41	10	3	24	4	0
Steung Treng	220	137	28	12	25	3	0	0	20	0	0	0
Svay Rieng	186	2,300	292	51	41	339	43	7	45	14	6	0
Takeo	165	3,797	646	191	29	541	83	38	17	65	12	0
Whole Kingdom	4,700	46,232	8,336	2,636	840	7,422	1,213	276	1,195	991	130	1
- Urban Area	926	13,711	4,444	1,933	386	3,059	801	199	208	316	56	1
- Rural Area	3,105	30,842	3,718	700	433	4,246	408	77	735	602	68	0
- Remote Area	669	1,679	174	3	21	117	4	0	252	73	6	0

Table 18: School Staff with Special Functions

Province	Number of Schools with									Sec. Teachers at Primary		Literacy	Contracted
	Secretary	Librarian	Home.Eco.	Agri.	Sports	Arts	Surveillant	Guard	Others	Total	Female	Teachers	Teachers
Banteay Meanchey	53	35	12	16	25	13	14	31	24	74	13	13	113
Battambang	103	80	37	22	71	14	40	42	54	30	12	35	391
Kampong Cham	216	93	39	21	77	7	52	17	61	23	14	33	732
Kampong Chhnang	36	21	10	9	11	3	15	2	13	75	16	39	14
Kampong Speu	49	20	9	19	45	7	23	9	13	16	1	10	130
Kampong Thom	56	29	20	7	18	1	16	4	13	0	0	3	12
Kampot	48	26	15	13	20	6	27	1	11	29	14	31	116
Kandal	178	96	56	27	59	11	55	6	24	12	0	4	121
Kep	4	0	0	0	1	0	1	0	0	0	0	0	24
Koh Kong	6	13	1	0	6	0	2	0	0	14	4	1	24
Kratie	34	27	16	7	16	2	13	3	5	2	0	8	7
Mondulkiri	3	2	1	0	3	0	1	2	1	1	1	0	11
Pailin	0	0	0	0	0	0	0	0	0	0	0	0	0
Phnom Penh	117	93	63	25	63	50	28	43	46	35	10	7	5
Preah Vihear	6	3	2	2	1	0	5	1	2	1	1	9	10
Prey Veng	104	54	22	18	76	10	62	18	20	16	1	42	81
Pursat	36	22	8	7	17	5	13	8	12	54	8	33	14
Ratanakiri	8	2	0	0	1	0	2	0	1	11	5	0	16
Siem Reap	51	43	20	14	36	12	29	6	20	115	43	5	311
Sihanoukville	10	4	3	2	11	2	5	3	2	8	1	2	48
Steung Treng	9	7	2	0	3	0	3	3	1	1	0	1	6
Svay Rieng	73	24	13	22	40	14	29	17	10	19	1	4	84
Takeo	92	90	29	40	70	24	35	15	13	119	17	18	66
Whole Kingdom	1,292	784	378	271	670	181	470	231	346	655	162	298	2,336
- Urban Area	462	330	179	100	237	83	150	116	159	261	99	69	293
- Rural Area	803	445	198	169	422	94	309	112	183	354	59	211	1,656
- Remote Area	27	9	1	2	11	4	11	3	4	40	4	18	387

Table 19: Primary Teachers by Age, Sex, Service, Education and Training

Province	Age				Gender		Service				Education Level				w/o Pedag.
	< 30 yrs.	30 - 39	40 - 49	50+	Total	Female	< 5 yrs.	5 - 14	15 - 24	25+	Primary	L.Sec.	U.Sec.	Graduate	Training
Banteay Meanchey	1,168	496	509	160	2,333	619	529	1,301	485	18	342	1,806	184	1	240
Battambang	1,554	560	687	178	2,979	1,309	765	1,546	651	17	248	2,402	327	2	70
Kampong Cham	3,192	807	1,524	597	6,120	2,319	1,108	3,302	1,686	24	426	5,399	295	0	286
Kampong Chhnang	713	257	395	105	1,470	439	268	677	522	3	132	1,164	168	6	72
Kampong Speu	1,041	319	612	261	2,233	527	399	947	886	1	384	1,706	143	0	211
Kampong Thom	815	442	591	240	2,088	734	271	1,034	763	20	164	1,723	201	0	54
Kampot	1,027	373	643	277	2,320	817	419	990	905	6	90	1,981	249	0	63
Kandal	1,739	862	1,418	328	4,347	1,895	579	1,968	1,778	22	155	3,888	299	5	102
Kep	62	11	17	5	95	32	50	22	23	0	5	52	38	0	3
Koh Kong	151	53	43	11	258	42	77	137	44	0	52	164	39	3	20
Kratie	575	134	282	138	1,129	500	204	587	333	5	193	852	83	1	70
Mondulkiri	57	13	9	4	83	17	18	55	10	0	48	32	3	0	4
Pailin	26	3	8	2	39	14	22	13	3	1	29	9	1	0	0
Phnom Penh	1,715	823	605	135	3,278	2,408	786	1,745	674	73	152	2,445	601	80	111
Preah Vihear	171	116	125	21	433	114	26	238	169	0	331	96	6	0	32
Prey Veng	1,735	551	1,276	472	4,034	980	536	2,084	1,406	8	295	3,489	250	0	115
Pursat	776	301	268	105	1,450	437	261	810	376	3	46	1,233	171	0	23
Ratanakiri	108	61	28	6	203	46	35	122	46	0	130	65	8	0	34
Siem Reap	1,093	338	556	252	2,239	919	410	991	830	8	574	1,434	231	0	364
Sihanoukville	307	77	80	30	494	196	180	227	87	0	13	368	113	0	25
Steung Treng	204	48	53	26	331	97	68	189	72	2	210	93	28	0	15
Svay Rieng	797	331	589	308	2,025	426	333	852	835	5	174	1,651	200	0	59
Takeo	1,205	916	844	336	3,301	929	438	1,677	1,167	19	144	2,856	298	3	74
Whole Kingdom	20,231	7,892	11,162	3,997	43,282	15,816	7,782	21,514	13,751	235	4,337	34,908	3,936	101	2,047
- Urban Area	6,413	2,412	2,163	531	11,519	6,490	2,843	6,028	2,531	117	759	8,839	1,833	88	410
- Rural Area	12,855	5,118	8,241	3,093	29,307	9,027	4,534	14,444	10,218	111	2,916	24,436	1,944	11	1,307
- Remote Area	963	362	758	373	2,456	299	405	1,042	1,002	7	662	1,633	159	2	330

Table 20: Secondary Teachers by Specialized Subject

Province	Subject Specialized during Pedagogy Training													
	Khmer	Maths	Geog.	History	Physics	Chem.	Biology	Cevic	Philo.	English	French	Exact Sc.	Social Sc.	Others
Banteay Meanchey	95	93	38	16	29	31	36	8	2	14	7	108	82	9
Battambang	261	275	88	52	93	56	70	21	14	39	28	128	130	68
Kampong Cham	450	440	146	74	156	89	146	53	15	21	31	222	260	61
Kampong Chhnang	104	96	41	31	36	26	48	12	0	10	9	171	203	38
Kampong Speu	139	138	63	45	55	46	58	20	5	12	4	169	178	76
Kampong Thom	137	153	60	27	46	22	50	10	5	10	3	71	68	57
Kampot	154	158	59	38	60	39	52	23	12	23	15	115	145	25
Kandal	286	297	129	49	108	61	98	14	17	25	46	180	169	55
Kep	9	10	5	3	3	2	1	1	2	1	8	18	5	0
Koh Kong	9	10	4	5	5	3	5	1	2	1	0	0	0	0
Kratie	76	73	27	18	22	13	27	4	2	8	1	35	33	7
Mondulkiri	2	4	4	0	3	0	0	0	0	0	0	0	0	1
Pailin	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phnom Penh	430	508	154	101	202	147	186	20	51	51	18	139	157	40
Preah Vihear	12	9	5	3	3	2	4	0	0	1	4	14	17	0
Prey Veng	268	240	88	64	97	56	111	20	10	7	22	166	163	34
Pursat	44	40	13	10	13	11	16	5	1	5	4	93	75	7
Ratanakiri	5	5	2	2	3	2	2	1	1	0	0	0	0	0
Siem Reap	96	73	31	21	32	27	29	9	7	16	10	79	80	22
Sihanoukville	53	67	17	10	10	11	18	5	1	8	6	0	0	6
Steung Treng	3	2	0	0	1	1	1	3	1	0	0	3	3	0
Svay Rieng	108	108	46	25	41	22	40	27	7	15	28	100	95	34
Takeo	250	248	99	79	93	60	95	26	15	8	3	137	140	17
Whole Kingdom	2,991	3,047	1,119	673	1,111	727	1,093	283	170	275	247	1,948	2,003	557
- Urban Area	1,478	1,632	558	356	616	409	591	138	117	173	105	1,003	1,041	249
- Rural Area	1,498	1,404	558	316	491	316	499	145	52	101	141	945	961	307
- Remote Area	15	11	3	1	4	2	3	0	1	1	1	0	1	1

Table 21: Condition of School Buildings

Province	Total Number of		Concrete/Brick Structure		Wooden Structure		Bamboo Structure		Buildings Under		Buildings Without Good		
	Buildings	Rooms	Buildings	Rooms	Buildings	Rooms	Buildings	Rooms	Repair	Constrn.	Floor	Roof	Wall
Banteay Meanchey	716	2,263	113	432	592	1,809	11	22	32	36	299	96	187
Battambang	806	3,024	264	1,249	526	1,737	16	38	50	39	231	132	187
Kampong Cham	1,696	6,210	897	3,861	779	2,296	20	53	96	70	581	237	504
Kampong Chhnang	476	1,557	252	976	212	556	12	25	31	31	161	98	144
Kampong Speu	670	2,281	334	1,406	333	869	3	6	43	31	238	175	238
Kampong Thom	737	2,140	227	954	498	1,168	12	18	49	64	332	196	325
Kampot	543	2,022	290	1,243	245	763	8	16	51	44	229	156	199
Kandal	1,322	5,143	949	3,984	367	1,148	6	11	67	83	374	203	295
Kep	29	95	24	80	5	15	0	0	1	0	8	4	7
Koh Kong	76	242	28	113	47	128	1	1	7	2	30	16	29
Kratie	385	1,240	120	509	239	684	26	47	21	33	130	76	134
Mondulkiri	34	87	8	42	12	28	14	17	3	8	9	8	7
Pailin	14	43	8	30	6	13	0	0	0	0	1	0	4
Phnom Penh	586	2,963	443	2,403	142	556	1	4	25	24	152	94	110
Preah Vihear	183	379	11	29	126	287	46	63	31	6	55	50	66
Prey Veng	1,238	4,334	599	2,450	595	1,782	44	102	87	87	505	226	458
Pursat	366	1,382	97	465	260	899	9	18	16	16	113	106	132
Ratanakiri	87	244	27	122	39	95	21	27	3	11	8	6	9
Siem Reap	639	2,053	215	845	377	1,110	47	98	37	39	231	177	218
Sihanoukville	117	470	80	351	37	119	0	0	8	8	23	19	22
Steung Treng	107	301	23	91	64	182	20	28	16	12	18	14	26
Svay Rieng	584	1,882	319	1,187	240	645	25	50	34	36	208	119	202
Takeo	1,143	4,530	886	3,730	250	788	7	12	50	80	370	219	275
Whole Kingdom	12,554	44,885	6,214	26,552	5,991	17,677	349	656	758	760	4,306	2,427	3,778
- Urban Area	2,875	11,793	1,673	7,953	1,171	3,793	31	47	143	158	846	488	665
- Rural Area	8,777	30,495	4,306	17,677	4,251	12,391	220	427	534	536	3,132	1,728	2,788
- Remote Area	902	2,597	235	922	569	1,493	98	182	81	66	328	211	325

Table 22: Condition of Classrooms and Existence of Separate School Office and Library

Province	Number of Classrooms	Number of Classrooms			Classrooms Without Good			Classrooms Without				Schools with Separate	
		in Pagoda	Und.Repair	Und.Constr.	Floor	Roof	Wall	Desks	Chairs	Blk.board	Tchr.Table	Office	Library
Banteay Meanchey	2,160	62	105	151	859	294	577	407	424	171	457	87	20
Battambang	2,775	153	175	179	736	429	583	258	222	116	426	121	54
Kampong Cham	6,047	278	275	303	1,802	732	1,496	435	271	203	778	213	44
Kampong Chhnang	1,416	43	78	75	449	277	408	132	90	70	198	50	12
Kampong Speu	2,162	104	115	133	648	426	638	184	180	108	470	65	19
Kampong Thom	2,092	98	117	245	868	453	805	265	253	150	442	60	17
Kampot	1,945	179	111	200	751	507	657	182	176	91	306	70	14
Kandal	4,665	208	228	385	1,291	674	988	336	279	179	495	228	91
Kep	91	5	3	0	25	12	21	9	6	10	11	4	0
Koh Kong	242	5	22	9	79	46	75	19	36	27	44	9	4
Kratie	1,122	161	60	122	367	204	385	76	89	89	254	39	14
Mondulkiri	67	1	6	26	11	9	7	71	70	16	27	1	0
Pailin	36	7	0	0	3	0	10	4	4	7	7	0	0
Phnom Penh	2,768	90	119	128	669	365	511	232	253	151	270	96	69
Preah Vihear	376	0	46	23	96	76	107	28	36	24	62	8	1
Prey Veng	4,223	307	275	383	1,646	670	1,479	347	359	275	812	122	17
Pursat	1,306	23	50	73	353	337	416	82	99	54	220	46	14
Ratanakiri	236	2	14	30	26	16	26	166	194	26	41	4	1
Siem Reap	1,943	158	106	147	633	417	565	211	284	156	318	83	36
Sihanoukville	448	0	29	34	83	78	87	0	0	0	10	14	5
Steung Treng	295	17	22	39	47	32	68	108	113	30	89	15	10
Svay Rieng	1,800	77	95	160	559	299	541	221	223	186	421	84	15
Takeo	4,043	111	189	357	1,361	826	996	497	367	312	636	230	92
Whole Kingdom	42,258	2,089	2,240	3,202	13,362	7,179	11,446	4,270	4,028	2,451	6,794	1,649	549
- Urban Area	10,850	406	528	698	2,901	1,643	2,336	1,005	963	480	1,201	476	236
- Rural Area	28,816	1,508	1,534	2,250	9,549	5,007	8,239	2,879	2,616	1,744	4,982	1,132	310
- Remote Area	2,592	175	178	254	912	529	871	386	449	227	611	41	3

Table 23: School Space and Sports Facilities

Province	School Area (m^2)		Cl.room Area	Pre-School with	Schools with Sport Ground, Equipment and Teams / Player for							
	Land	Playground	per Student	Sport Facility	Volleyball	Football	Basketball	Climb.Ropes	Shotput	High Jump	Long Jump	Running
Banteay Meanchey	17,820	9,700	1.05	6	53	15	12	52	14	76	90	68
Battambang	14,558	6,820	1.04	7	104	20	19	63	30	103	119	93
Kampong Cham	11,899	9,005	1.03	6	131	26	26	86	28	166	177	156
Kampong Chhnang	21,238	14,604	1.04	8	90	26	8	22	10	112	119	87
Kampong Speu	21,047	11,011	0.98	2	105	36	10	31	9	79	103	83
Kampong Thom	15,764	8,398	1.06	0	75	15	7	66	19	150	156	130
Kampot	11,334	7,368	0.91	4	120	21	7	55	31	160	161	145
Kandal	15,303	9,162	1.12	6	152	9	20	90	49	205	210	200
Kep	13,680	4,692	0.82	0	7	3	0	8	0	15	15	10
Koh Kong	13,961	6,670	0.92	0	6	7	1	9	0	8	7	9
Kratie	14,274	7,827	1.24	2	47	13	14	38	12	62	73	60
Mondulkiri	11,337	4,468	1.11	0	1	0	0	0	0	2	3	2
Pailin	127,105	2,625	0.81	0	1	0	0	1	0	1	1	1
Phnom Penh	13,036	8,662	0.58	12	84	10	9	39	23	89	91	72
Preah Vihear	21,300	18,856	1.19	0	7	5	2	5	3	12	11	8
Prey Veng	13,709	7,298	1.15	3	193	50	19	97	38	190	205	175
Pursat	13,897	8,992	0.96	2	63	8	8	32	22	62	66	49
Ratanakiri	7,336	3,048	1.54	0	6	4	4	2	0	4	5	5
Siem Reap	12,184	7,376	0.87	6	60	23	14	54	13	112	137	98
Sihanoukville	13,373	5,474	0.88	1	20	5	7	3	2	17	18	16
Steung Treng	7,593	4,087	1.37	0	18	5	4	3	0	13	14	8
Svay Rieng	16,501	10,271	0.89	2	78	32	13	54	13	87	95	82
Takeo	20,481	12,927	1.28	13	243	32	16	93	32	236	242	220
Whole Kingdom	15,191	9,082	1.01	80	1,664	365	220	903	348	1,961	2,118	1,777
- Urban Area	20,961	12,371	0.87	45	362	95	50	187	107	410	435	338
- Rural Area	14,666	8,823	1.07	35	1,216	254	154	664	234	1,429	1,560	1,337
- Remote Area	9,683	5,469	1.04	0	86	16	16	52	7	122	123	102

Table 24: Community Participation and Financing

Province	Parent Association			Commu.	Teaching	Contributions (Riel)		Number of Schools Obtaining Funds from				
	Exists	Held Meet.	Members	Teachers	Monks	per Student	per School	Sch. Income	Community	Government	Abroad	IOs/NGOs
Banteay Meanchey	246	233	6	55	4	1,939	767,636	14	25	3	10	16
Battambang	301	271	5	41	3	3,508	1,507,248	16	42	10	17	42
Kampong Cham	487	450	43	29	2	2,057	988,729	18	41	11	7	15
Kampong Chhnang	154	142	18	4	0	1,747	612,846	15	29	8	2	11
Kampong Speu	130	124	23	36	3	1,603	703,102	8	8	6	2	9
Kampong Thom	295	279	8	5	0	1,336	450,427	20	29	9	5	25
Kampot	190	187	123	5	2	1,640	746,609	8	17	6	4	11
Kandal	244	224	46	11	3	2,118	1,055,023	19	31	6	3	20
Kep	18	18	6	0	0	1,337	412,863	0	1	1	0	1
Koh Kong	2	2	7	3	1	2,463	1,116,881	1	2	0	0	2
Kratie	142	134	9	0	1	1,189	343,859	3	14	2	3	4
Mondulkiri	3	2	4	3	0	94	13,000	0	0	0	0	2
Pailin	4	0	0	0	0	0	0	0	0	0	0	0
Phnom Penh	109	99	72	0	0	2,883	4,165,212	3	33	5	3	14
Preah Vihear	30	29	11	0	0	751	260,635	0	0	0	0	0
Prey Veng	347	331	79	13	22	870	314,998	32	35	16	5	20
Pursat	164	157	7	1	0	1,112	394,882	8	16	2	0	3
Ratanakiri	9	9	41	8	0	1,149	279,100	0	0	1	0	3
Siem Reap	236	229	18	11	11	2,913	1,085,918	20	14	8	2	22
Sihanoukville	32	31	7	3	0	2,412	1,568,174	4	4	2	1	0
Steung Treng	40	37	17	1	0	1,829	765,007	1	2	0	1	9
Svay Rieng	189	183	85	4	6	718	294,635	12	57	11	3	19
Takeo	344	336	52	9	6	1,822	894,295	61	56	29	21	42
Whole Kingdom	3,716	3,507	39	242	64	1,986	904,697	263	456	136	89	290
- Urban Area	690	657	37	19	3	3,172	2,391,306	55	100	29	21	71
- Rural Area	2,720	2,571	41	164	40	1,431	562,046	202	334	101	64	204
- Remote Area	306	279	24	59	21	727	179,786	6	22	6	4	15

Table 25: Educational Staff in Province and District Offices and Schools

Province	Director of the Provincial Education Service	Provincial Edn. Service		District Edn. Office		Teaching Staff at Schools		Non-Tch. Staff at Schools		Total Staff	
		Total	Female	Total	Female	Total	Female	Total	Female	Total	Female
Banteay Meanchey	Pin Oknha	55	9	93	12	2,894	793	527	97	3,569	911
Battambang	Khoun Chhoeut	106	31	128	28	4,451	1,885	775	214	5,460	2,158
Kampong Cham	Huot Norn	55	9	189	36	8,384	3,072	1,633	451	10,261	3,568
Kampong Chhnang	Nuth Sem	76	30	78	17	2,064	650	314	94	2,532	791
Kampong Speu	Sun Samban	58	7	84	10	3,214	763	316	50	3,672	830
Kampong Thom	Chin Vanthan	48	3	94	19	2,907	1,016	422	113	3,471	1,151
Kampot	Nguon Hoeung	63	18	94	12	3,222	1,135	417	95	3,796	1,260
Kandal	Top San	88	20	149	26	6,408	2,553	908	228	7,553	2,827
Kep	Nguon Bean	20	5	6	2	127	41	16	3	169	51
Koh Kong	Khuon Nuon	20	3	23	1	312	53	19	2	374	59
Kratie	Mao Thong	39	10	54	14	1,644	709	254	66	1,991	799
Mondulkiri	Chum Valy	31	5	32	5	99	22	6	1	168	33
Pailin	Nuon Nim	0	0	0	0	48	18	0	0	48	18
Phnom Penh	Oum Hoeung	115	36	76	22	6,164	3,738	1,268	596	7,623	4,392
Preah Vihear	Ros Syphan	27	8	44	5	538	150	62	16	671	179
Prey Veng	Chhuon Soeun	110	35	167	20	5,555	1,437	773	126	6,605	1,618
Pursat	Theam Lim Ieng	63	14	71	15	1,989	603	283	52	2,406	684
Ratanakiri	Phann Phirun	32	9	18	2	230	50	14	3	294	64
Siem Reap	To Kim Sean	130	37	134	16	2,868	1,155	492	183	3,624	1,391
Sihanoukville	Ngin Meng	41	12	23	1	761	272	103	38	928	323
Steung Treng	Noy Sokhann	20	6	10	1	397	109	28	5	455	121
Svay Rieng	Sao Leng	59	9	86	10	2,829	612	430	62	3,404	693
Takeo	Hak Sengly	84	26	115	13	4,799	1,301	691	88	5,689	1,428
Whole Kingdom		1,340	342	1,768	287	61,904	22,137	9,751	2,583	74,763	25,349
- Urban Area		0	0	0	0	21,014	10,117	4,445	1,730	25,459	11,847
- Rural Area		0	0	0	0	38,365	11,703	5,164	849	43,529	12,552
- Remote Area		0	0	0	0	2,525	317	142	4	2,667	321

Table 26: School-Going Age Population and Respective Sex-Ratios

Province	Aged 6		Aged 6-11		Aged 12-14		Aged 15-17		Sex-Ratio of Population			
	Total	Girl	Total	Girl	Total	Girl	Total	Girl	Aged 6	6-11	12-14	15-17
Banteay Meanchey	20,979	10,533	122,435	60,729	52,405	25,911	47,447	24,193	99.2	101.6	102.3	96.1
Battambang	30,026	14,423	173,979	84,139	79,527	38,803	56,381	28,781	108.2	106.8	105.0	95.9
Kampong Cham	55,040	27,689	349,877	173,511	138,787	69,233	126,975	63,123	98.8	101.6	100.5	101.2
Kampong Chhnang	14,701	7,127	86,433	42,591	40,030	20,912	32,830	15,983	106.3	102.9	91.4	105.4
Kampong Speu	21,322	10,385	117,745	57,655	53,923	27,519	47,512	23,575	105.3	104.2	95.9	101.5
Kampong Thom	19,317	9,504	109,042	54,076	46,774	23,126	43,066	21,584	103.3	101.6	102.3	99.5
Kampot	19,076	9,440	119,917	57,066	43,125	21,488	32,404	16,276	102.1	110.1	100.7	99.1
Kandal	35,986	17,322	210,334	102,954	85,872	41,566	80,582	39,984	107.7	104.3	106.6	101.5
Kep	962	469	5,792	2,849	2,483	1,145	2,196	1,135	105.1	103.3	116.9	93.5
Koh Kong	3,855	1,799	21,154	10,061	8,429	4,036	8,206	3,982	114.3	110.3	108.8	106.1
Kratie	7,651	3,811	44,047	22,793	19,909	9,721	19,587	9,888	100.8	93.2	104.8	98.1
Mondulkiri	799	381	3,765	1,777	1,512	821	1,788	1,048	109.7	111.9	84.2	70.6
Pailin	1,293	588	7,039	3,221	2,865	1,370	2,621	1,236	119.9	118.5	109.1	112.1
Phnom Penh	21,701	10,323	149,228	75,372	72,705	36,260	96,112	49,528	110.2	98.0	100.5	94.1
Preah Vihear	3,475	1,706	19,003	9,190	8,164	3,890	7,309	3,689	103.7	106.8	109.9	98.1
Prey Veng	29,890	14,988	193,061	93,445	81,732	40,110	73,668	36,624	99.4	106.6	103.8	101.1
Pursat	12,426	6,067	69,309	33,504	27,325	12,939	17,738	9,111	104.8	106.9	111.2	94.7
Ratanakiri	2,931	1,339	14,537	6,681	5,970	2,917	6,802	3,489	118.9	117.6	104.7	95.0
Siem Reap	25,297	12,373	134,351	66,482	53,772	27,742	65,149	30,805	104.5	102.1	93.8	111.5
Sihanoukville	5,456	2,837	35,663	18,271	17,886	9,265	16,234	9,245	92.3	95.2	93.0	75.6
Steung Treng	3,177	1,667	18,528	9,554	8,490	4,145	8,396	4,050	90.6	93.9	104.8	107.3
Svay Rieng	16,371	7,812	97,586	47,392	40,727	19,541	36,116	18,245	109.6	105.9	108.4	98.0
Takeo	29,050	14,484	175,743	83,534	73,598	34,001	87,887	32,656	100.6	110.4	116.5	169.1
Whole Kingdom	380,781	187,067	2,278,568	1,116,847	966,010	476,461	917,006	448,230	103.6	104.0	102.7	104.6
- Urban Areas	84,356	41,307	537,114	265,235	249,784	122,996	255,752	127,590	104.2	102.5	103.1	100.4
- Rural Areas	248,490	122,237	1,470,264	719,050	604,016	298,328	553,765	267,505	103.3	104.5	102.5	107.0
- Remote Areas	47,935	23,523	271,190	132,562	112,210	55,137	107,489	53,135	103.8	104.6	103.5	102.3

Table 1: Indicators on Schools

Particulars	Pupils per School	Teachers per School	Staff per School	Buildings per School	Rooms per School	Classrooms per School	Classes per School	Percentage of Schools			
								2 - shift	in Pagoda	w/o Water	w/o Latrine
Whole Kingdom	374.7	9.8	11.4	2.0	7.1	6.7	8.6	44.0	22.1	73.3	72.2
By Area of Location:											
- Urban Area	644.6	19.3	23.4	2.6	10.8	10.0	14.3	51.2	14.7	59.8	48.3
- Rural Area	335.7	8.5	9.6	1.9	6.7	6.4	7.9	43.6	23.7	74.2	74.9
- Remote Area	198.6	3.8	4.0	1.4	3.9	3.9	4.6	34.6	23.2	89.2	93.3
By Type of School & Edn. Level:											
- Pre-School	54.7	2.3	2.5	0.6	1.8	1.7	1.8	0.0	28.0	60.3	73.3
- Primary School	400.3	8.6	9.6	2.0	7.0	6.7	9.0	52.3	22.7	78.0	75.7
- College	378.9	24.0	30.1	3.1	13.1	11.0	10.3	24.6	7.1	49.7	39.7
- Lycee	1,362.6	67.5	85.5	6.1	31.0	27.5	31.9	40.8	1.6	32.8	15.2
- Lower Secondary Level	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
- Upper Secondary Level	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Characteristics of Primary Schools:											
- Cluster - core school	783.4	16.8	19.8	3.2	12.3	11.4	16.9	73.9	23.8	62.6	54.0
- Cluster - satellite school	336.4	7.2	8.0	1.8	6.1	5.9	7.7	48.8	22.5	80.6	79.4
- School not in cluster	214.8	5.6	5.6	1.4	4.8	4.8	5.2	20.0	40.0	100.0	100.0
- Annex school	157.1	3.2	3.3	1.2	3.3	3.3	3.7	31.1	20.5	89.1	90.7
- School in Pagoda	408.9	8.7	9.7	2.1	7.3	7.0	9.3	53.9	100.0	75.7	76.1
Disadvantaged school (All Level)	240.6	5.5	5.9	1.5	4.2	4.0	5.6	42.9	21.9	100.0	100.0

EDUCATION

INDICATORS

Table 3: Indicators on Primary Schools by Province

Province	Pupils per School	Teachers per School	Staff per School	Buildings per School	Rooms per School	Classrooms per School	Classes per School	Percentage of Schools			
								2 - shift	in Pagoda	w/o Water	w/o Latrine
Banteay Meanchey	350.5	7.4	8.5	2.0	6.3	6.1	7.7	48.1	6.4	85.7	76.1
Battambang	446.0	9.4	10.9	2.0	7.3	6.8	10.3	76.9	12.3	71.5	60.4
Kampong Cham	406.0	8.8	10.3	2.0	7.3	7.1	9.8	56.1	20.3	78.6	81.8
Kampong Chhnang	349.0	7.2	7.9	1.9	5.9	5.7	7.4	42.9	18.7	60.6	63.5
Kampong Speu	469.4	9.5	10.1	2.3	7.7	7.6	10.3	56.4	17.1	77.8	72.6
Kampong Thom	243.3	5.3	5.8	1.6	4.4	4.4	5.4	38.9	13.6	90.0	88.2
Kampot	453.8	9.8	10.6	1.9	6.8	6.6	10.5	77.1	61.0	63.6	78.4
Kandal	533.9	11.2	12.5	2.6	9.9	9.2	11.8	66.0	33.2	78.4	63.9
Kep	368.1	6.8	7.4	1.6	5.2	5.0	9.1	92.9	42.9	57.1	71.4
Koh Kong	220.4	4.2	4.4	1.1	3.6	3.6	5.0	41.9	4.8	96.8	90.3
Kratie	232.7	6.0	6.6	1.6	5.1	4.8	6.1	40.2	24.3	83.1	89.4
Mondulkiri	106.7	3.1	3.3	1.1	2.3	2.1	2.9	29.6	3.7	92.6	96.3
Pailin	340.0	5.6	5.6	1.9	5.9	4.9	5.4	28.6	28.6	100.0	100.0
Phnom Penh	1,444.7	30.6	36.8	3.6	17.3	15.6	28.1	80.4	25.2	59.8	19.6
Preah Vihear	178.0	4.6	4.9	1.7	3.5	3.5	4.9	17.9	1.1	96.8	96.8
Prey Veng	380.8	8.7	9.5	2.2	7.2	7.2	8.9	40.7	35.7	84.2	82.9
Pursat	345.0	8.0	8.8	1.7	6.2	6.1	8.1	50.8	4.4	84.0	70.7
Ratanakiri	93.3	2.6	2.8	1.1	2.9	2.9	3.0	24.7	6.5	96.1	97.4
Siem Reap	322.6	6.6	7.5	1.6	5.1	5.0	7.3	56.9	15.0	80.8	82.6
Sihanoukville	628.2	12.0	13.0	2.1	8.5	8.3	13.5	68.3	14.6	82.9	65.9
Steung Treng	132.7	3.8	4.0	1.1	3.1	3.1	4.0	26.1	14.8	81.8	84.1
Svay Rieng	415.0	8.7	9.5	2.1	6.1	6.1	8.7	63.5	27.0	67.4	75.5
Takeo	488.6	10.0	11.1	2.7	10.7	9.8	10.7	36.2	42.2	62.6	63.5
Whole Kingdom	400.3	8.6	9.6	2.0	7.0	6.7	9.0	52.3	22.7	78.0	75.7
- Urban Area	724.5	16.2	19.0	2.7	10.7	9.9	15.6	68.3	16.9	66.8	52.1
- Rural Area	372.6	8.0	8.8	2.0	6.8	6.6	8.5	52.2	23.7	78.2	77.1
- Remote Area	202.2	3.8	4.0	1.4	3.9	3.9	4.7	35.6	23.1	89.5	93.7

Table 2: Indicators on Schools by Province

Province	Pupils per School	Teachers per School	Staff per School	Buildings per School	Rooms per School	Classrooms per School	Classes per School	Percentage of Schools			
								2 - shift	in Pagoda	w.o Water	w.o Latrine
Banteay Meanchey	342.2	8.1	9.6	2.0	6.3	6.1	7.6	45.4	5.9	82.6	73.9
Battambang	384.0	10.4	12.2	1.9	7.0	6.5	9.2	59.5	12.8	67.7	57.9
Kampong Cham	385.7	10.0	12.0	2.0	7.4	7.2	9.4	48.4	19.2	75.2	78.2
Kampong Chhnang	321.4	8.4	9.6	1.9	6.3	5.7	7.1	35.6	17.0	55.9	62.3
Kampong Speu	419.3	10.9	11.9	2.3	7.7	7.3	9.4	46.6	15.9	72.6	69.6
Kampong Thom	243.4	6.5	7.4	1.6	4.8	4.7	5.5	34.9	13.4	85.7	85.0
Kampot	388.3	10.2	11.5	1.7	6.4	6.2	9.2	59.8	58.5	58.9	74.7
Kandal	460.4	11.9	13.6	2.5	9.6	8.7	10.5	50.3	31.7	75.4	62.0
Kep	308.9	6.7	7.5	1.5	5.0	4.8	7.7	73.7	36.8	52.6	68.4
Koh Kong	226.8	4.8	5.1	1.2	3.7	3.7	5.1	41.5	4.6	96.9	89.2
Kratie	221.5	7.1	8.3	1.7	5.4	4.9	5.9	33.9	27.0	77.8	87.4
Mondulkiri	108.5	3.4	3.6	1.2	3.0	2.3	3.0	27.6	3.4	89.7	93.1
Pailin	304.3	6.0	6.0	1.8	5.4	4.5	5.0	25.0	25.0	100.0	100.0
Phnom Penh	1,333.1	36.3	43.7	3.4	17.4	16.3	26.5	64.7	18.8	50.6	20.6
Preah Vihear	171.3	5.1	5.7	1.7	3.6	3.5	4.7	18.9	0.9	96.2	96.2
Prey Veng	335.5	9.2	10.5	2.0	7.2	7.0	8.2	32.9	32.3	78.6	80.6
Pursat	330.1	9.4	10.8	1.7	6.5	6.2	7.9	45.5	3.8	79.6	65.9
Ratanakiri	98.6	2.9	3.1	1.1	3.1	3.0	3.1	25.3	6.3	94.9	96.2
Siem Reap	320.4	7.6	8.9	1.7	5.4	5.1	7.4	53.0	15.3	76.3	79.7
Sihanoukville	559.7	13.8	15.7	2.1	8.5	8.1	12.2	54.5	16.4	78.2	63.6
Steung Treng	139.8	4.3	4.6	1.2	3.3	3.2	4.1	26.1	14.1	79.3	81.5
Svay Rieng	372.9	9.5	10.9	2.0	6.3	6.0	8.1	51.7	22.1	61.1	73.2
Takeo	389.0	9.9	11.3	2.4	9.4	8.4	8.8	25.0	38.6	61.0	61.0
Whole Kingdom	374.7	9.8	11.4	2.0	7.1	6.7	8.6	44.0	22.1	73.3	72.2
- Urban Area	644.6	19.3	23.4	2.6	10.8	10.0	14.3	51.2	14.7	59.8	48.3
- Rural Area	335.7	8.5	9.6	1.9	6.7	6.4	7.9	43.6	23.7	74.2	74.9
- Remote Area	198.6	3.8	4.0	1.4	3.9	3.9	4.6	34.6	23.2	89.2	93.3

Table 4: Indicators on Secondary Schools by Province

Province	Pupils per School	Teachers per School	Staff per School	Buildings per School	Rooms per School	Classrooms per School	Classes per School	Percentage of Schools			
								2 - shift	in Pagoda	w/o Water	w/o Latrine
Banteay Meanchey	554.0	25.4	33.7	2.7	12.0	10.9	13.2	55.0	0.0	40.0	55.0
Battambang	517.1	33.1	40.6	3.1	14.4	12.7	14.1	32.5	5.0	55.0	80.0
Kampong Cham	696.7	40.0	51.8	4.6	20.4	19.3	18.5	28.8	3.8	63.5	76.9
Kampong Chhnang	535.7	41.6	54.8	5.5	22.5	14.5	14.2	8.3	0.0	75.0	91.7
Kampong Speu	410.4	29.4	35.4	3.5	13.6	10.8	10.4	19.4	3.2	54.8	58.1
Kampong Thom	615.7	38.9	51.3	4.2	19.7	17.2	16.3	22.2	0.0	50.0	72.2
Kampot	535.7	35.1	45.2	3.3	15.0	13.1	13.7	30.4	17.4	47.8	60.9
Kandal	594.1	32.7	39.9	4.6	19.9	16.3	15.4	24.1	12.1	48.3	75.9
Kep	295.5	14.5	18.5	2.5	9.5	9.0	8.0	50.0	0.0	50.0	0.0
Koh Kong	517.5	26.5	29.0	2.5	9.0	8.5	11.0	50.0	0.0	0.0	50.0
Kratie	402.2	32.2	41.1	4.4	16.8	12.3	11.1	14.3	21.4	35.7	35.7
Mondulkiri	205.0	15.0	16.0	3.0	23.0	9.0	8.0	0.0	0.0	100.0	100.0
Pailin	54.0	9.0	9.0	1.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0
Phnom Penh	2,554.0	98.6	119.3	5.7	35.0	36.0	50.7	88.9	0.0	55.6	88.9
Preah Vihear	140.6	13.0	16.7	2.4	6.3	4.7	4.3	42.9	0.0	14.3	14.3
Prey Veng	365.5	22.1	28.8	3.1	13.9	12.3	11.0	17.7	4.8	54.8	41.9
Pursat	470.5	37.3	47.6	3.6	17.1	12.5	12.8	30.8	0.0	46.2	84.6
Ratanakiri	517.0	25.0	26.0	3.0	18.0	13.0	13.0	100.0	0.0	100.0	100.0
Siem Reap	555.6	29.3	38.9	3.4	13.7	11.0	13.4	42.1	5.3	52.6	57.9
Sihanoukville	914.2	49.2	61.0	4.6	22.2	19.0	21.4	40.0	0.0	60.0	80.0
Steung Treng	369.3	19.7	21.3	2.3	8.0	7.3	9.7	33.3	0.0	66.7	100.0
Svay Rieng	566.4	31.4	41.8	4.0	17.2	14.8	14.6	26.1	0.0	82.6	65.2
Takeo	535.1	32.3	40.8	4.3	20.5	16.1	15.0	4.9	9.8	61.0	75.6
Whole Kingdom	637.8	35.4	44.7	3.9	17.8	15.3	16.0	28.8	5.7	54.7	66.7
- Urban Area	1,131.5	56.7	72.0	4.9	23.9	21.7	26.1	47.7	3.3	58.2	80.4
- Rural Area	410.9	25.8	32.3	3.5	15.1	12.5	11.3	20.4	6.7	53.8	60.8
- Remote Area	100.4	7.0	8.9	1.4	5.6	4.8	3.5	0.0	12.5	25.0	37.5

Table 5: Indicators on Students and Staff

Particulars	Pupil Teacher Ratio	Pupil Staff Ratio	Pupil Class Ratio	Pupil Classroom Ratio	Classes per Classroom	Classroom Area (m2) per Pupil	Percentage of		Percentage of Female in	
							Non-teaching Staff	Female Staff	Teaching Staff	Non-teaching Staff
Whole Kingdom	38.1	32.9	43.3	55.8	1.3	1.0	13.6	34.5	35.8	26.5
By Area of Location:										
- Urban Area	33.4	27.6	45.1	64.8	1.4	0.9	17.5	46.5	48.1	38.9
- Rural Area	39.7	35.0	42.6	52.9	1.2	1.1	11.9	28.8	30.5	16.4
- Remote Area	52.5	49.7	42.7	51.1	1.2	1.0	5.3	12.0	12.6	2.8
By Type of School & Edn. Level:										
- Pre-School	24.1	22.0	31.1	31.7	1.0	1.7	8.6	98.3	98.9	91.7
- Primary School	46.5	41.5	44.3	59.9	1.4	0.9	10.7	34.9	36.5	21.2
- College	15.8	12.6	36.9	34.5	0.9	1.8	20.4	26.0	26.2	25.5
- Lycee	20.2	15.9	42.8	49.6	1.2	1.1	21.1	29.2	27.8	34.6
- Lower Secondary Level	16.6	13.2	38.7	59.6	1.5	1.8	20.7	28.0	27.7	29.3
- Upper Secondary Level	24.5	19.3	44.7	21.5	0.5	1.1	21.0	25.9	23.7	34.2
Characteristics of Primary Schools:										
- Cluster - core school	46.6	39.7	46.2	68.7	1.5	0.9	14.8	40.7	43.7	23.7
- Cluster - satellite school	46.5	42.3	43.6	57.0	1.3	1.0	9.0	32.5	33.8	19.6
- School not in cluster	38.4	38.4	41.3	44.8	1.1	1.1	0.0	39.3	39.3	0.0
- Annex school	49.2	47.3	42.0	47.5	1.1	1.1	3.9	23.2	23.5	14.8
- School in Pagoda	46.8	42.3	43.8	58.2	1.3	0.9	9.6	33.3	35.0	17.4
Disadvantaged school (All Level)	44.1	40.9	42.7	60.4	1.4	0.9	7.3	27.3	28.4	12.6

Table 6: Indicators on Students and Staff by Province

Province	Pupil Teacher Ratio	Pupil Staff Ratio	Pupil Class Ratio	Pupil Classroom Ratio	Classes per Classroom	Classroom Area (m2) per Pupil	Percentage of Total Students in				Percentage of	
							Pre-school	Primary	Lower Secondary	Upper Secondary	Non-tching Staff	Female Staff
Banteay Meanchey	42.2	35.7	44.9	56.6	1.3	1.0	0.8	90.1	7.0	2.0	15.4	26.0
Battambang	37.1	31.6	41.9	59.5	1.4	1.0	2.1	85.4	9.4	3.1	14.8	40.2
Kampong Cham	38.4	32.2	40.9	53.3	1.3	1.0	1.4	87.3	9.0	2.3	16.3	35.2
Kampong Chhnang	38.5	33.4	45.3	56.1	1.2	1.0	2.6	89.3	6.4	1.7	13.2	31.3
Kampong Speu	38.6	35.2	44.8	57.4	1.3	1.0	1.2	88.5	8.7	1.6	9.0	23.0
Kampong Thom	37.4	32.7	44.2	52.0	1.2	1.1	2.4	87.4	7.9	2.3	12.7	33.9
Kampot	38.1	33.7	42.4	63.1	1.5	0.9	2.7	87.3	8.1	2.0	11.5	33.8
Kandal	38.6	33.8	43.9	53.0	1.2	1.1	2.3	83.8	10.7	3.2	12.4	38.0
Kep	46.2	41.0	40.2	64.5	1.6	0.8	2.1	87.8	8.5	1.5	11.2	30.8
Koh Kong	47.3	44.5	44.5	60.9	1.4	0.9	0.3	92.7	5.7	1.3	5.7	16.6
Kratie	31.0	26.8	37.5	45.4	1.2	1.2	2.6	86.3	9.4	1.7	13.4	40.8
Mondulkiri	31.8	30.0	36.2	47.0	1.3	1.1	1.9	91.6	5.3	1.2	5.7	21.9
Pailin	50.7	50.7	60.9	67.6	1.1	0.8	0.0	97.8	2.2	0.0	0.0	37.5
Phnom Penh	36.8	30.5	50.3	81.9	1.6	0.6	1.4	68.2	19.1	11.3	17.1	58.3
Preah Vihear	33.8	30.3	36.2	48.3	1.3	1.2	1.5	93.1	4.6	0.8	10.3	27.7
Prey Veng	36.5	32.0	41.1	48.0	1.2	1.1	2.0	86.8	9.4	1.7	12.2	24.7
Pursat	35.0	30.7	41.6	53.3	1.3	1.0	1.6	89.6	6.7	2.1	12.5	28.8
Ratanakiri	33.9	31.9	31.4	33.0	1.1	1.5	1.1	92.3	5.2	1.4	5.7	21.7
Siem Reap	42.3	36.1	43.4	62.5	1.4	0.9	1.3	90.1	6.4	2.3	14.6	39.8
Sihanoukville	40.5	35.6	45.7	68.7	1.5	0.9	1.5	83.7	10.7	4.1	11.9	35.9
Steung Treng	32.4	30.3	33.8	43.6	1.3	1.4	0.6	90.8	6.7	1.9	6.6	26.8
Svay Rieng	39.3	34.1	45.8	61.7	1.3	0.9	1.3	87.0	9.9	1.8	13.2	20.7
Takeo	39.2	34.3	44.0	46.6	1.1	1.3	3.0	85.4	9.3	2.3	12.6	25.3
Whole Kingdom	38.1	32.9	43.3	55.8	1.3	1.0	1.8	85.3	9.7	3.1	13.6	34.5
- Urban Area	33.4	27.6	45.1	64.8	1.4	0.9	2.2	73.2	16.5	8.1	17.5	46.5
- Rural Area	39.7	35.0	42.6	52.9	1.2	1.1	1.8	89.7	7.4	1.1	11.9	28.8
- Remote Area	52.5	49.7	42.7	51.1	1.2	1.0	0.3	99.1	0.6	0.0	5.3	12.0

Table 7: Indicators on Primary Students and Staff by Province

Province	Pupil Teacher Ratio	Pupil Staff Ratio	Pupil Class Ratio	Pupil Classroom Ratio	Classes per Classroom	Classroom Area (m2) per Pupil	Percentage of		Percentage of Female in	
							Non-teaching Staff	Female Staff	Teaching Staff	Non-teaching Staff
Banteay Meanchey	47.2	41.0	45.4	57.9	1.3	1.0	13.1	24.4	26.5	10.5
Battambang	47.3	41.0	43.4	66.0	1.5	0.9	13.3	40.8	43.9	20.4
Kampong Cham	46.0	39.4	41.6	57.2	1.4	1.0	14.2	35.9	37.9	23.5
Kampong Chhnang	48.2	44.0	47.1	60.8	1.3	0.9	8.8	28.7	29.9	16.9
Kampong Speu	49.2	46.7	45.7	61.7	1.3	0.9	5.1	22.8	23.6	7.4
Kampong Thom	45.6	41.7	45.4	55.7	1.2	1.0	8.5	33.5	35.2	15.5
Kampot	46.2	42.8	43.0	68.4	1.6	0.8	7.3	33.9	35.2	16.8
Kandal	47.7	42.9	45.1	58.3	1.3	1.0	10.0	41.2	43.6	20.2
Kep	54.2	50.0	40.6	73.6	1.8	0.8	7.8	32.0	33.7	12.5
Koh Kong	53.0	50.2	44.4	61.0	1.4	0.9	5.1	16.2	16.3	14.3
Kratie	39.0	35.1	37.9	48.5	1.3	1.1	10.0	41.5	44.3	16.8
Mondulkiri	34.7	32.8	36.9	50.6	1.4	1.0	5.7	20.5	20.5	20.0
Pailin	61.0	61.0	62.6	70.0	1.1	0.8	0.0	35.9	35.9	0.0
Phnom Penh	47.2	39.3	51.3	92.8	1.8	0.6	16.7	68.9	73.5	45.9
Preah Vihear	39.1	36.3	36.5	50.3	1.4	1.1	7.1	25.3	26.3	12.1
Prey Veng	43.6	40.1	42.8	52.8	1.2	1.0	8.0	23.0	24.3	8.2
Pursat	43.1	39.2	42.5	56.5	1.3	0.9	8.9	28.6	30.1	12.8
Ratanakiri	35.4	33.4	31.0	32.7	1.1	1.5	5.6	21.9	22.7	8.3
Siem Reap	48.8	43.1	44.0	65.0	1.5	0.8	11.8	39.6	41.0	29.1
Sihanoukville	52.1	48.1	46.6	75.5	1.6	0.7	7.7	39.6	39.7	39.0
Steung Treng	35.3	33.2	33.6	43.3	1.3	1.4	6.0	28.4	29.3	14.3
Svay Rieng	47.7	43.7	47.5	68.4	1.4	0.8	8.4	20.5	21.0	14.5
Takeo	48.7	44.2	45.8	49.9	1.1	1.2	9.3	26.3	28.1	8.5
Whole Kingdom	46.5	41.5	44.3	59.9	1.4	0.9	10.7	34.9	36.5	21.2
- Urban Area	44.7	38.1	46.4	73.3	1.6	0.8	14.6	53.4	56.3	36.3
- Rural Area	46.6	42.2	43.6	56.8	1.3	1.0	9.5	29.0	30.8	12.3
- Remote Area	53.4	50.8	42.9	51.6	1.2	1.0	4.9	11.7	12.2	3.1

Table 8: Indicators on Secondary Students and Staff by Province

Province	Pupil Teacher Ratio	Pupil Staff Ratio	Pupil Class Ratio	Pupil Classroom Ratio	Classes per Classroom	Classroom Area (m2) per Pupil	Percentage of		Percentage of Female in	
							Non-teaching Staff	Female Staff	Teaching Staff	Non-teaching Staff
Banteay Meanchey	21.9	16.5	42.1	50.8	1.2	1.3	24.7	25.6	23.7	31.3
Battambang	15.6	12.7	36.7	40.8	1.1	1.6	18.4	33.0	32.7	34.4
Kampong Cham	17.4	13.5	37.7	36.2	1.0	1.5	22.7	28.9	27.6	33.3
Kampong Chhnang	12.9	9.8	37.8	36.9	1.0	1.8	24.2	26.3	23.2	35.8
Kampong Speu	14.0	11.6	39.5	37.9	1.0	1.7	17.1	18.2	18.1	18.6
Kampong Thom	15.8	12.0	37.8	35.7	0.9	1.9	24.2	26.0	23.3	34.5
Kampot	15.2	11.9	39.2	40.8	1.0	1.5	22.2	27.5	27.7	26.8
Kandal	18.2	14.9	38.6	36.5	0.9	1.6	18.0	26.6	26.0	29.7
Kep	20.4	16.0	36.9	32.8	0.9	1.2	21.6	21.6	20.7	25.0
Koh Kong	19.5	17.8	47.0	60.9	1.3	0.9	8.6	17.2	18.9	0.0
Kratie	12.5	9.8	36.3	32.7	0.9	2.0	21.7	32.3	32.2	32.8
Mondulkiri	13.7	12.8	25.6	22.8	0.9	2.2	6.3	25.0	26.7	0.0
Pailin	6.0	6.0	27.0	27.0	1.0	2.1	0.0	44.4	44.4	0.0
Phnom Penh	25.9	21.4	50.4	70.9	1.4	0.4	17.4	42.3	41.8	44.5
Preah Vihear	10.8	8.4	32.8	29.8	0.9	2.7	22.2	26.5	24.2	34.6
Prey Veng	16.6	12.7	33.4	29.7	0.9	2.0	23.4	22.3	22.2	22.5
Pursat	12.6	9.9	36.6	37.5	1.0	1.6	21.6	22.3	23.1	19.4
Ratanakiri	20.7	19.9	39.8	39.8	1.0	1.6	3.8	11.5	8.0	100.0
Siem Reap	19.0	14.3	41.6	50.5	1.2	1.6	24.7	33.8	29.4	47.0
Sihanoukville	18.6	15.0	42.7	48.1	1.1	1.6	19.3	24.3	22.4	32.2
Steung Treng	18.8	17.3	38.2	50.4	1.3	1.1	7.8	9.4	8.5	20.0
Svay Rieng	18.0	13.6	38.9	38.2	1.0	1.8	24.9	14.2	14.5	13.0
Takeo	16.6	13.1	35.7	33.1	0.9	1.9	20.8	15.2	15.0	15.9
Whole Kingdom	18.0	14.3	40.0	41.6	1.0	1.4	20.8	27.6	27.0	30.2
- Urban Area	20.0	15.7	43.4	52.2	1.2	1.0	21.2	33.6	32.4	38.2
- Rural Area	15.9	12.7	36.2	32.8	0.9	1.9	20.2	21.3	21.3	21.2
- Remote Area	14.3	11.3	28.7	21.1	0.7	2.2	21.1	7.0	8.9	0.0

Table 9: Indicators on Enrollment by Province

Province	% Repeaters (Total)			% Over-age Enrollment (Total)			% Repeaters (Girl)			% Over-age Enrollment (Girl)		
	Primary	L.Sec.	U.Sec.	Primary	L.Sec.	U.Sec.	Primary	L.Sec.	U.Sec.	Primary	L.Sec.	U.Sec.
Banteay Meanchey	27.2	5.0	1.8	24.0	44.7	17.4	26.6	3.6	1.0	22.1	37.3	9.8
Battambang	21.9	10.5	2.3	19.9	40.2	23.9	20.9	7.5	0.7	18.8	34.9	19.5
Kampong Cham	26.2	9.6	3.4	9.1	30.1	18.0	25.2	6.8	2.4	8.3	24.8	13.6
Kampong Chhnang	28.5	4.9	1.5	7.2	27.5	15.8	27.3	3.7	0.0	5.9	25.3	10.6
Kampong Speu	26.5	8.6	1.0	12.2	34.8	18.5	26.2	5.5	0.4	10.9	26.2	10.6
Kampong Thom	25.6	9.1	2.5	12.9	27.0	13.2	25.1	7.5	1.8	11.9	22.2	8.1
Kampot	27.4	9.1	0.9	6.8	20.4	16.3	26.5	6.0	0.0	6.4	18.3	13.5
Kandal	28.7	11.2	1.3	12.3	31.9	15.0	27.1	7.9	0.7	11.2	25.0	9.8
Kep	23.2	2.4	1.1	6.0	13.8	2.2	24.5	2.6	3.6	5.5	10.3	0.0
Koh Kong	26.8	10.4	0.0	12.8	41.8	18.8	28.9	7.7	0.0	11.6	34.1	8.5
Kratie	32.2	7.6	0.2	11.4	31.8	29.2	30.9	6.0	0.0	10.7	28.2	20.1
Mondulkiri	39.8	5.4	0.0	11.4	34.9	20.5	38.0	8.0	0.0	10.0	48.0	8.3
Pailin	0.0	0.0	0.0	11.1	75.9	0.0	0.0	0.0	0.0	10.1	70.6	0.0
Phnom Penh	19.7	10.3	3.3	11.1	29.1	13.0	18.7	7.0	2.3	10.2	25.7	11.1
Preah Vihear	40.9	8.2	2.8	14.1	43.6	33.6	41.1	5.1	2.7	13.4	29.2	13.5
Prey Veng	27.0	5.6	1.4	8.8	28.7	19.3	26.8	3.7	0.5	7.5	23.7	11.1
Pursat	25.9	10.6	1.1	5.8	40.3	13.8	25.2	6.6	0.0	5.0	33.6	5.0
Ratanakiri	31.1	10.3	8.1	20.0	48.8	32.4	29.3	5.1	15.2	17.5	31.6	24.2
Siem Reap	26.5	10.7	5.4	15.5	28.9	18.6	26.1	8.3	4.4	14.2	22.2	10.4
Sihanoukville	27.0	10.2	1.9	8.4	25.5	10.8	24.7	5.0	0.9	8.1	20.3	9.4
Steung Treng	35.4	20.7	2.4	12.6	33.8	12.1	35.1	16.8	0.0	11.6	32.5	12.2
Svay Rieng	28.4	7.3	2.2	7.9	22.5	15.0	28.0	3.9	0.4	7.0	18.3	8.6
Takeo	25.8	3.7	0.8	11.3	37.4	17.6	24.4	2.1	0.6	10.1	32.0	11.5
Whole Kingdom	26.3	8.8	2.5	11.8	31.3	16.0	25.4	6.2	1.6	10.8	26.3	11.7
- Urban Area	22.5	9.2	2.8	13.4	31.9	15.5	21.3	6.4	1.8	12.3	27.0	11.7
- Rural Area	27.4	8.3	1.5	11.3	30.6	17.6	26.5	5.9	0.9	10.3	25.3	11.7
- Remote Area	29.9	3.9	0.0	10.9	42.6	0.0	30.5	4.7	0.0	9.8	38.0	0.0

Table 10: Indicators on Access and Equity by Province

Province	Gross Admission Rate		Net Admission Rate		% Over-age (6+) Admission		Transition Rate to Lower Sec.		Transition Rate to Upper Sec.	
	Total	Girl	Total	Girl	Total	Girl	Total	Girl	Total	Girl
Banteay Meanchey	106.5	100.9	39.8	38.1	62.6	62.3	62.5	58.9	41.4	41.9
Battambang	97.3	96.8	41.2	40.7	57.7	57.9	74.2	70.6	34.4	37.7
Kampong Cham	95.4	89.6	63.2	59.7	33.8	33.3	66.5	62.0	28.7	28.2
Kampong Chhnang	92.0	89.7	66.9	65.9	27.2	26.6	74.6	70.5	43.2	43.4
Kampong Speu	102.7	97.1	56.4	54.2	45.0	44.2	72.6	63.9	26.5	25.5
Kampong Thom	109.0	107.2	57.1	58.6	47.6	45.4	74.7	68.4	37.2	34.7
Kampot	97.5	92.3	75.1	72.2	23.0	21.8	68.6	64.2	31.9	32.4
Kandal	92.0	90.7	66.4	66.5	27.8	26.8	76.5	72.4	34.9	32.1
Kep	99.7	81.0	59.3	48.0	40.6	40.8	75.1	60.0	85.5	57.6
Koh Kong	99.4	94.9	47.6	47.0	52.1	50.5	56.4	46.1	42.3	45.6
Kratie	99.2	94.9	63.4	61.3	36.0	35.4	73.9	66.5	22.0	23.3
Mondulkiri	96.9	92.9	31.5	31.2	67.4	66.4	85.7	72.7	31.6	40.0
Pailin	107.4	101.9	20.3	20.2	81.1	80.1	n.a	n.a	n.a	n.a
Phnom Penh	112.2	112.1	82.0	81.7	26.9	27.1	88.8	81.9	59.1	63.3
Preah Vihear	94.1	90.7	40.8	39.9	56.6	56.0	83.6	78.5	27.0	24.6
Prey Veng	100.6	96.1	70.9	67.7	29.5	29.5	66.7	57.9	28.7	33.0
Pursat	103.9	99.5	81.8	79.5	21.2	20.1	61.1	61.1	31.6	36.1
Ratanakiri	82.2	69.9	27.8	26.7	66.1	61.8	58.3	56.6	29.7	32.4
Siem Reap	96.8	93.3	30.8	29.7	68.2	68.1	70.4	72.7	39.9	39.1
Sihanoukville	88.2	81.3	46.8	42.7	46.9	47.5	77.2	76.4	45.4	46.2
Steung Treng	79.1	71.3	46.2	42.0	41.6	41.1	43.0	36.3	16.8	17.0
Svay Rieng	94.0	92.3	68.9	67.9	26.7	26.4	71.7	60.4	34.3	36.3
Takeo	88.0	85.0	64.1	61.6	27.2	27.6	74.3	65.6	49.3	43.3
Whole Kingdom	97.9	94.2	59.8	58.0	38.9	38.4	71.9	66.3	38.8	40.7
- Urban Area	104.6	101.1	64.6	63.1	38.2	37.6	106.2	95.3	54.3	55.3
- Rural Area	101.0	97.3	63.6	61.8	37.1	36.5	60.5	54.8	21.5	20.5
- Remote Area	69.5	65.7	31.3	29.8	55.0	54.7	14.7	13.1	0.0	0.0

Table 11: Gross and Net Enrollment Ratios by Province

Province	Gross Enrollment Ratio (Total)			Net Enrollment Ratio (Total)			Gross Enrollment Ratio (Girl)			Net Enrollment Ratio (Girl)		
	Primary	L.Sec.	U.Sec.	Primary	L.Sec.	U.Sec.	Primary	L.Sec.	U.Sec.	Primary	L.Sec.	U.Sec.
Banteay Meanchey	89.9	16.4	5.3	68.3	9.1	4.3	83.1	11.7	3.2	64.7	7.3	2.9
Battambang	81.0	19.6	9.0	64.9	11.7	6.9	77.6	15.9	7.0	63.0	10.4	5.7
Kampong Cham	80.4	20.9	5.7	73.1	14.6	4.7	73.6	15.1	3.8	67.4	11.4	3.3
Kampong Chhnang	82.0	12.6	4.2	76.1	9.2	3.5	74.0	7.9	2.7	69.6	5.9	2.4
Kampong Speu	93.3	20.0	4.1	81.9	13.1	3.3	84.3	11.2	2.0	75.1	8.3	1.8
Kampong Thom	87.2	18.3	5.9	76.0	13.3	5.1	82.8	13.8	3.8	72.9	10.7	3.5
Kampot	89.3	23.0	7.4	83.2	18.3	6.2	84.3	15.5	4.4	78.9	12.7	3.8
Kandal	98.5	30.8	9.9	86.4	21.0	8.4	91.1	22.1	6.3	80.9	16.6	5.6
Kep	89.0	20.2	4.1	83.6	17.4	4.0	79.2	13.6	2.5	74.9	12.2	2.5
Koh Kong	64.6	10.0	2.3	56.3	5.8	1.9	60.5	6.5	1.5	53.5	4.3	1.4
Kratie	99.9	24.0	4.3	88.5	16.4	3.1	88.2	19.8	3.0	78.8	14.2	2.4
Mondulkiri	76.5	11.0	2.2	67.8	7.1	1.7	69.9	6.1	1.1	63.0	3.2	1.0
Pailin	33.8	1.9	0.0	30.0	0.5	0.0	30.1	1.2	0.0	27.0	0.4	0.0
Phnom Penh	103.6	59.5	26.7	92.1	42.2	23.3	94.3	49.0	21.5	84.7	36.4	19.1
Preah Vihear	89.0	10.3	2.0	76.4	5.8	1.3	83.6	8.0	1.0	72.4	5.7	0.9
Prey Veng	91.1	23.4	4.8	83.1	16.7	3.9	82.8	13.4	2.5	76.6	10.2	2.2
Pursat	90.1	17.0	8.2	84.9	10.2	7.1	82.4	11.7	5.4	78.3	7.8	5.2
Ratanakiri	49.4	6.8	1.6	39.6	3.5	1.1	38.5	4.0	0.9	31.8	2.7	0.7
Siem Reap	81.4	14.4	4.3	68.7	10.3	3.5	74.1	9.6	3.0	63.5	7.5	2.7
Sihanoukville	72.2	18.4	7.8	66.1	13.7	7.0	63.8	12.8	4.8	58.7	10.2	4.4
Steung Treng	63.0	10.1	2.9	55.1	6.7	2.6	55.3	7.0	2.0	49.0	4.8	1.8
Svay Rieng	99.1	27.1	5.5	91.3	21.0	4.7	89.8	15.9	2.7	83.5	12.9	2.4
Takeo	91.5	23.8	5.0	81.1	14.9	4.1	85.0	14.7	3.0	76.4	10.0	2.7
Whole Kingdom	88.3	23.7	8.1	77.8	16.3	6.8	81.2	16.8	5.7	72.4	12.4	5.0
- Urban Area	95.8	46.4	22.4	83.0	31.6	18.9	88.5	35.6	16.4	77.7	26.0	14.5
- Rural Area	92.9	18.6	3.0	82.4	12.9	2.5	85.4	12.0	1.7	76.5	9.0	1.5
- Remote Area	48.4	0.7	0.0	43.1	0.4	0.0	43.9	0.4	0.0	39.7	0.2	0.0

Table 12: Student Flow Rates (Grades 1-4)

Province	Grade 1			Grade 2			Grade 3			Grade 4		
	Promotion	Repetition	Dropout	Promotion	Repetition	Dropout	Promotion	Repetition	Dropout	Promotion	Repetition	Dropout
Banteay Meanchey	44.7	41.0	14.3	57.8	28.8	13.4	65.6	19.9	14.5	68.5	11.3	20.2
Battambang	52.7	37.6	9.7	63.9	21.9	14.2	68.4	14.7	16.9	71.1	9.3	19.6
Kampong Cham	47.6	38.9	13.6	57.6	27.7	14.6	65.0	21.8	13.1	68.2	13.6	18.2
Kampong Chhnang	44.0	44.4	11.6	57.8	30.1	12.1	65.2	19.2	15.5	71.4	11.9	16.7
Kampong Speu	45.0	42.0	13.0	58.6	24.8	16.6	63.7	16.9	19.4	67.1	13.1	19.8
Kampong Thom	41.6	38.9	19.5	53.9	23.8	22.2	65.3	16.6	18.2	68.1	11.5	20.4
Kampot	46.7	44.0	9.3	58.3	28.1	13.5	66.1	19.3	14.7	72.9	12.8	14.3
Kandal	46.7	46.0	7.3	58.5	30.9	10.6	65.4	22.3	12.4	70.8	14.6	14.6
Kep	50.6	40.0	9.4	65.7	21.9	12.4	76.2	12.4	11.5	72.2	10.2	17.7
Koh Kong	40.5	39.3	20.2	54.5	22.7	22.7	61.2	18.2	20.6	61.8	13.9	24.3
Kratie	45.6	50.3	4.1	51.1	32.0	16.9	57.1	26.3	16.6	65.5	15.6	18.9
Mondulkiri	19.5	50.2	30.3	51.7	35.6	12.7	85.2	19.5	n.a	66.7	22.2	11.1
Pailin	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Phnom Penh	57.5	33.9	8.5	67.9	23.0	9.1	75.6	16.2	8.1	78.4	11.2	10.4
Preah Vihear	30.7	56.9	12.5	43.5	34.3	22.1	54.7	20.0	25.2	65.3	13.9	20.8
Prey Veng	47.5	41.4	11.1	56.2	24.2	19.6	62.3	19.9	17.8	65.8	14.0	20.2
Pursat	43.0	39.3	17.7	54.9	23.8	21.4	62.6	16.0	21.3	67.2	10.0	22.8
Ratanakiri	32.1	44.3	23.6	30.5	25.6	43.9	51.5	14.8	33.7	66.8	7.4	25.8
Siem Reap	44.4	37.0	18.6	52.3	26.7	21.1	63.9	18.7	17.4	68.9	13.3	17.8
Sihanoukville	45.6	42.9	11.5	58.3	26.5	15.2	69.3	17.0	13.8	69.2	13.2	17.6
Steung Treng	34.2	48.2	17.6	44.1	31.7	24.2	54.7	26.6	18.7	62.8	13.6	23.6
Svay Rieng	47.2	43.8	9.1	57.9	28.7	13.3	64.5	20.5	14.9	66.2	13.9	19.9
Takeo	49.4	42.2	8.4	60.0	27.0	13.1	68.4	18.3	13.3	72.9	10.6	16.5
Whole Kingdom	46.9	41.2	11.9	58.1	26.7	15.2	65.9	19.2	14.9	70.0	12.6	17.4
- Urban Area	52.8	37.8	9.3	63.8	25.3	10.9	71.7	17.5	10.9	75.3	11.8	12.9
- Rural Area	45.9	42.1	12.0	57.0	27.4	15.6	64.2	20.0	15.7	68.1	12.9	19.0
- Remote Area	39.5	42.3	18.2	47.9	25.3	26.8	56.9	17.8	25.2	62.4	12.4	25.2

Table 13: Student Flow Rates (Grades 5-8)

Province	Grade 5			Grade 6			Grade 7			Grade 8		
	Promotion	Repetition	Dropout	Promotion	Repetition	Dropout	Promotion	Repetition	Dropout	Promotion	Repetition	Dropout
Banteay Meanchey	66.3	7.6	26.1	73.3	5.4	21.3	80.5	1.8	17.7	72.4	2.1	25.5
Battambang	75.1	6.7	18.2	80.3	2.9	16.8	72.0	3.0	24.9	74.0	2.6	23.4
Kampong Cham	69.0	7.6	23.4	65.4	4.3	30.3	77.3	2.1	20.6	75.5	2.3	22.2
Kampong Chhnang	72.4	5.0	22.6	87.1	5.1	7.8	81.7	1.7	16.6	81.3	1.6	17.1
Kampong Speu	70.3	8.1	21.6	78.4	6.3	15.3	80.0	1.8	18.3	77.6	1.5	20.9
Kampong Thom	70.8	6.4	22.9	79.3	2.6	18.1	77.7	1.6	20.7	77.9	3.3	18.8
Kampot	73.0	5.5	21.5	80.4	2.4	17.2	82.5	1.8	15.7	78.9	2.5	18.5
Kandal	75.2	9.6	15.2	77.9	3.5	18.6	79.2	3.7	17.1	77.9	3.5	18.6
Kep	79.9	8.6	11.5	69.2	0.6	30.2	73.4	0.0	26.6	74.0	0.0	26.0
Koh Kong	47.5	9.3	43.2	73.1	8.6	18.2	72.5	6.4	21.1	96.5	10.0	n.a
Kratie	68.6	7.3	24.1	81.4	5.8	12.7	82.1	2.7	15.2	77.7	2.0	20.3
Mondulkiri	49.5	29.9	20.6	85.7	0.0	14.3	98.5	4.6	n.a	77.8	0.0	22.2
Pailin	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Phnom Penh	79.8	7.6	12.7	n.a	4.5	n.a	83.2	6.0	10.8	91.1	3.4	5.5
Preah Vihear	78.1	9.1	12.9	61.4	2.7	35.9	77.4	1.0	21.6	92.6	1.3	6.1
Prey Veng	68.8	8.4	22.8	71.6	7.5	20.9	79.7	1.6	18.7	74.7	1.1	24.2
Pursat	65.4	7.3	27.2	76.6	3.9	19.5	67.9	1.8	30.3	78.9	2.0	19.1
Ratanakiri	59.6	7.5	33.0	58.3	11.0	30.7	83.6	0.0	16.4	n.a	0.0	n.a
Siem Reap	65.5	8.0	26.5	69.7	4.7	25.6	84.9	3.3	11.8	74.7	4.0	21.4
Sihanoukville	73.4	10.4	16.3	67.9	10.3	21.8	74.2	6.1	19.7	79.9	4.4	15.7
Steung Treng	55.0	11.3	33.6	69.6	5.2	25.2	77.4	2.2	20.3	78.2	6.4	15.3
Svay Rieng	68.4	8.2	23.3	72.8	2.4	24.8	83.3	2.0	14.6	84.0	2.1	13.9
Takeo	70.3	5.4	24.3	79.6	2.9	17.6	83.0	1.4	15.6	82.2	1.0	16.7
Whole Kingdom	71.3	7.5	21.1	77.6	4.4	18.0	80.0	3.1	16.9	80.0	2.5	17.5
- Urban Area	77.7	7.5	14.8	88.8	4.4	6.8	81.4	4.2	14.4	85.0	3.1	11.9
- Rural Area	69.1	7.5	23.4	73.6	4.3	22.1	78.5	2.0	19.5	74.8	1.9	23.3
- Remote Area	56.7	8.5	34.8	64.3	8.1	27.6	82.7	0.3	17.0	55.9	2.6	41.5

Table 14: Student Flow Rates (Grades 9-12) and Graduates

Province	Grade 9			Grade 10			Grade 11			Grade 12			Successful Candidates		
	Prom.	Repe.	Drop.	Prom.	Repe.	Drop.	Prom.	Repe.	Drop.	Prom.	Repe.	Drop.	Grade 6	Grade 9	Grade 12
Banteay Meanchey	41.0	11.2	47.8	83.2	1.1	15.7	87.6	1.3	11.0	52.4	7.6	40.0	2,752	1,049	173
Battambang	34.0	21.0	44.9	73.2	1.7	25.1	87.3	1.3	11.4	59.7	4.7	35.6	3,889	1,991	691
Kampong Cham	39.3	20.5	40.1	83.3	3.1	13.6	88.6	1.4	10.0	80.1	9.6	10.3	6,772	4,244	1,190
Kampong Chhnang	43.3	14.9	41.8	88.1	2.8	9.1	93.5	0.5	6.0	50.6	1.8	47.6	1,220	503	86
Kampong Speu	27.1	22.3	50.6	80.2	1.0	18.9	86.3	0.4	13.3	42.5	4.0	53.4	3,464	953	105
Kampong Thom	46.2	21.3	32.6	88.2	1.3	10.5	88.6	0.5	10.9	50.4	12.6	37.0	2,531	1,336	196
Kampot	35.9	25.7	38.4	82.9	1.4	15.7	86.1	0.6	13.3	44.9	0.4	54.6	3,005	1,029	102
Kandal	36.0	21.3	42.6	84.8	0.5	14.7	86.6	0.3	13.1	38.6	8.1	53.3	5,787	3,641	384
Kep	37.7	17.4	44.9	90.9	3.0	6.1	n.a	n.a	n.a	n.a	n.a	n.a	225	26	0
Koh Kong	42.3	17.7	40.0	85.5	0.0	14.5	100.0	0.0	0.0	18.2	0.0	81.8	305	93	4
Kratie	26.4	21.9	51.7	89.8	0.3	9.9	95.0	0.0	5.0	58.1	0.5	41.4	1,273	320	111
Mondulkiri	31.6	10.5	57.9	100.0	0.0	0.0	66.7	0.0	33.3	n.a	n.a	n.a	30	18	0
Pailin	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	0	0	0
Phnom Penh	48.3	17.2	34.4	87.3	3.2	9.5	81.1	1.5	17.4	73.5	8.6	17.9	6,116	6,869	3,211
Preah Vihear	43.9	27.0	29.1	95.8	0.0	4.2	93.9	0.0	6.1	21.7	17.4	60.9	183	101	5
Prey Veng	36.4	15.9	47.7	84.9	0.5	14.5	87.8	0.0	12.2	50.8	6.6	42.6	6,190	1,959	321
Pursat	31.4	20.7	47.9	90.6	2.5	6.9	87.8	0.9	11.3	52.5	0.0	47.5	1,091	617	63
Ratanakiri	33.1	35.6	31.4	81.6	0.0	18.4	n.a	0.0	n.a	34.8	39.1	26.1	95	39	8
Siem Reap	37.9	23.5	38.7	86.9	3.7	9.4	85.2	3.5	11.3	48.9	14.3	36.8	1,970	996	287
Sihanoukville	47.3	16.7	36.0	78.2	2.4	19.4	86.5	0.7	12.8	31.3	6.9	61.8	738	527	41
Steung Treng	18.8	48.7	32.6	91.1	2.2	6.7	84.8	0.0	15.2	60.0	10.0	30.0	188	57	18
Svay Rieng	33.6	21.0	45.4	81.7	3.7	14.6	91.8	1.0	7.1	30.5	4.6	64.9	3,357	1,024	106
Takeo	44.3	12.9	42.8	91.8	0.4	7.8	84.9	0.3	14.8	40.1	4.9	54.9	4,925	1,574	211
Whole Kingdom	39.2	19.5	41.3	85.0	2.2	12.8	85.0	1.1	13.8	60.9	7.8	31.3	56,106	28,966	7,313
- Urban Area	47.1	17.8	35.1	85.2	2.6	12.2	85.0	1.3	13.6	66.2	7.8	26.0	18,091	18,362	6,323
- Rural Area	30.4	21.4	48.1	84.4	0.7	14.9	84.9	0.3	14.8	40.4	7.7	51.9	36,496	10,571	990
- Remote Area	21.4	16.2	62.3	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	1,519	33	0

Table 15: Student Flow Rates for Female (Grades 1-4)

Province	Grade 1			Grade 2			Grade 3			Grade 4		
	Promotion	Repetition	Dropout	Promotion	Repetition	Dropout	Promotion	Repetition	Dropout	Promotion	Repetition	Dropout
Banteay Meanchey	44.8	39.8	15.4	58.0	27.3	14.7	65.1	19.4	15.5	67.5	10.5	22.0
Battambang	52.3	35.6	12.1	65.2	20.9	13.9	69.3	14.1	16.6	69.2	8.2	22.6
Kampong Cham	47.0	38.4	14.6	58.3	26.0	15.7	64.9	19.3	15.8	69.4	11.9	18.6
Kampong Chhnang	43.9	42.6	13.4	57.7	28.6	13.7	68.0	16.0	16.0	71.2	9.4	19.4
Kampong Speu	44.2	41.0	14.8	58.5	24.2	17.3	64.0	16.0	19.9	65.4	11.9	22.7
Kampong Thom	41.4	38.2	20.4	55.1	22.3	22.5	63.3	15.4	21.3	67.3	10.7	22.0
Kampot	47.3	42.5	10.2	58.3	26.4	15.3	66.5	17.6	15.9	72.5	11.7	15.8
Kandal	47.0	43.6	9.4	59.5	28.7	11.8	66.4	19.0	14.6	70.2	12.7	17.0
Kep	48.2	39.0	12.9	68.6	22.2	9.2	73.5	14.0	12.5	76.6	10.6	12.8
Koh Kong	38.4	43.4	18.2	49.4	22.2	28.4	61.5	17.3	21.2	57.1	12.5	30.4
Kratie	44.6	47.6	7.9	50.6	30.4	19.0	56.8	22.6	20.7	66.2	13.0	20.9
Mondulkiri	20.6	50.6	28.9	58.3	31.1	10.7	64.5	17.8	17.8	59.6	17.3	23.1
Pailin	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Phnom Penh	58.2	33.0	8.8	67.9	21.4	10.7	74.8	14.8	10.4	78.6	9.9	11.5
Preah Vihear	29.5	53.9	16.6	39.6	33.4	27.0	50.3	18.3	31.4	64.3	14.0	21.7
Prey Veng	46.0	39.9	14.1	54.5	23.1	22.4	59.5	18.9	21.7	64.2	12.8	23.0
Pursat	42.5	37.7	19.8	53.9	21.9	24.2	59.9	14.0	26.1	62.4	8.5	29.1
Ratanakiri	29.3	39.8	30.9	34.8	29.1	36.1	48.8	16.4	34.8	66.9	7.1	26.0
Siem Reap	42.9	36.2	20.9	52.3	25.6	22.1	63.3	17.0	19.7	66.1	12.3	21.6
Sihanoukville	46.5	39.7	13.8	57.7	22.8	19.5	73.1	15.0	11.9	66.6	11.3	22.1
Steung Treng	32.7	47.7	19.6	44.7	33.0	22.3	56.2	25.0	18.8	61.2	10.5	28.3
Svay Rieng	46.6	42.4	11.0	57.3	27.5	15.2	63.0	19.0	17.9	65.3	11.9	22.8
Takeo	49.6	39.8	10.6	60.8	25.0	14.2	68.8	15.7	15.5	70.7	8.2	21.1
Whole Kingdom	46.5	39.8	13.7	58.2	25.2	16.6	65.6	17.4	17.0	69.2	11.0	19.8
- Urban Area	53.0	36.5	10.5	64.4	23.3	12.3	71.9	15.4	12.7	75.1	10.5	14.4
- Rural Area	45.5	40.6	13.9	57.2	25.9	16.9	63.9	18.1	18.0	67.1	11.3	21.6
- Remote Area	37.9	41.4	20.8	46.0	25.3	28.7	53.8	18.0	28.2	57.4	10.8	31.8

Table 16: Student Flow Rates for Female (Grades 5-8)

Province	Grade 5			Grade 6			Grade 7			Grade 8		
	Promotion	Repetition	Dropout	Promotion	Repetition	Dropout	Promotion	Repetition	Dropout	Promotion	Repetition	Dropout
Banteay Meanchey	63.1	5.8	31.1	73.1	5.2	21.6	81.8	1.2	17.0	68.4	1.6	30.0
Battambang	73.5	5.5	21.0	81.1	1.9	17.0	76.2	1.4	22.4	73.2	1.5	25.3
Kampong Cham	67.5	6.0	26.4	63.7	3.1	33.2	74.2	1.1	24.7	70.9	1.1	28.1
Kampong Chhnang	69.6	4.0	26.4	91.3	3.6	5.1	76.7	0.9	22.4	78.7	0.7	20.6
Kampong Speu	66.3	7.7	26.0	76.7	5.5	17.8	72.9	1.7	25.5	67.1	0.9	32.0
Kampong Thom	67.8	5.1	27.0	76.7	2.2	21.1	72.6	1.5	25.9	73.3	2.6	24.1
Kampot	68.6	4.9	26.4	82.3	2.3	15.3	77.4	0.6	22.0	72.5	2.1	25.4
Kandal	71.2	8.2	20.6	76.1	3.2	20.7	74.7	2.1	23.1	70.9	2.4	26.7
Kep	75.7	9.6	14.7	67.9	0.0	32.1	50.0	0.0	50.0	67.6	0.0	32.4
Koh Kong	44.7	11.0	44.3	69.4	7.2	23.3	80.4	6.5	13.0	68.1	7.2	24.6
Kratie	67.7	6.1	26.2	76.9	4.9	18.2	79.3	1.8	18.9	73.3	1.3	25.4
Mondulkiri	78.3	30.4	n.a	63.6	0.0	36.4	100.0	5.6	n.a	66.7	0.0	33.3
Pailin	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Phnom Penh	77.7	6.8	15.5	n.a	3.9	n.a	81.4	2.8	15.8	83.9	1.9	14.2
Preah Vihear	64.3	5.5	30.2	56.2	4.1	39.7	77.6	1.1	21.3	75.0	2.3	22.7
Prey Veng	63.0	8.0	29.0	66.6	6.5	27.0	77.2	1.2	21.6	64.4	0.6	35.0
Pursat	61.9	4.9	33.3	81.5	2.1	16.3	67.6	0.5	31.9	72.1	1.0	26.9
Ratanakiri	52.3	2.8	45.0	56.6	11.3	32.1	91.8	0.0	8.2	90.0	0.0	10.0
Siem Reap	62.0	7.1	31.0	74.3	3.9	21.8	81.3	2.3	16.4	71.1	3.3	25.6
Sihanoukville	73.4	10.1	16.5	71.4	7.4	21.2	73.7	1.1	25.1	74.3	2.3	23.4
Steung Treng	55.6	4.5	39.9	64.7	5.9	29.4	72.5	2.0	25.5	86.0	6.1	7.9
Svay Rieng	64.3	7.2	28.5	66.2	2.2	31.6	76.6	0.9	22.5	73.9	1.4	24.6
Takeo	67.8	4.4	27.8	77.6	3.1	19.3	77.2	0.6	22.2	74.2	0.5	25.4
Whole Kingdom	68.5	6.4	25.1	76.7	3.7	19.5	77.2	1.7	21.1	74.1	1.6	24.3
- Urban Area	75.6	6.6	17.8	88.3	3.8	7.9	79.9	2.0	18.1	79.3	1.8	18.9
- Rural Area	65.9	6.2	27.9	72.0	3.4	24.6	74.0	1.3	24.7	67.7	1.4	30.9
- Remote Area	47.7	8.7	43.6	57.5	11.2	31.3	73.9	0.9	25.2	47.3	1.8	50.9

Table 17: Student Flow Rates (Grades 9-12) and Graduates for Female

Province	Grade 9			Grade 10			Grade 11			Grade 12			Successful Candidates		
	Prom.	Repe.	Drop.	Prom.	Repe.	Drop.	Prom.	Repe.	Drop.	Prom.	Repe.	Drop.	Grade 6	Grade 9	Grade 12
Banteay Meanchey	43.3	8.7	48.0	81.8	0.8	17.4	75.4	0.6	24.0	61.6	4.0	34.3	1,008	356	61
Battambang	33.6	16.9	49.5	82.9	0.3	16.7	94.4	0.5	5.1	71.6	2.2	26.2	1,583	758	290
Kampong Cham	39.5	15.9	44.6	81.4	1.7	17.0	86.3	0.9	12.8	75.9	7.6	16.5	2,513	1,499	369
Kampong Chhnang	45.6	13.1	41.3	87.5	0.0	12.5	92.8	0.0	7.2	57.5	0.0	42.5	409	170	23
Kampong Speu	24.9	15.5	59.6	76.9	0.0	23.1	85.2	0.0	14.8	50.9	3.8	45.3	1,256	217	27
Kampong Thom	44.2	17.6	38.2	88.0	0.3	11.7	87.3	0.0	12.7	52.5	11.7	35.8	1,013	458	63
Kampot	34.5	17.4	48.1	80.2	0.0	19.8	79.7	0.0	20.3	66.7	0.0	33.3	1,129	324	44
Kandal	33.7	15.9	50.4	84.8	0.1	15.1	79.8	0.3	19.9	35.0	4.7	60.3	2,197	1,131	105
Kep	27.3	12.1	60.6	80.0	10.0	10.0	n.a	n.a	n.a	n.a	n.a	n.a	95	9	0
Koh Kong	45.6	8.8	45.6	n.a	0.0	n.a	n.a	0.0	n.a	0.0	0.0	100.0	125	31	0
Kratie	28.8	18.6	52.6	79.6	0.0	20.4	83.2	0.0	16.8	69.1	0.0	30.9	502	135	56
Mondulkiri	40.0	15.0	45.0	100.0	0.0	0.0	50.0	0.0	50.0	n.a	n.a	n.a	7	8	0
Pailin	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	0	0	0
Phnom Penh	50.3	13.9	35.8	88.1	1.4	10.4	74.2	1.2	24.6	77.1	8.5	14.3	2,708	2,907	1,194
Preah Vihear	35.1	21.1	43.9	n.a	0.0	n.a	90.9	0.0	9.1	0.0	33.3	66.7	68	20	0
Prey Veng	36.9	12.1	51.0	82.9	0.0	17.1	85.0	0.0	15.0	67.2	3.7	29.1	1,909	462	90
Pursat	33.9	14.1	52.0	98.0	0.0	2.0	87.3	0.0	12.7	68.0	0.0	32.0	384	211	17
Ratanakiri	32.4	16.2	51.4	77.8	0.0	22.2	n.a	0.0	n.a	0.0	55.6	44.4	30	12	0
Siem Reap	36.2	17.0	46.8	85.8	3.5	10.7	83.0	2.0	15.0	54.3	11.7	34.0	692	349	107
Sihanoukville	49.5	11.4	39.2	81.7	1.2	17.1	90.7	0.7	8.7	27.8	2.8	69.4	299	183	10
Steung Treng	17.9	36.8	45.3	94.0	0.0	6.0	53.1	0.0	46.9	75.0	0.0	25.0	66	19	6
Svay Rieng	36.7	13.8	49.4	83.5	0.6	15.9	86.5	0.0	13.5	39.2	1.3	59.5	1,083	252	31
Takeo	39.6	8.9	51.6	87.2	0.2	12.6	82.4	0.4	17.3	40.4	3.7	56.0	1,500	353	44
Whole Kingdom	39.8	14.9	45.3	85.8	1.0	13.2	79.8	0.8	19.4	66.6	6.6	26.8	20,576	9,864	2,537
- Urban Area	48.5	14.0	37.5	86.3	1.2	12.5	79.4	0.9	19.7	72.4	6.8	20.8	7,410	6,975	2,296
- Rural Area	27.8	16.2	56.0	83.5	0.2	16.3	82.0	0.3	17.7	37.9	5.8	56.3	12,750	2,885	241
- Remote Area	9.1	18.2	72.7	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	416	4	0

6. Graphical Presentation of Education in Cambodia(1990-98), July 1998, EMIS Center

Ministry of Education, Youth and Sport

Department of Planning

Kingdom of Cambodia

Nation Religion King

GRAPHICAL PRESENTATION
OF
EDUCATION IN CAMBODIA
(1980 - 98)

EMIS Center, Phnom Penh

(July 1998)

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II. Evolution of Schools from 1980-98 :

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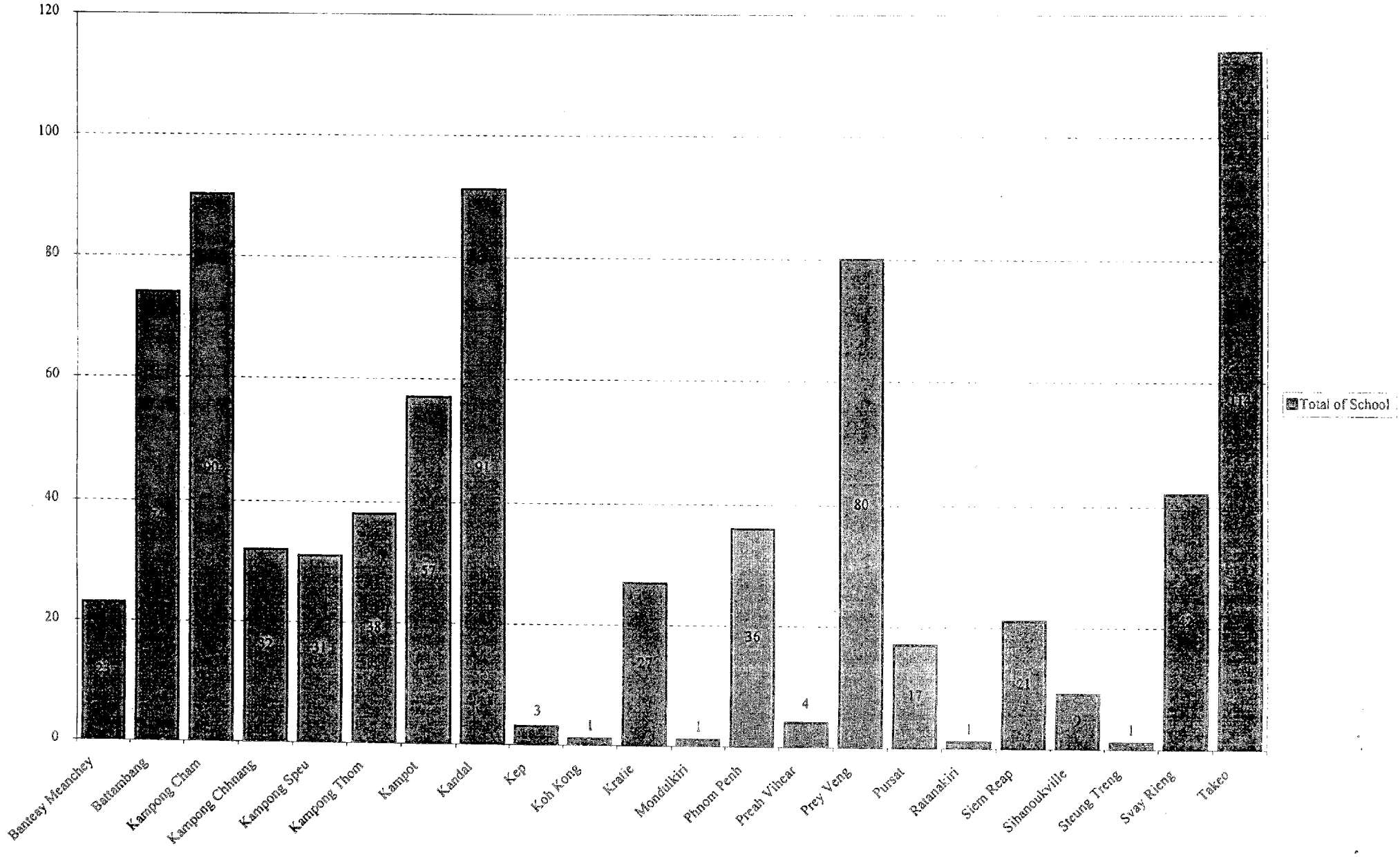

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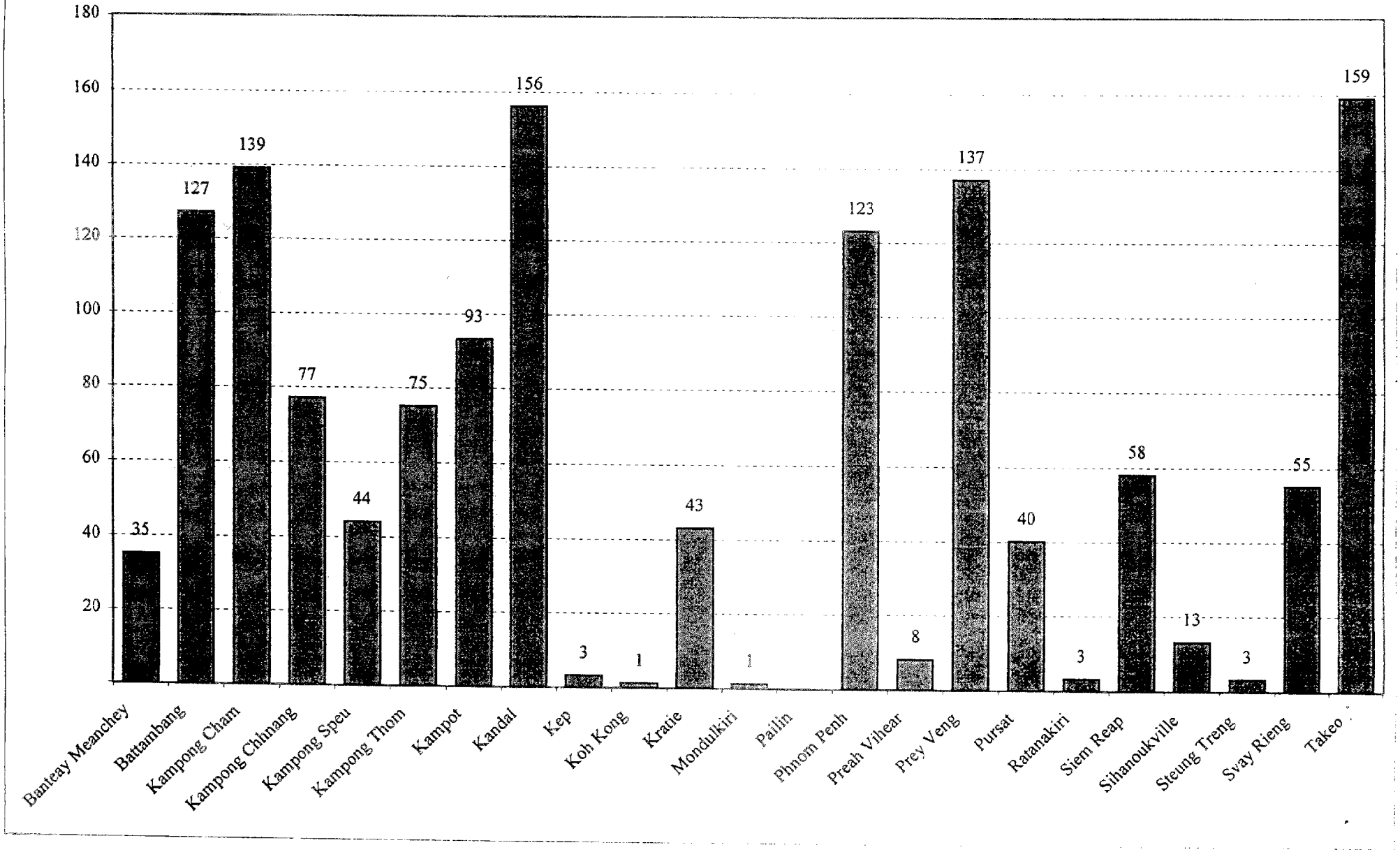
NUMBER OF CLASSES IN PRE-SCHOOL (1997-98)



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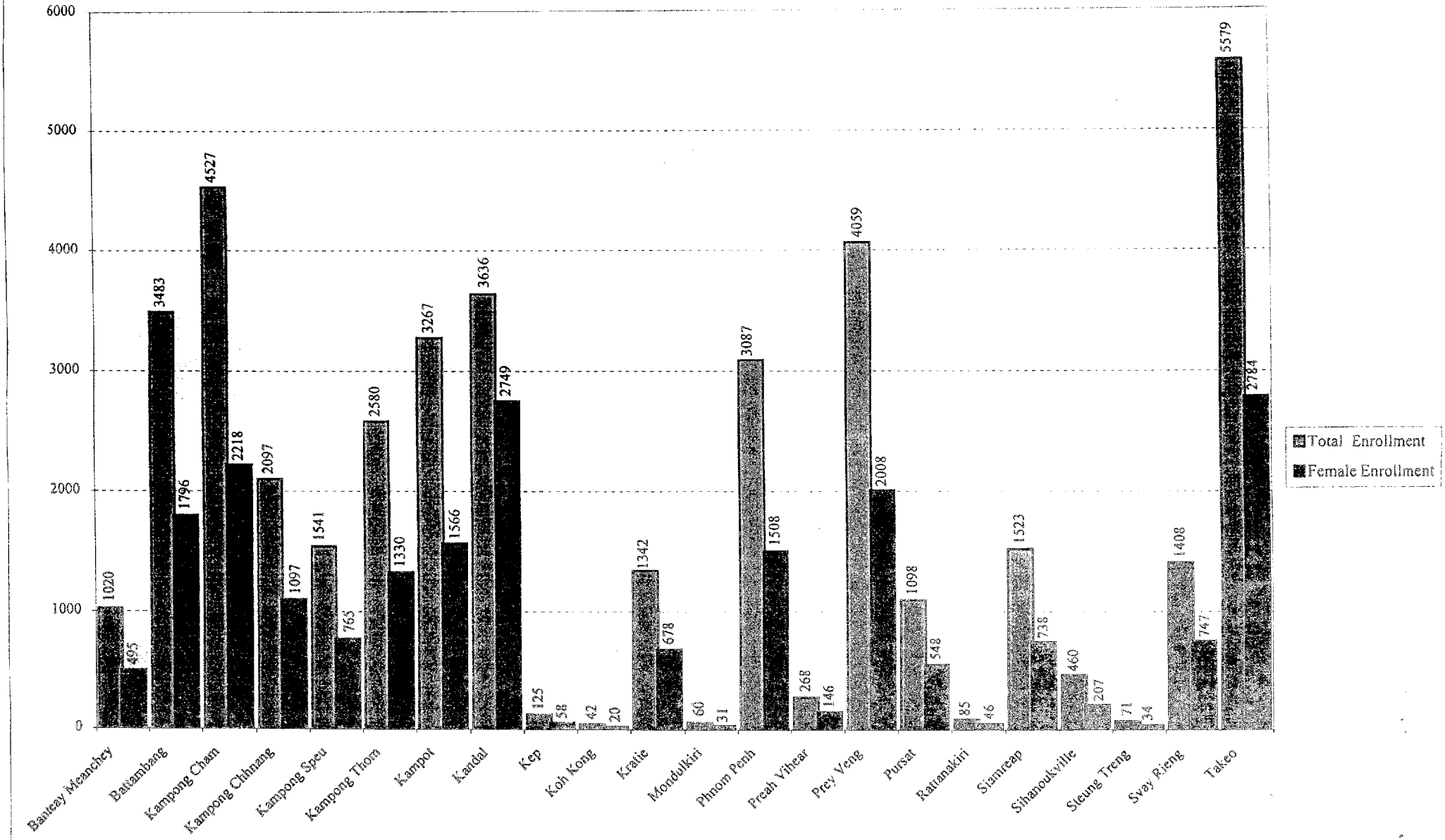
ENROLLMENT IN PRE-SCHOOL BY PROVINCE (1997 - 98)



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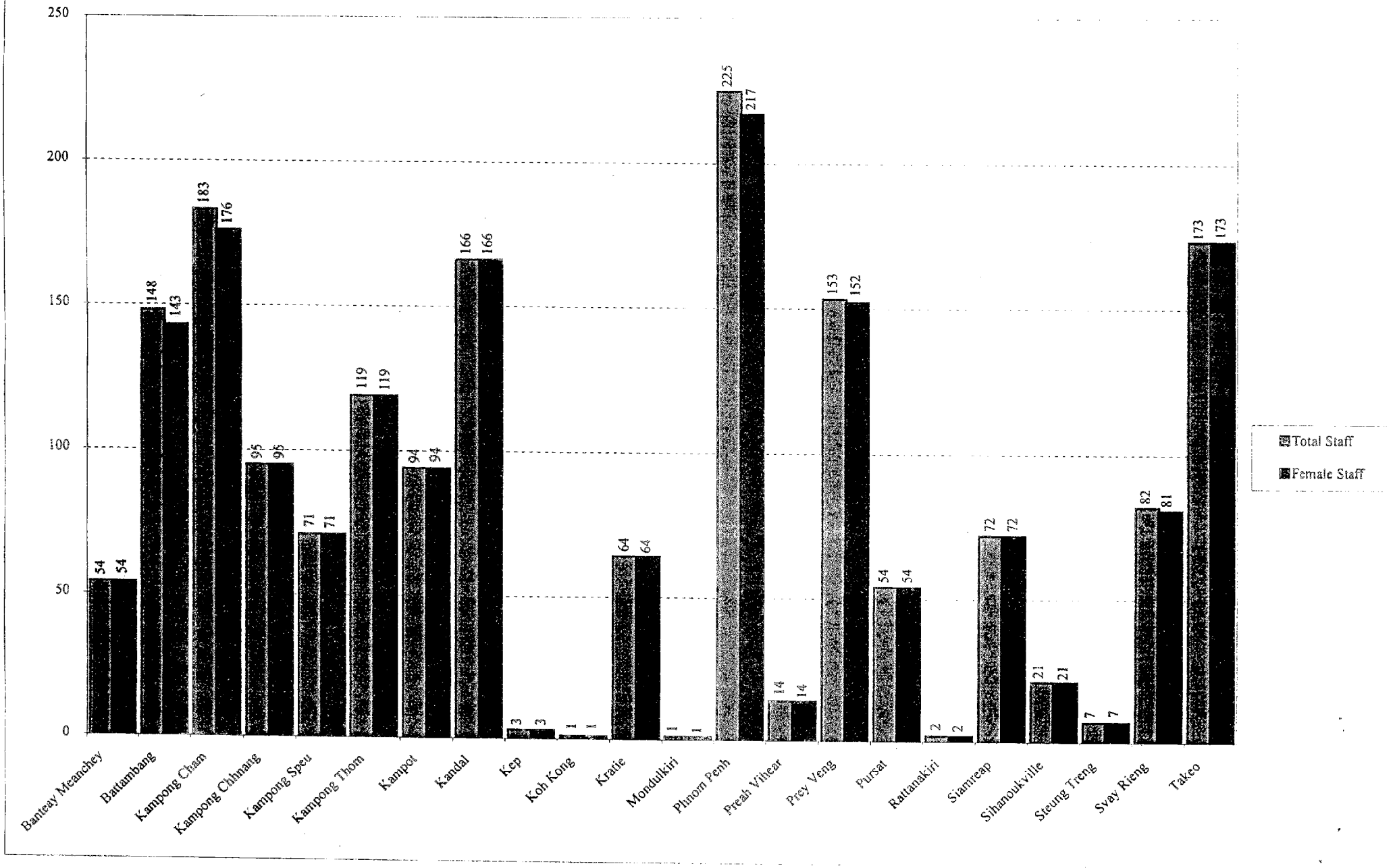

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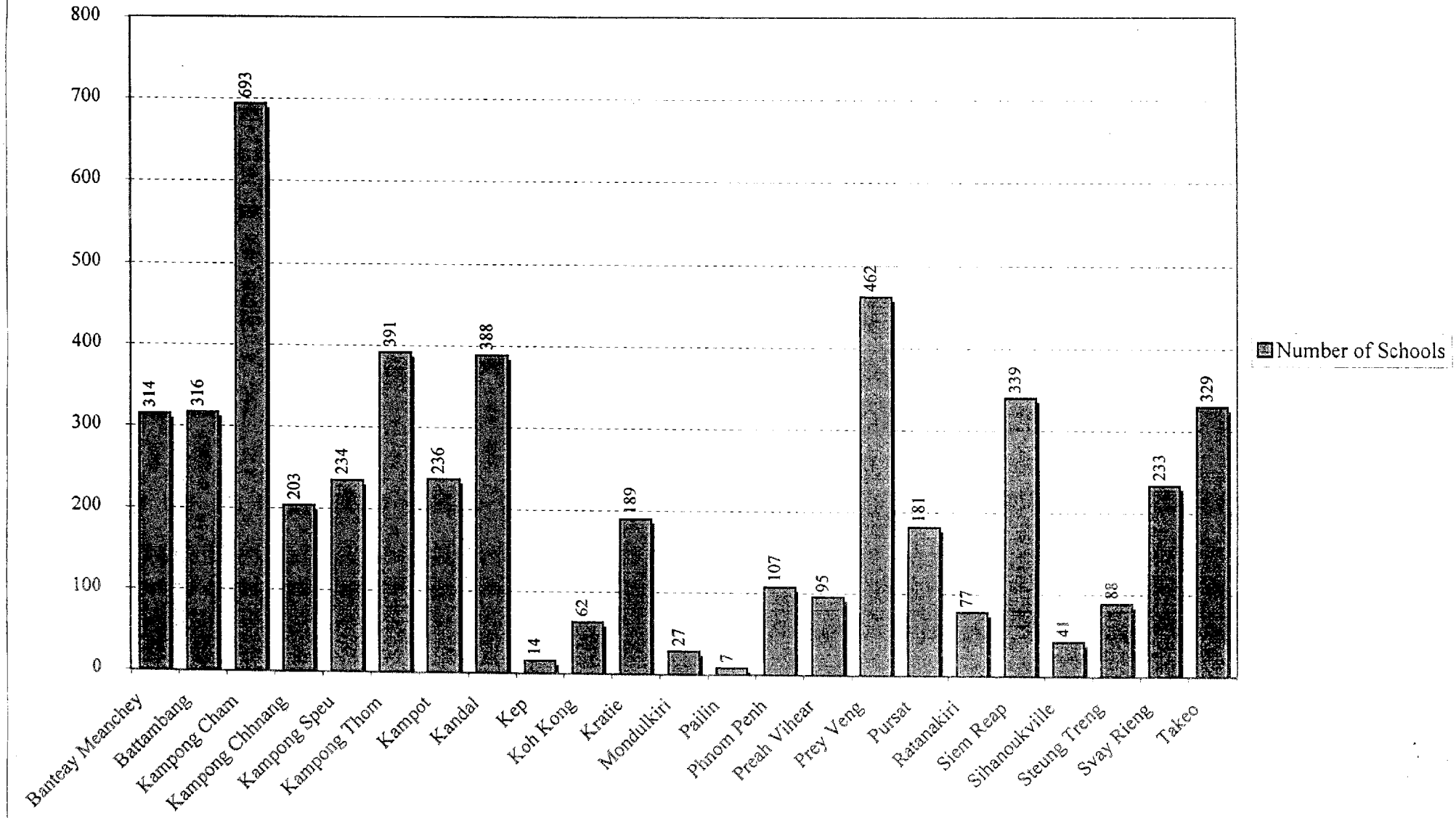
NUMBER OF PRIMARY SCHOOL BY PROVINCE (1997 - 1998)



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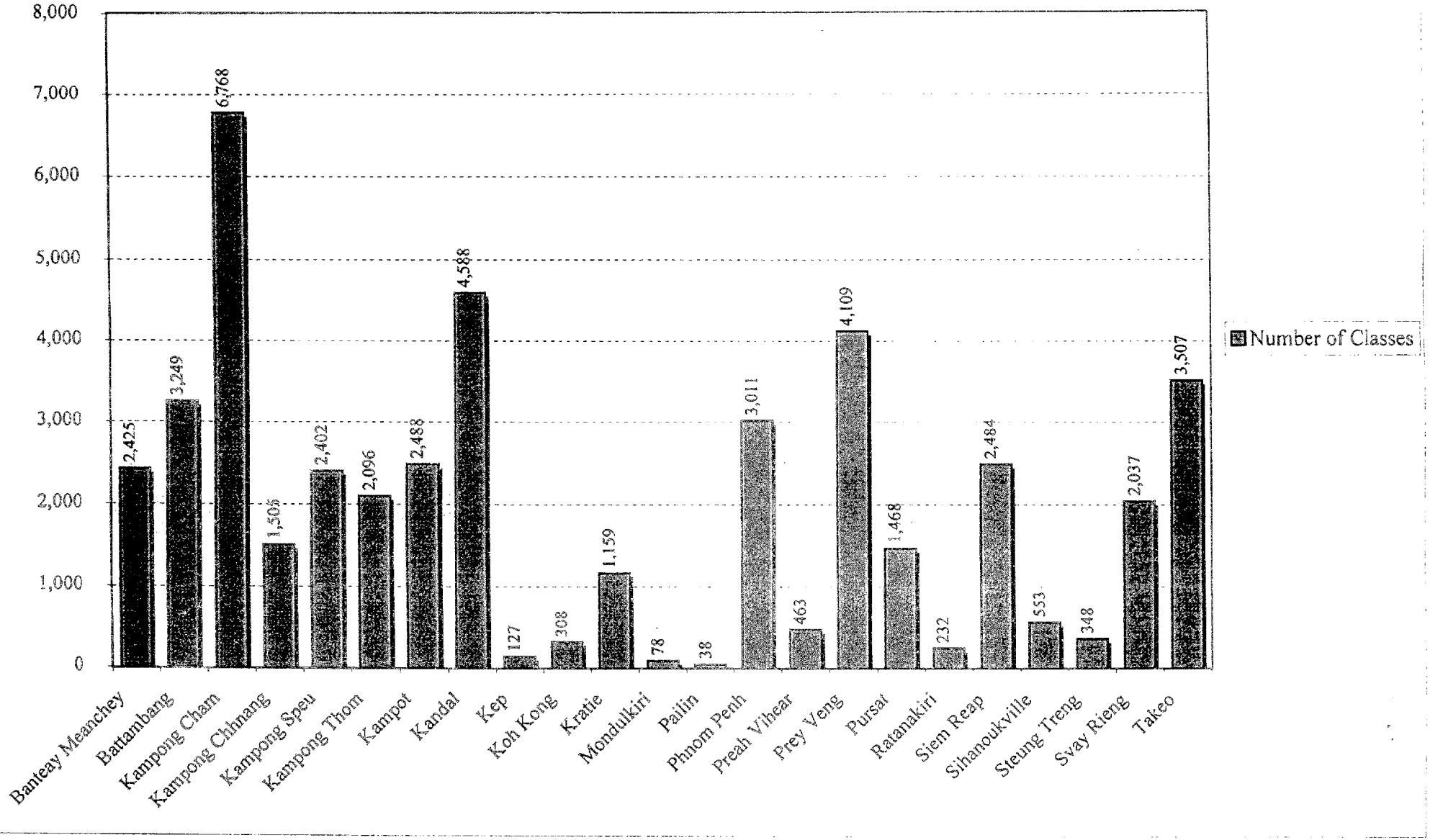
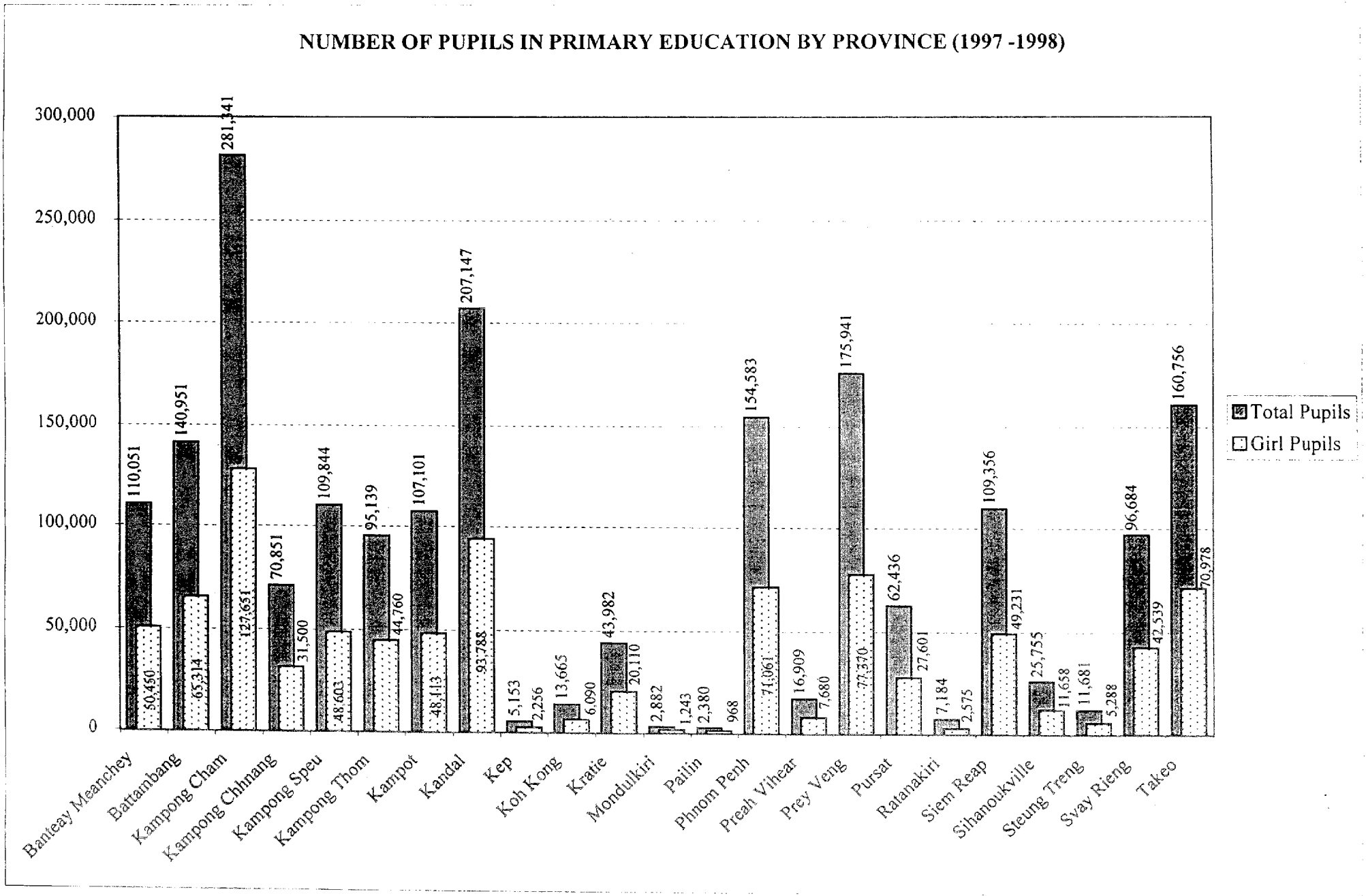
NUMBER OF CLASSES IN PRIMARY EDUCATION BY PROVINCE (1997 - 1998)

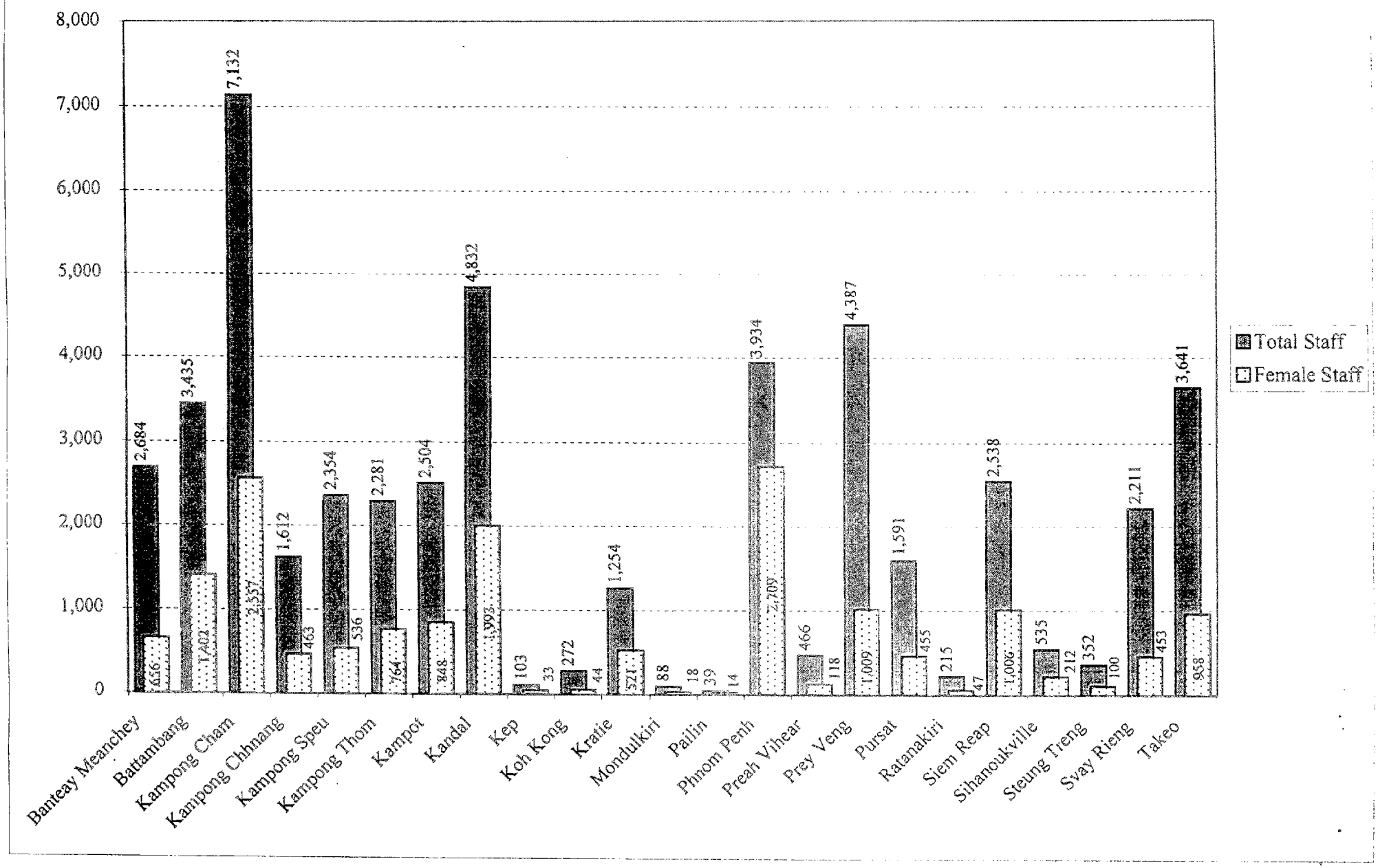


NUMBER OF PUPILS IN PRIMARY EDUCATION BY PROVINCE (1997 -1998)

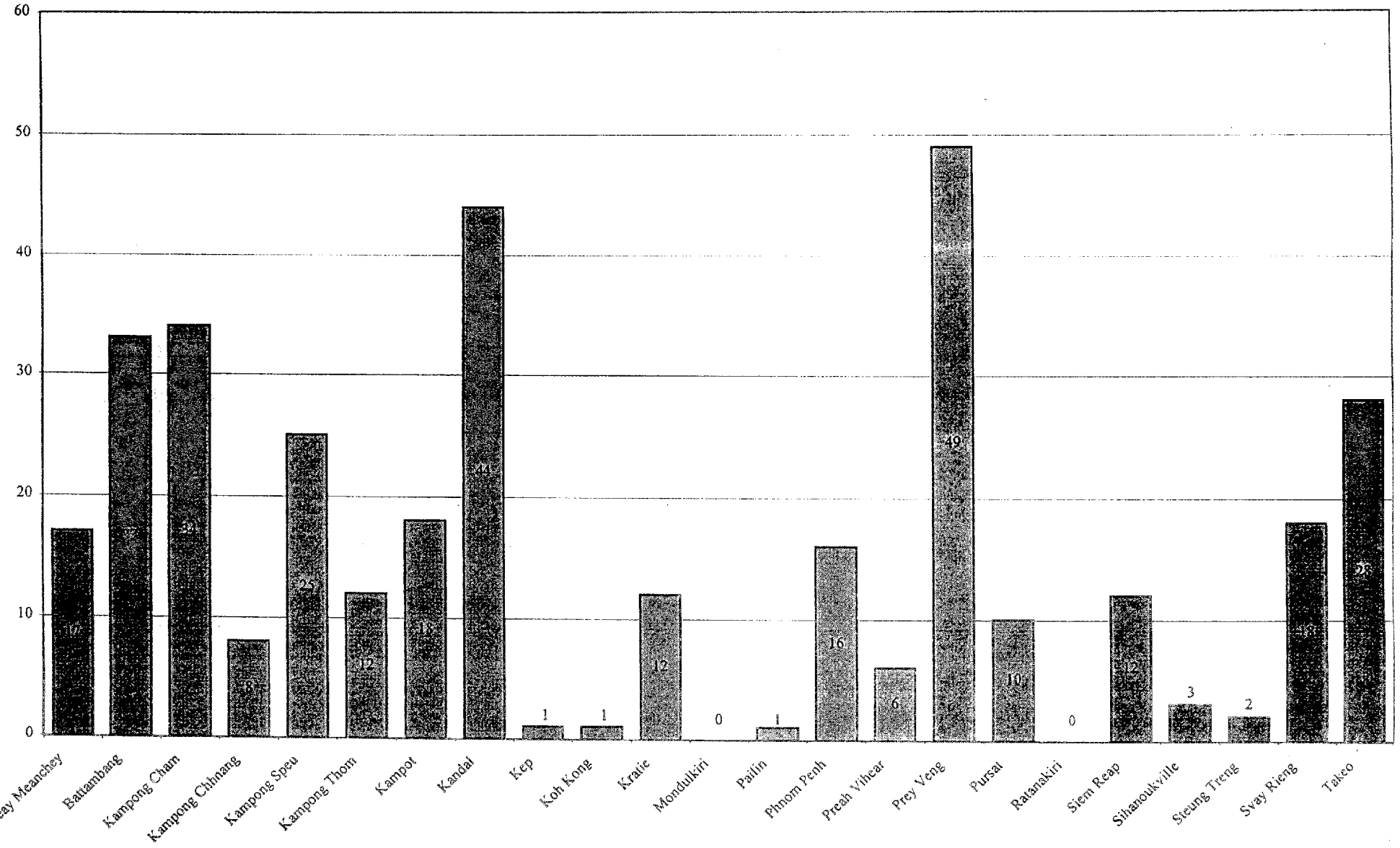


EMIS Center, Department of Planning, MoEYS (01/07/1998)

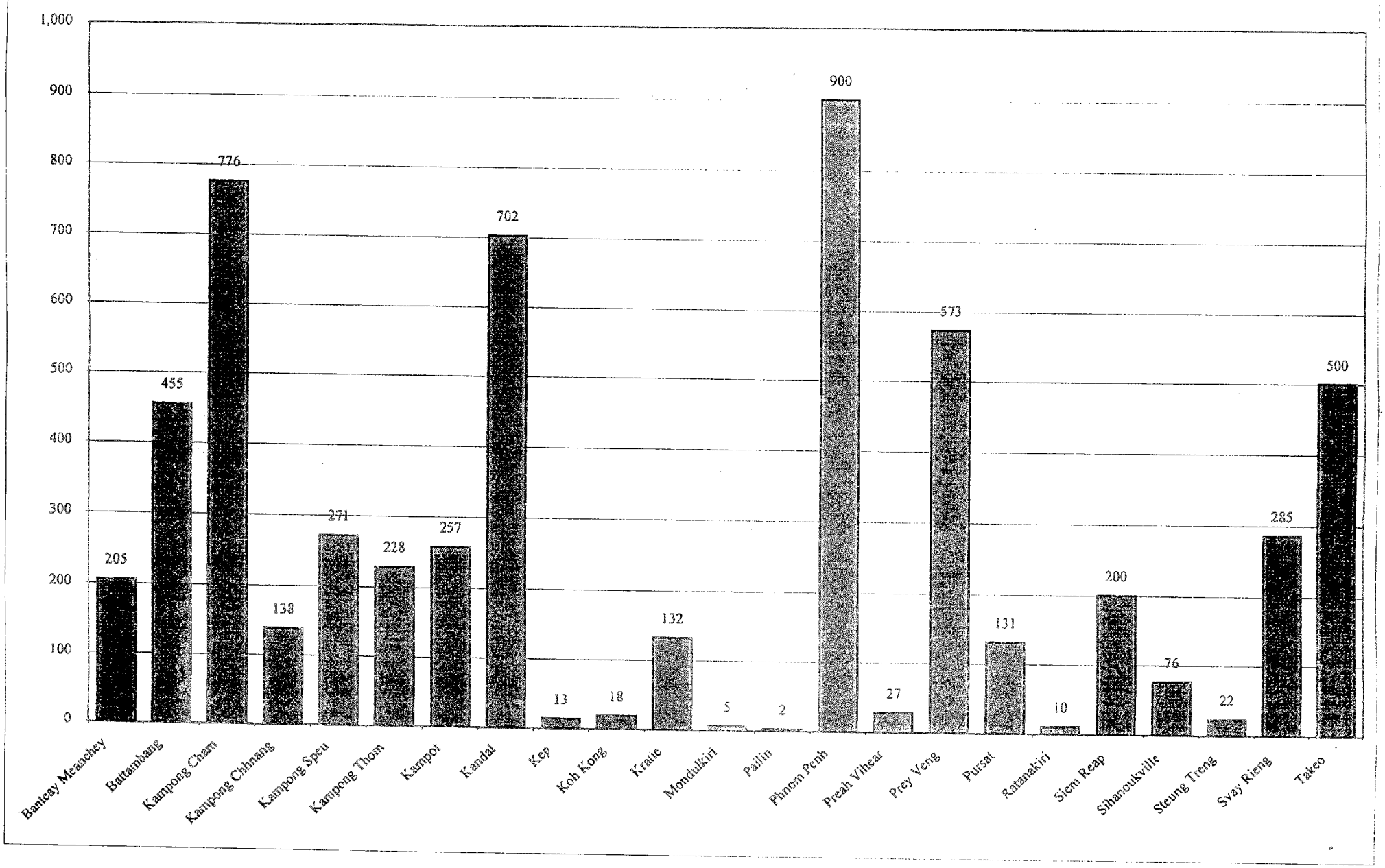
NUMBER OF STAFF IN PRIMARY EDUCATION BY PROVINCE (1997 - 1998)



NUMBER OF JUNIOR HIGH SCHOOLS (COLLEGE) BY PROVINCE (1997-98)



NUMBER OF CLASSES IN LOWER SECONDARY EDUCATION BY PROVINCE (1997-98)



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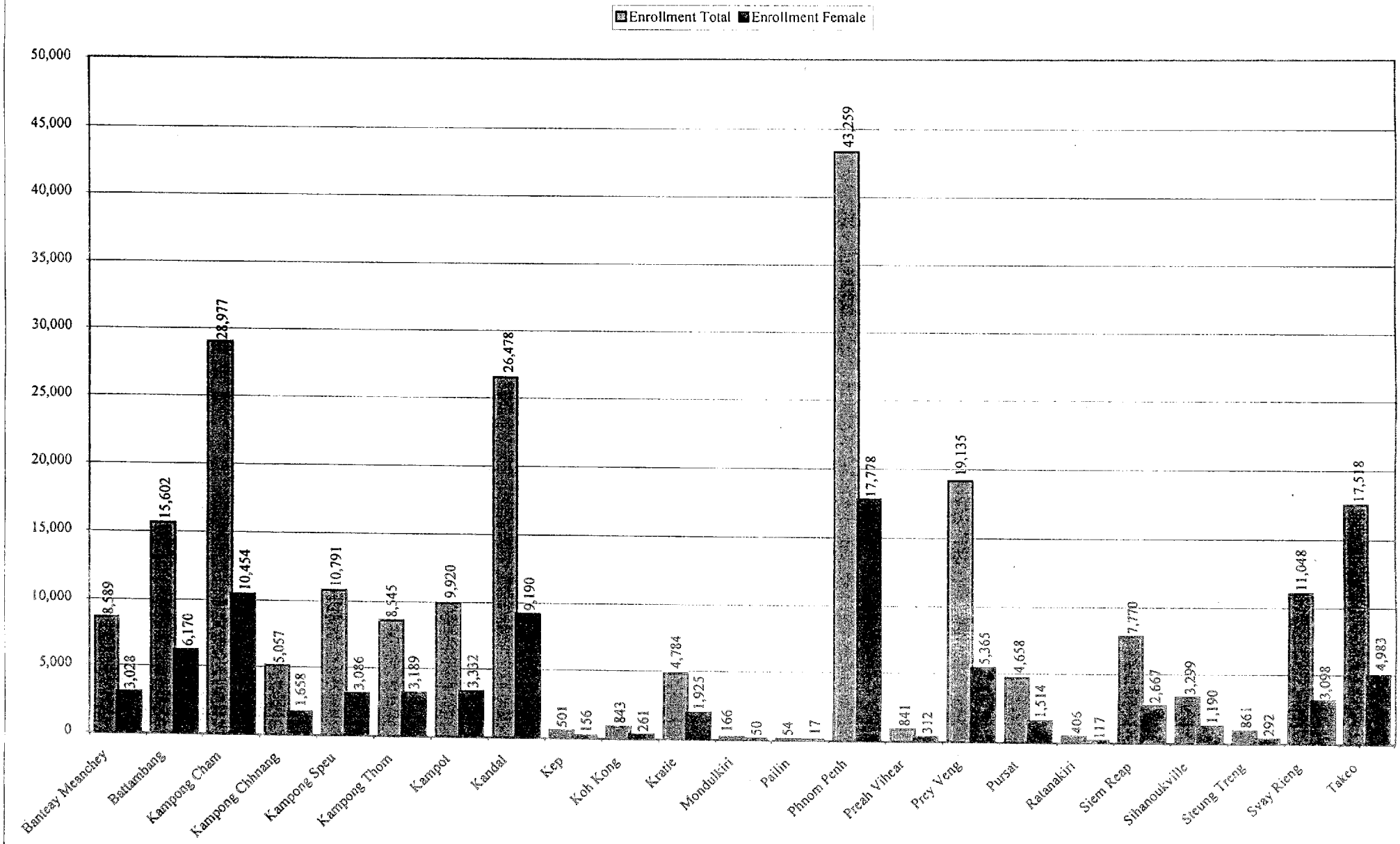
ENROLLMENT IN LOWER SECONDARY SCHOOL BY PROVINCE (1997-98)



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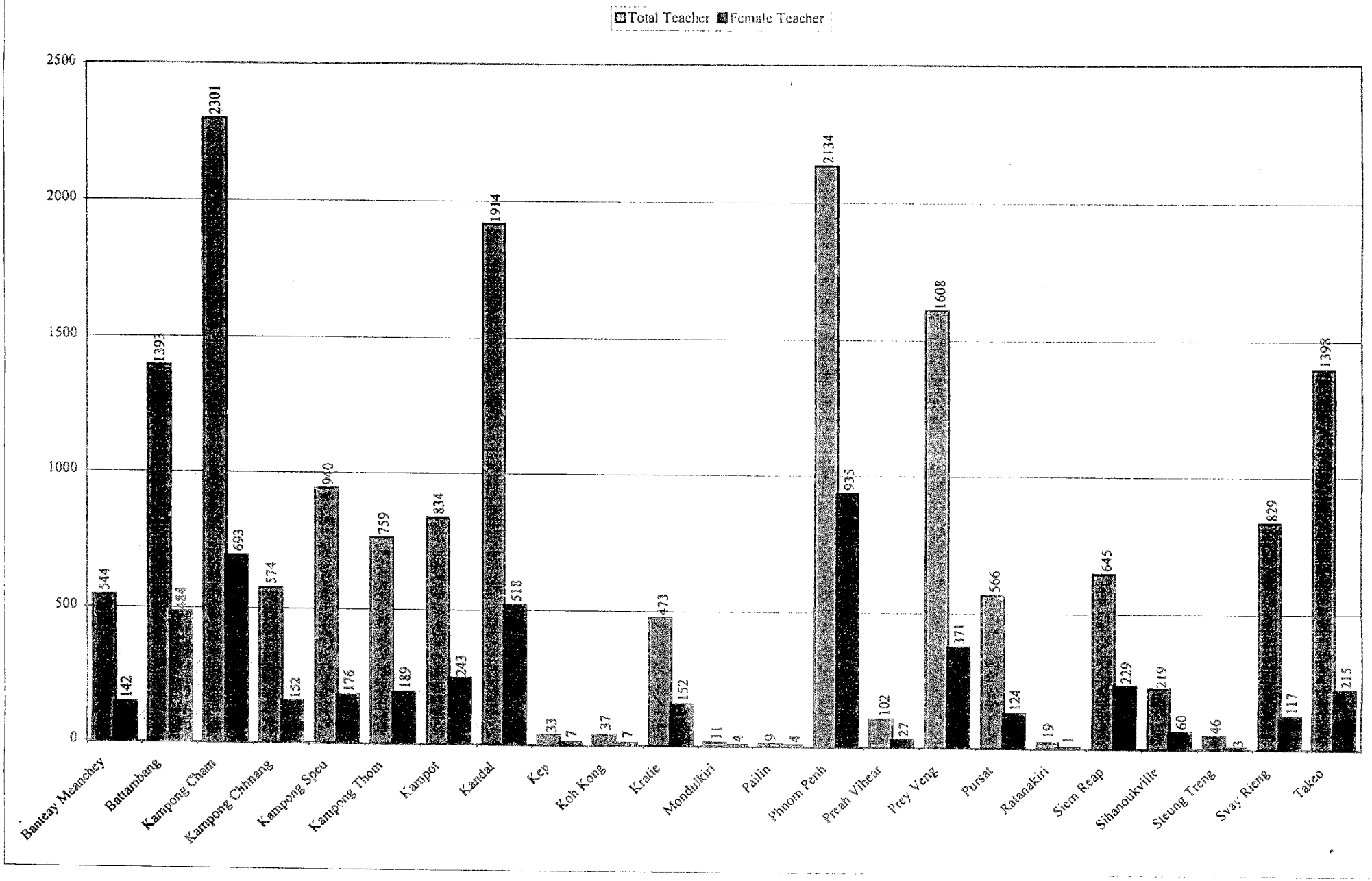
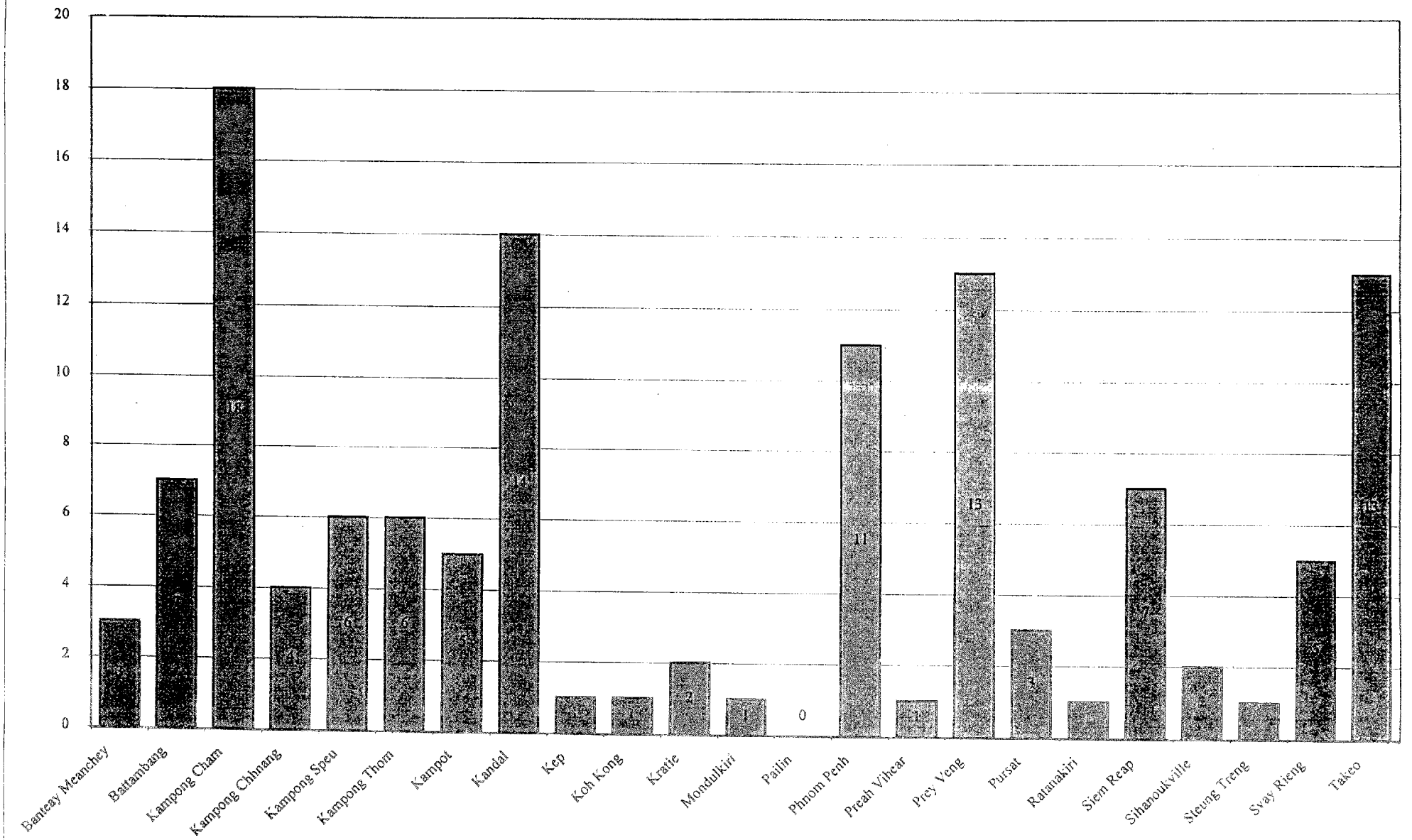
NUMBER OF STAFF IN LOWER SECONDARY LEVEL BY PROVINCE (1997-98)



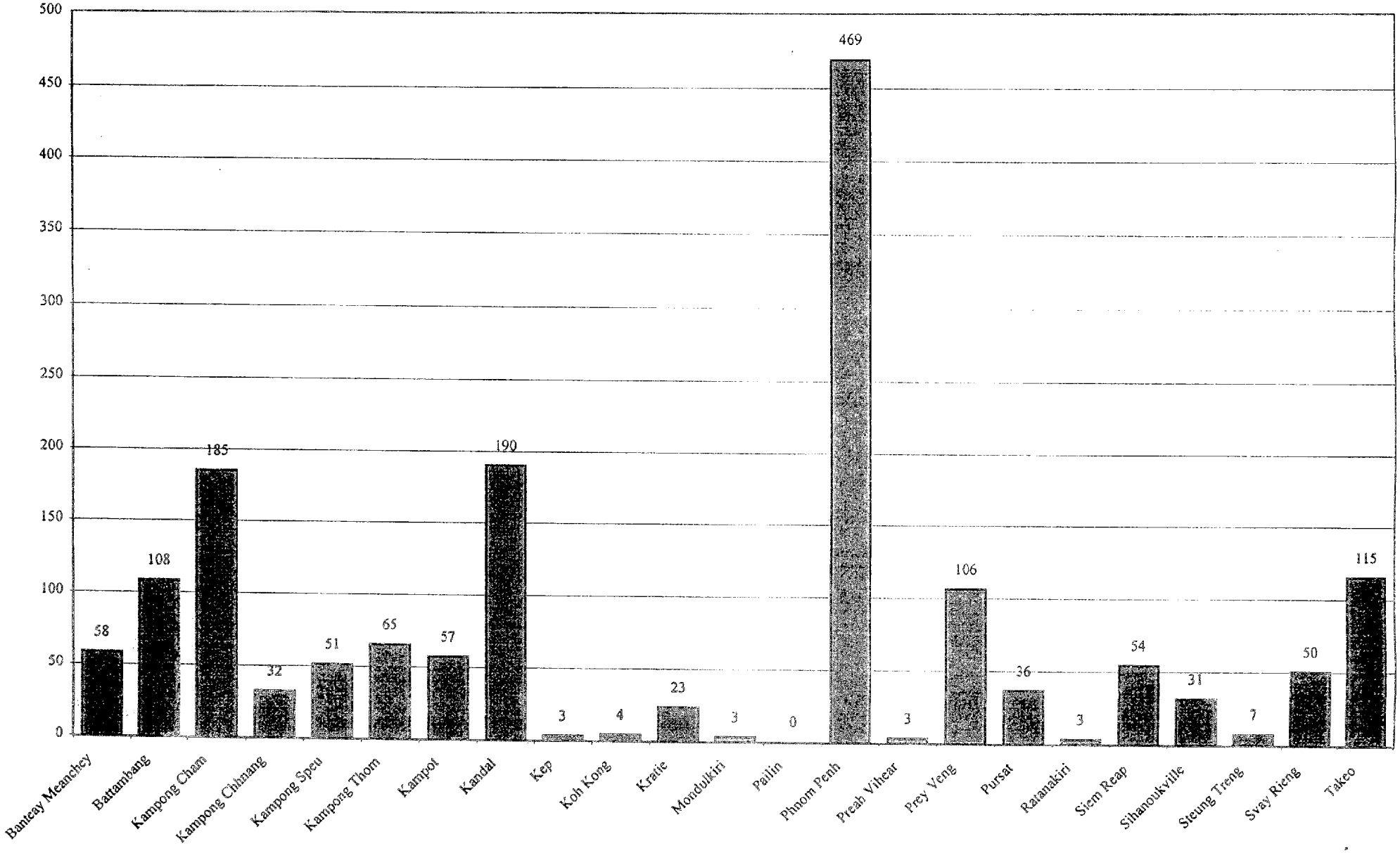
EMIS Center, Department of Planning, MoEYS(01/07/98)

NUMBER OF SENIOR HIGH SCHOOLS (Lycée) BY PROVINCE (1997-98)



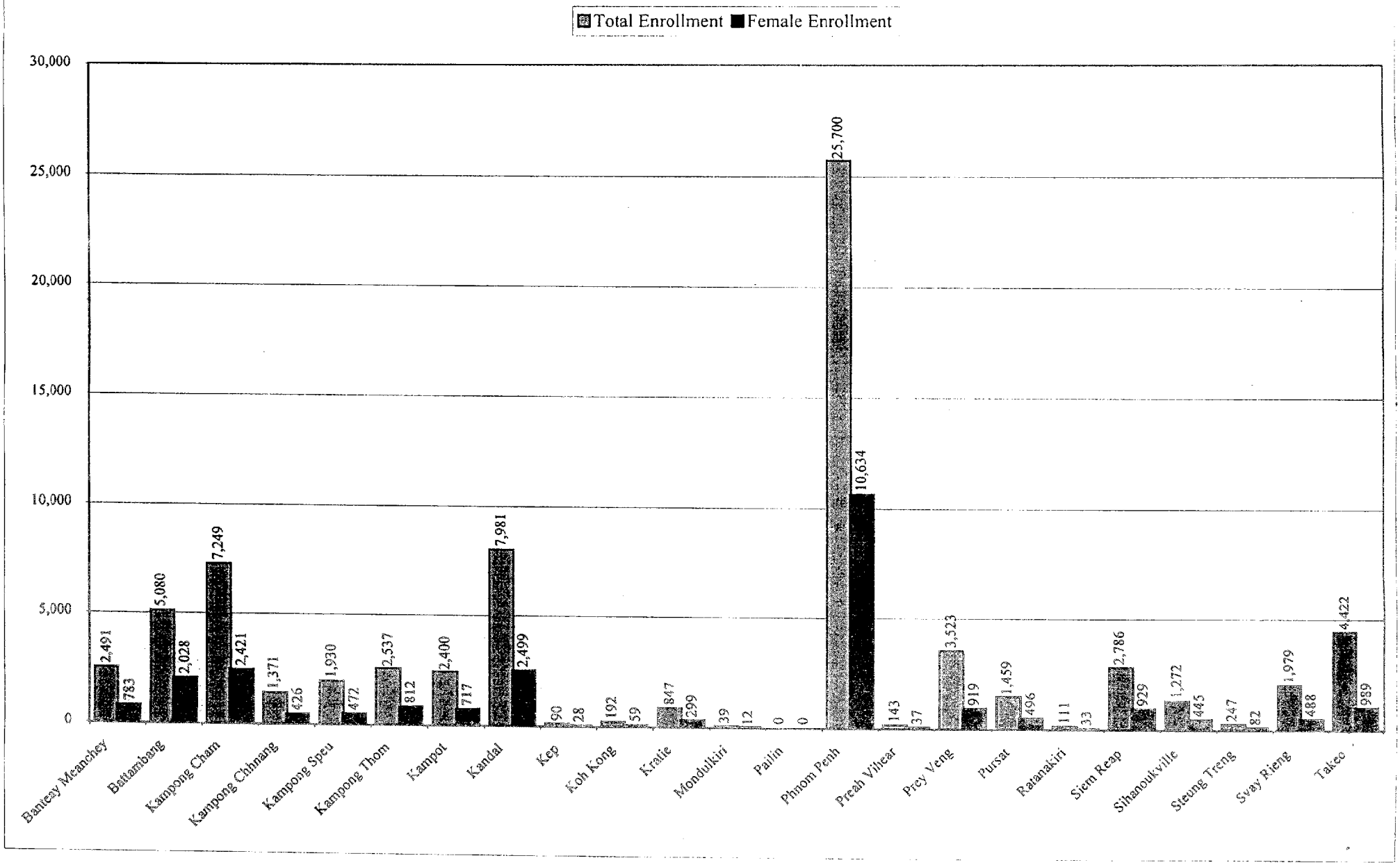
EMIS Center, Department of Planning, MoEYS(01/07/98)

NUMBER OF CLASSES IN UPPER SECONDARY EDUCATION BY PROVINCE (1997-98)

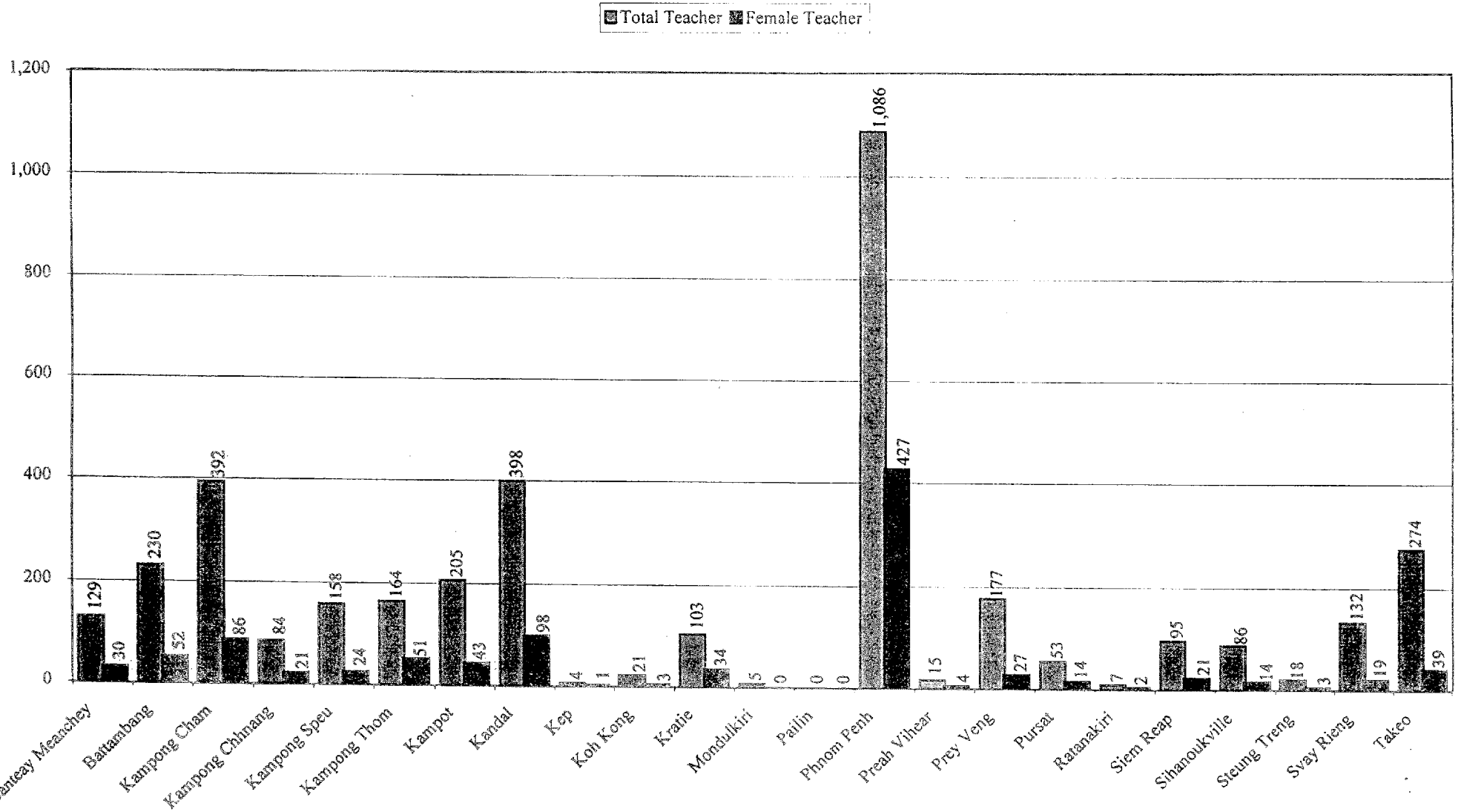


EMIS Center, Department of Planning, MoEYS(01/07/98)

ENROLLMENT IN UPPER SECONDARY EDUCATION BY PROVINCE (1997-98)

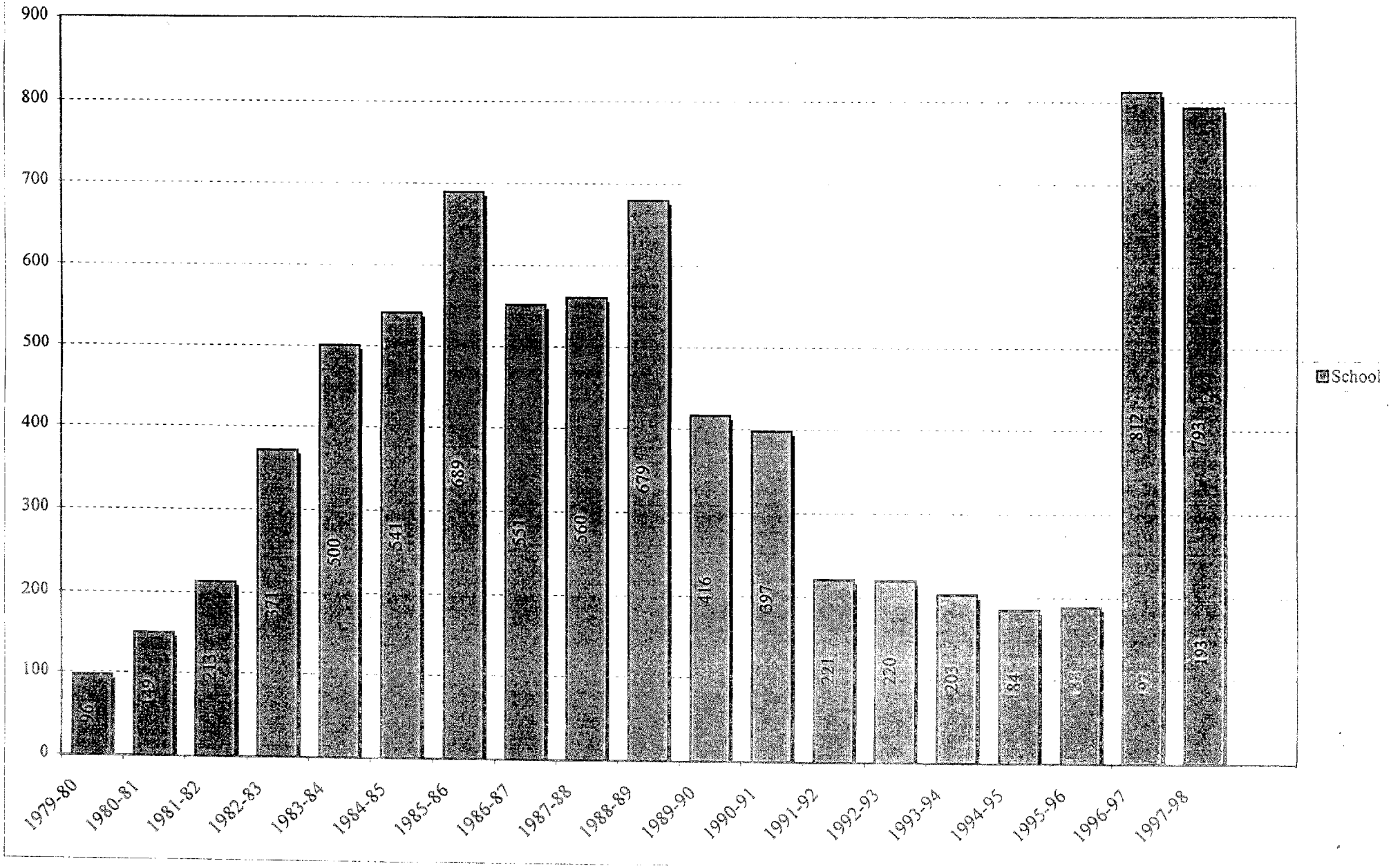


NUMBER OF STAFF IN UPPER SECONDARY LEVEL BY PROVINCE (1997-98)



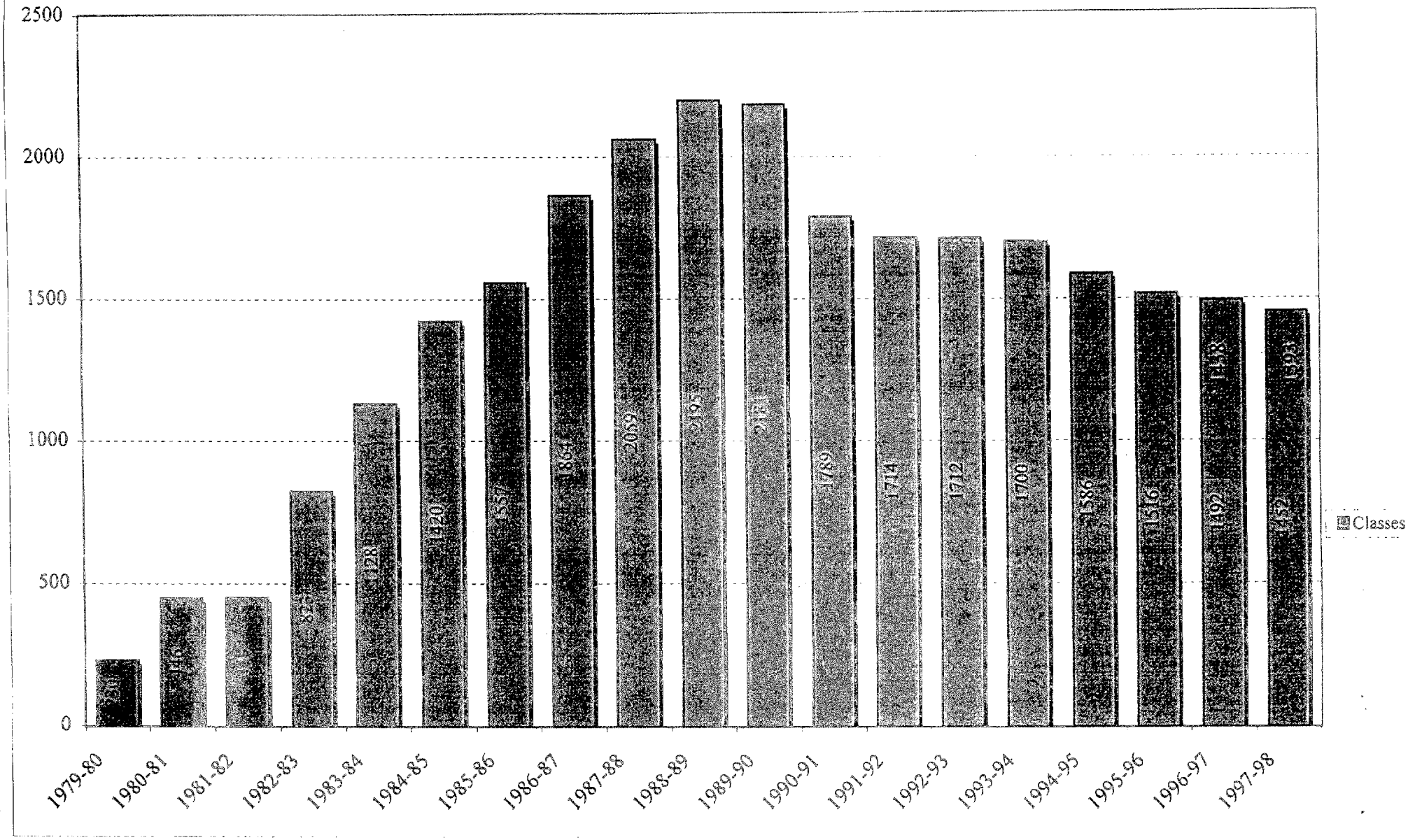
EMIS Center, Department of Planning, MoEYS(01/07/98)

EVOLUTION OF PRE-SCHOOL (1980 - 1998)

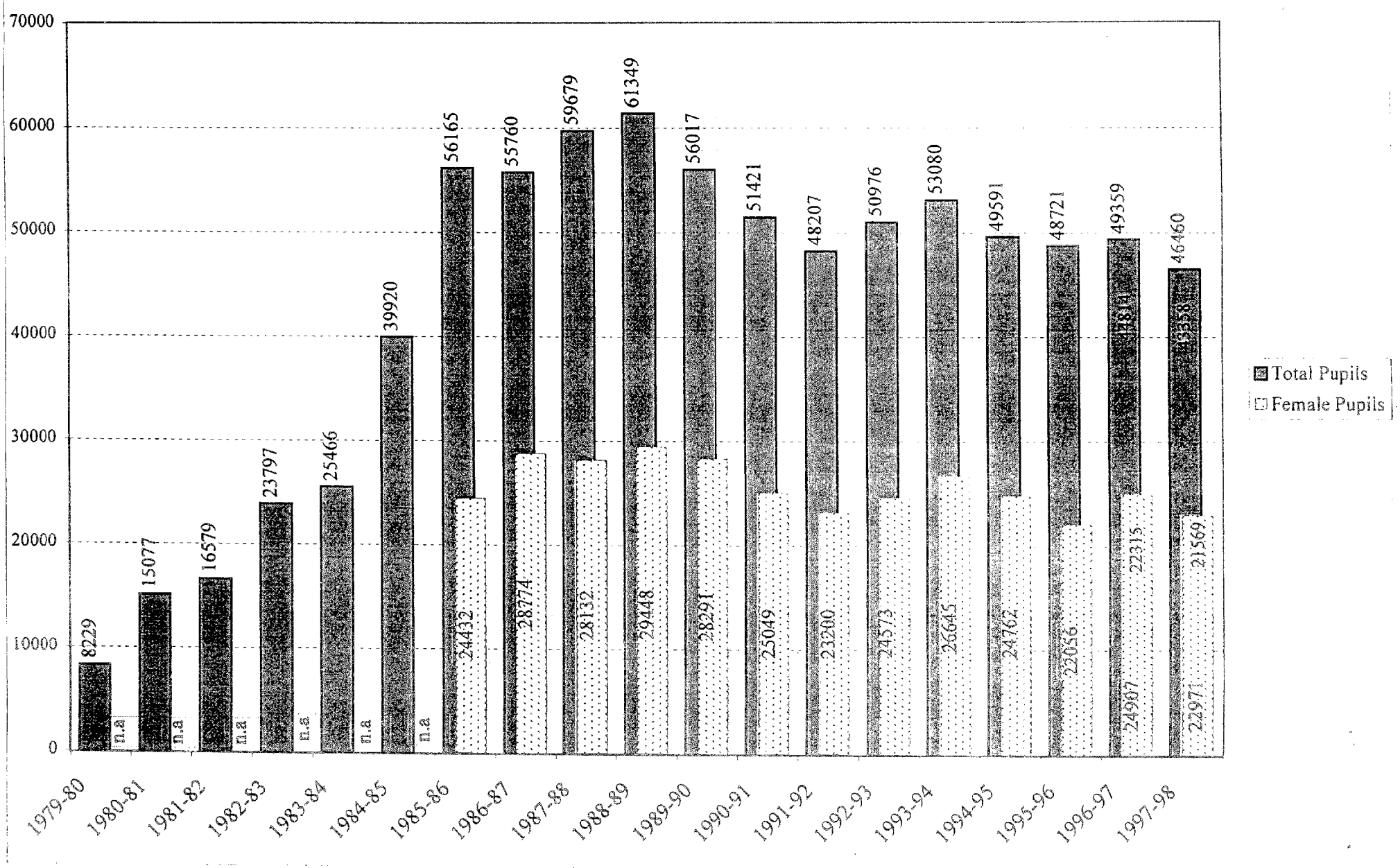


EMIS Center, Department of Planning, MoEYS(01/07/98)

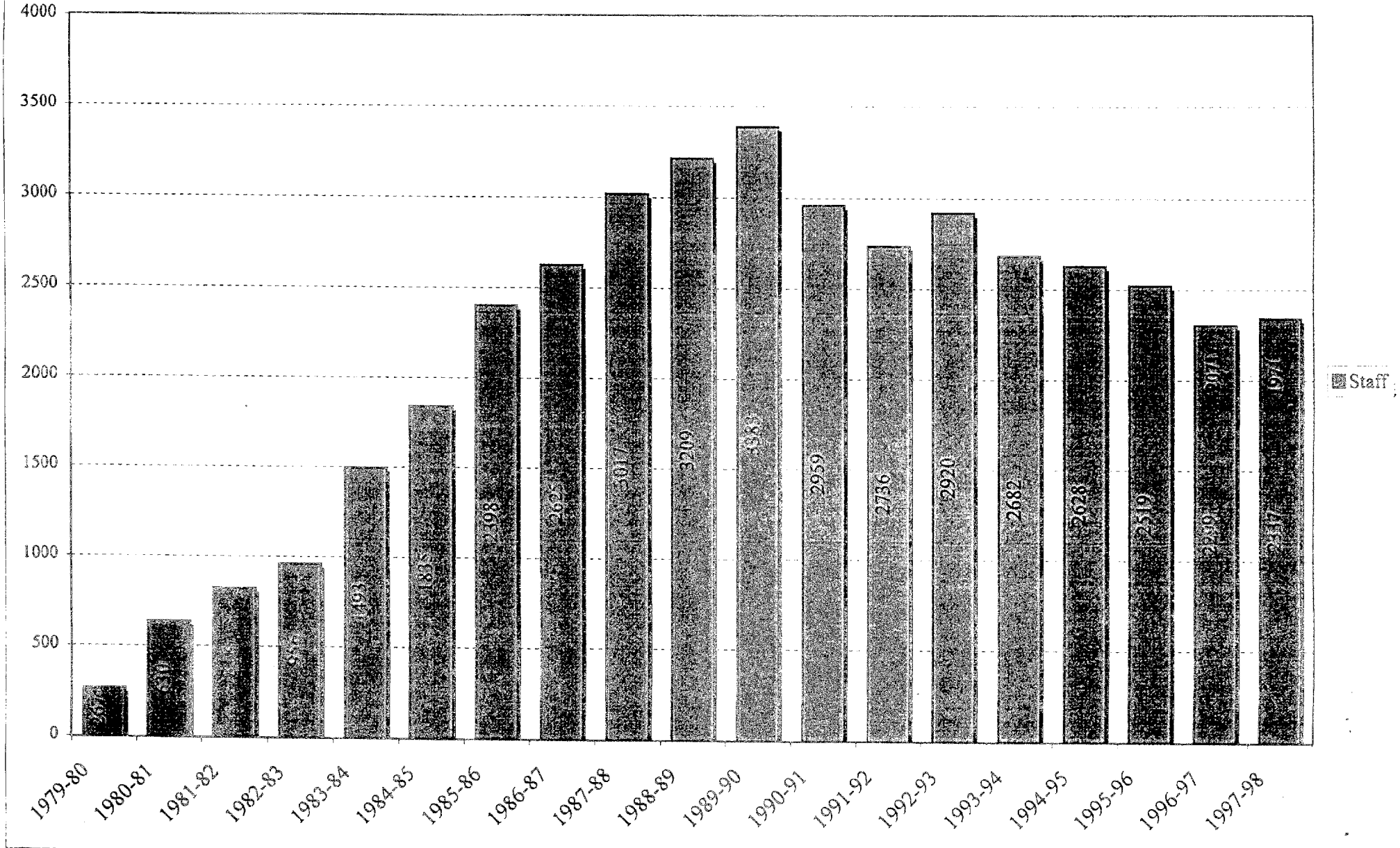
EVOLUTION OF CLASSES IN PRE-SCHOOL (1980 - 1998)



EVOLUTION OF PUPILS IN PRE-SCHOOL (1980 - 1998)

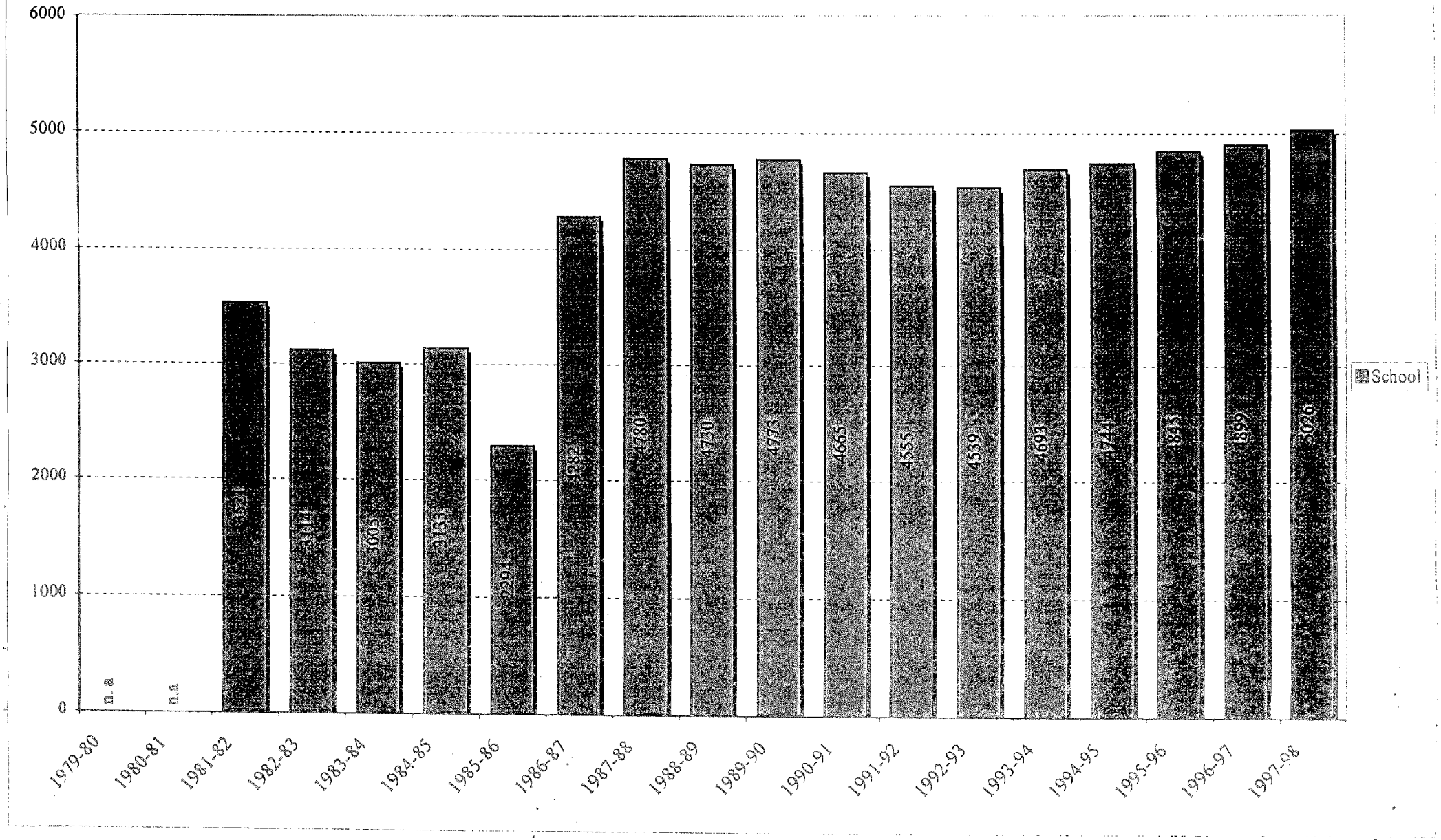


EVOLUTION OF STAFF IN PRE-SCHOOL (1980 - 1998)



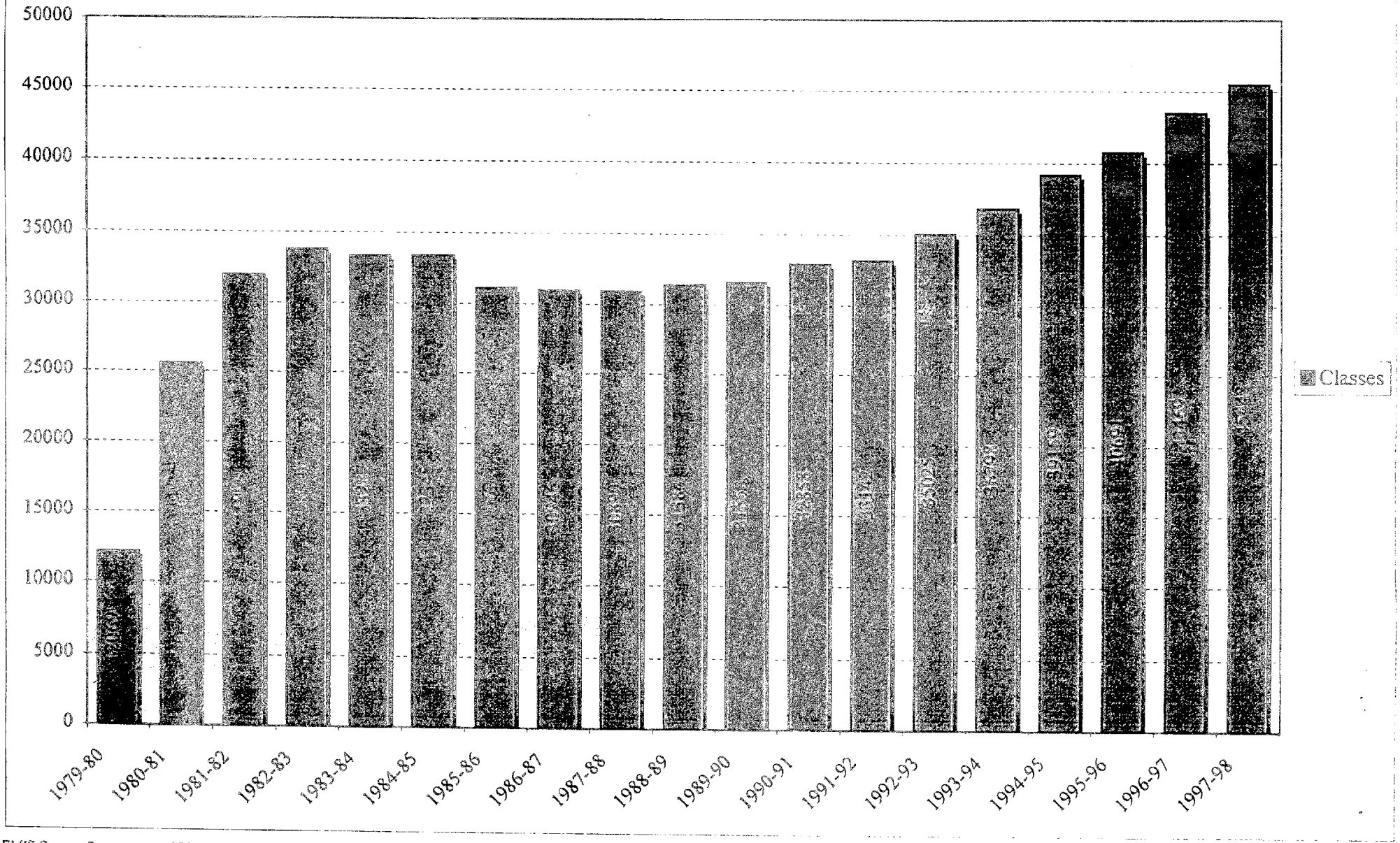
EMIS Center, Department of Planning, MoEYS(01/07/98)

EVOLUTION OF PRIMARY SCHOOL (1980 -1998)



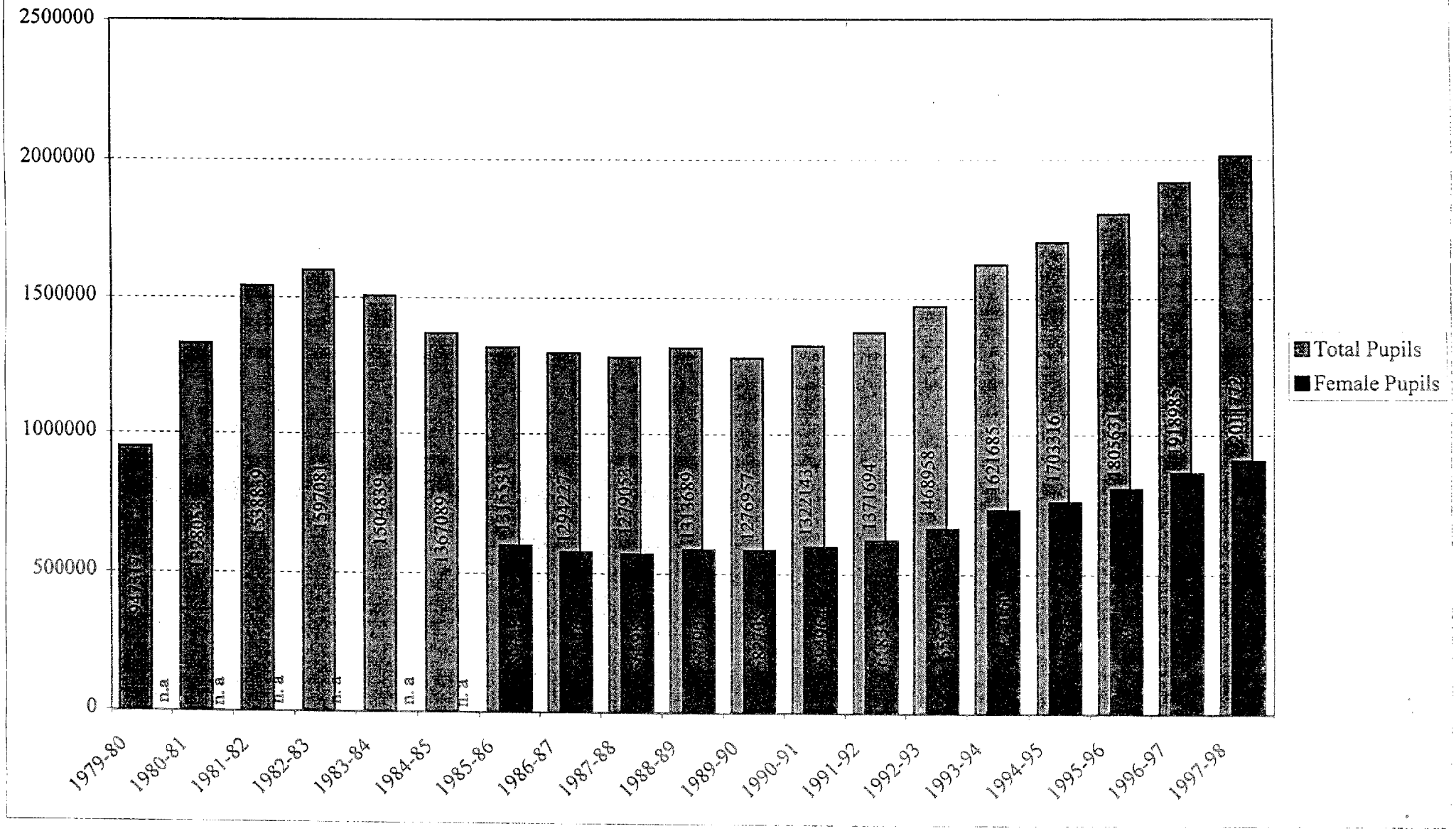
EMIS Center, Department of Planning, MoEYS(01/07/98)

EVOLUTION OF CLASSES IN PRIMARY EDUCATION (1980 - 1998)



EMIS Center, Department of Planning, MoEYS(01/07/98)

EVOLUTION OF PUPILS IN PRIMARY EDUCATION (1980 - 1998)



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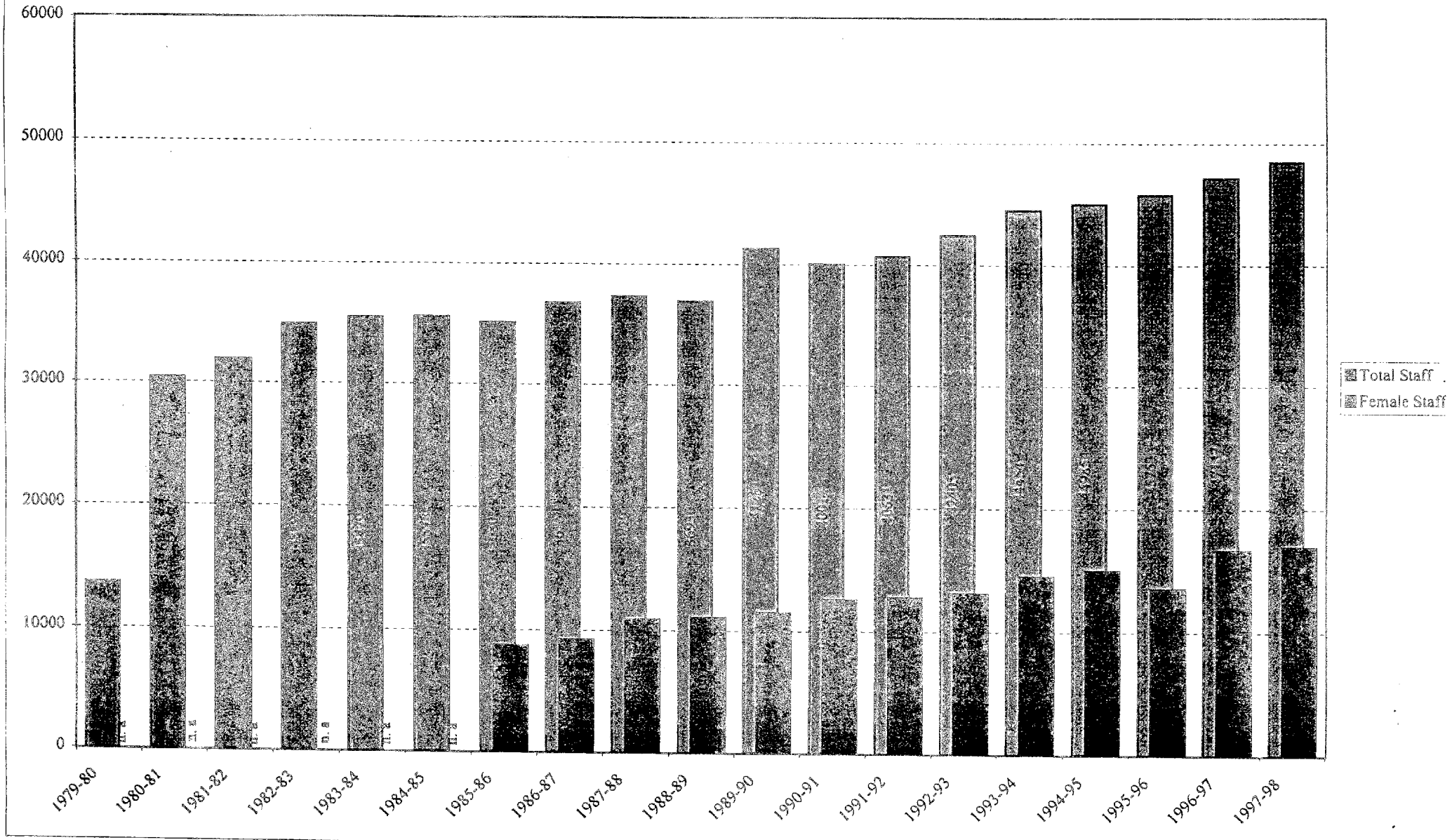
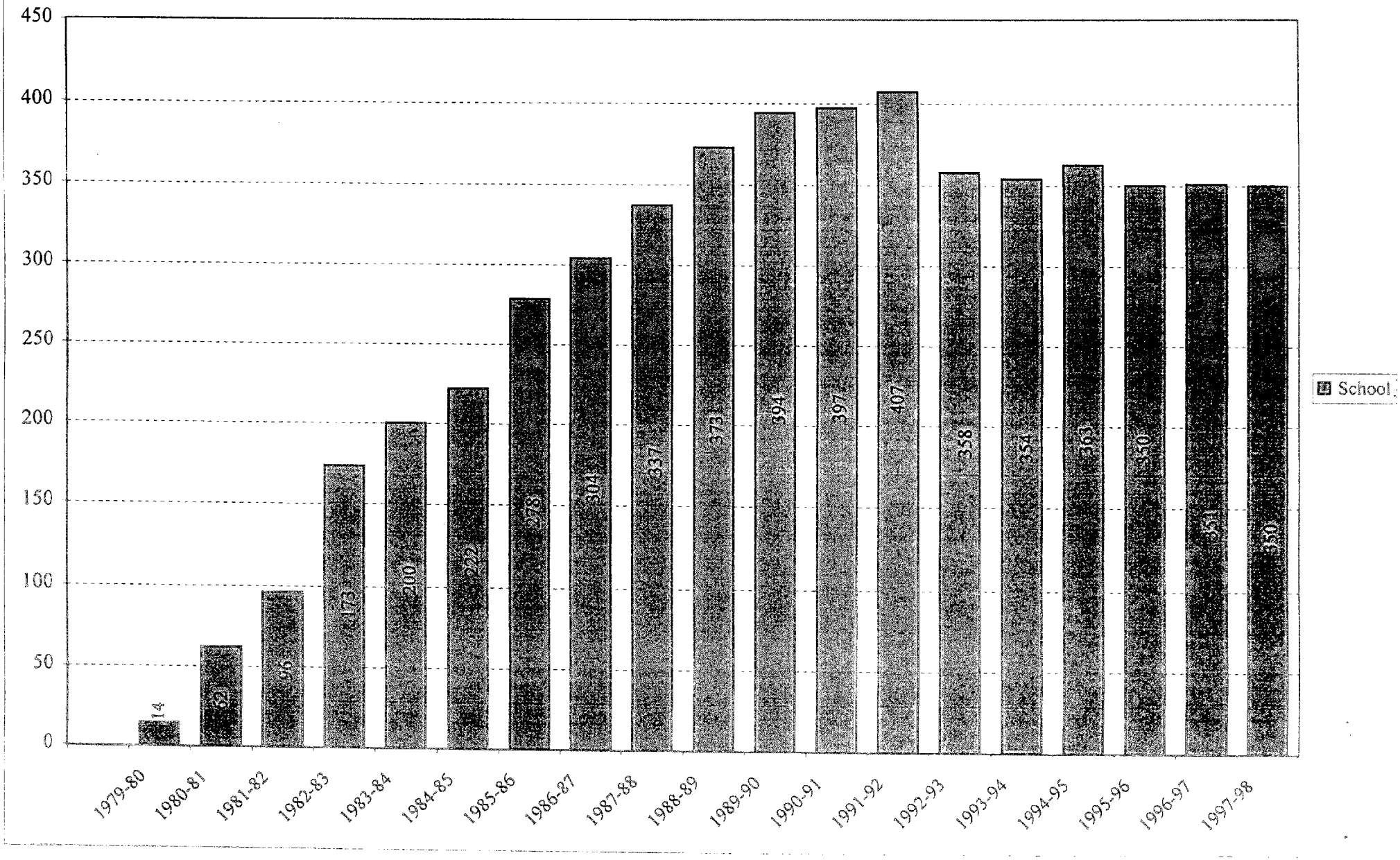
EVOLUTION OF STAFF IN PRIMARY EDUCATION (1980 - 1998)

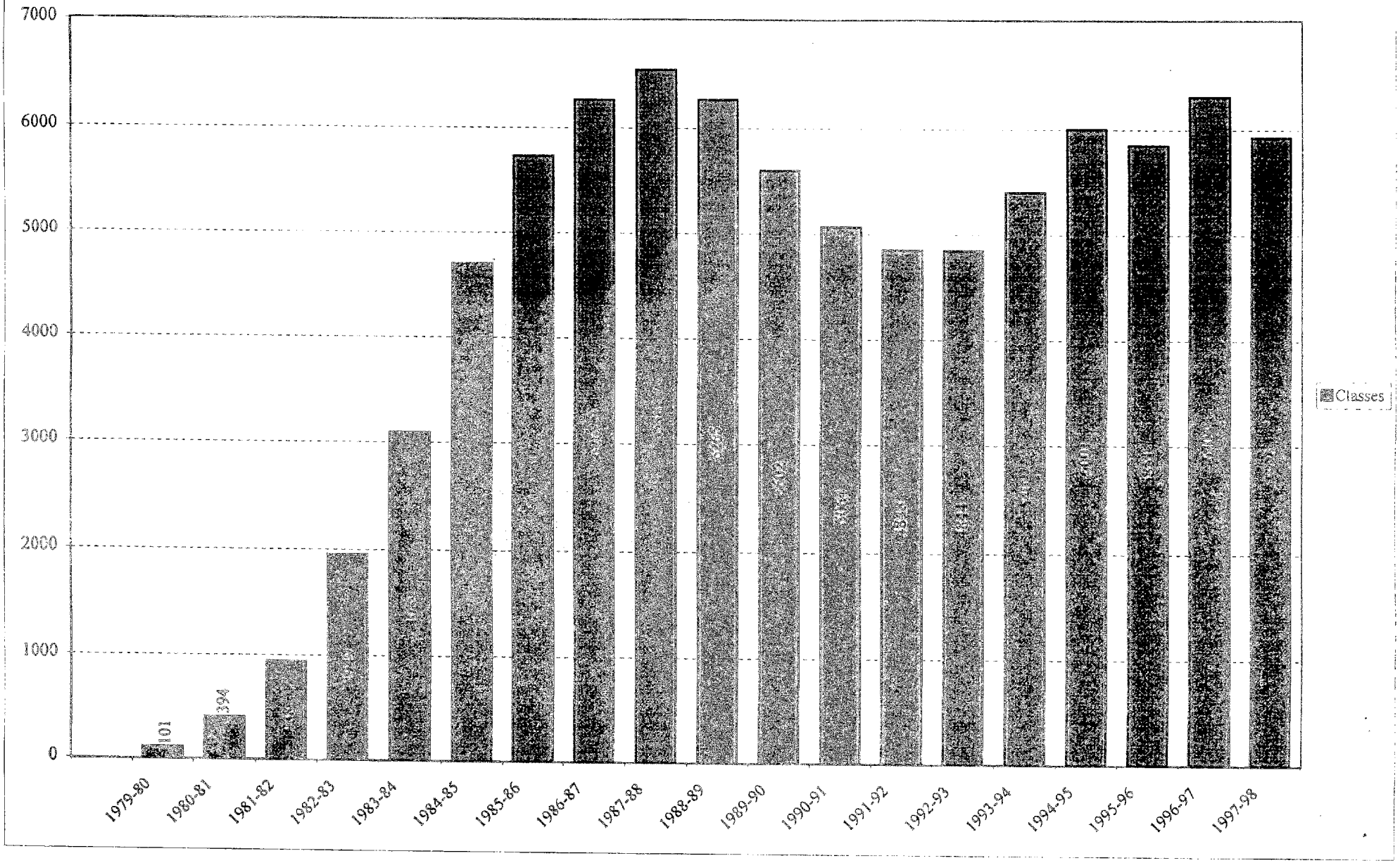


EMIS Center, Department of Planning, MoEYS(01/07/98)

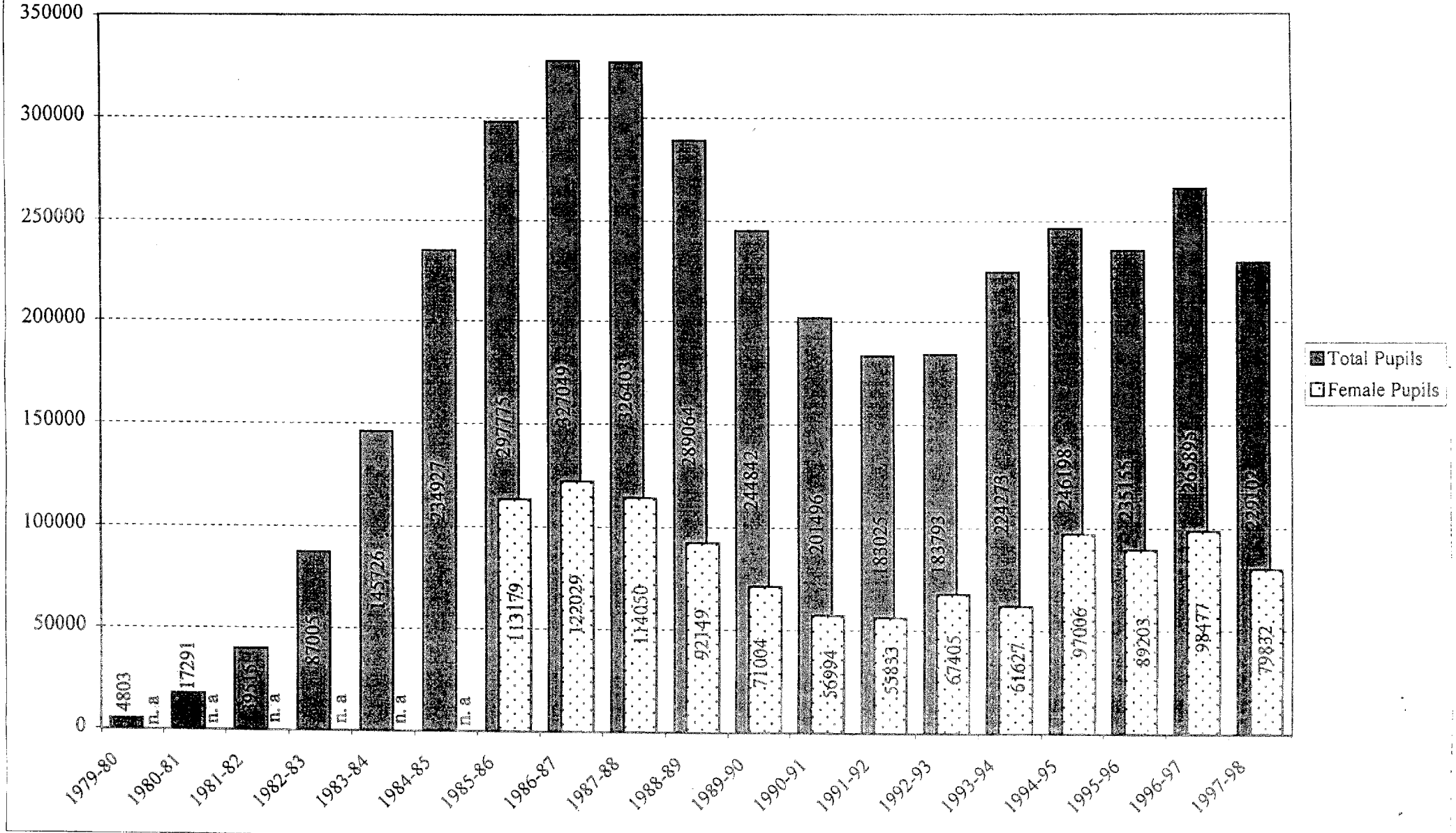
EVOLUTION OF JUNIOR HIGH SCHOOLS (COLLEGE) (1980 - 1998)



EVOLUTION OF CLASSES IN LOWER SECONDARY LEVEL (1980 - 1998)

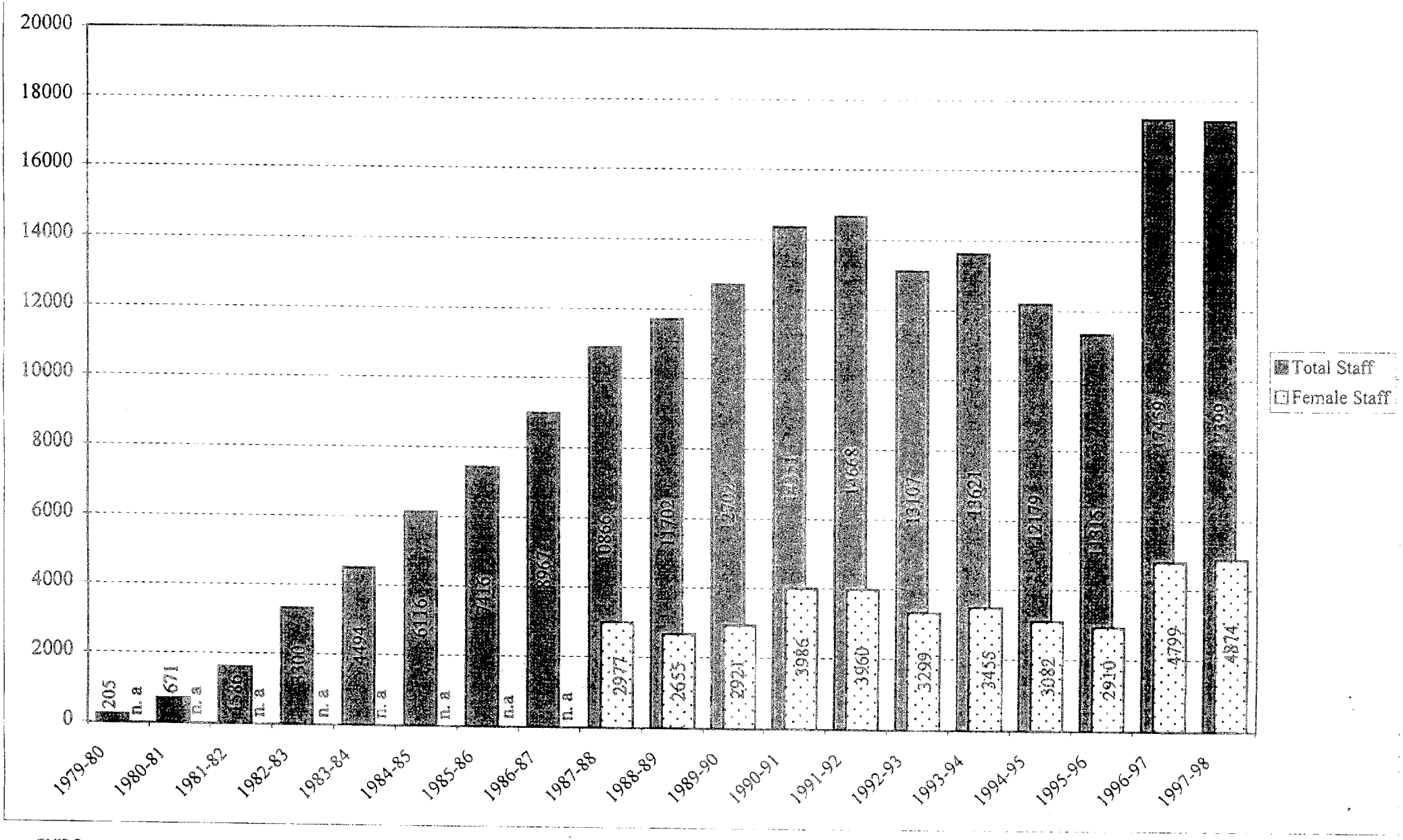


EVOLUTION OF PUPILS IN LOWER SECONDARY LEVEL (1980 - 1998)



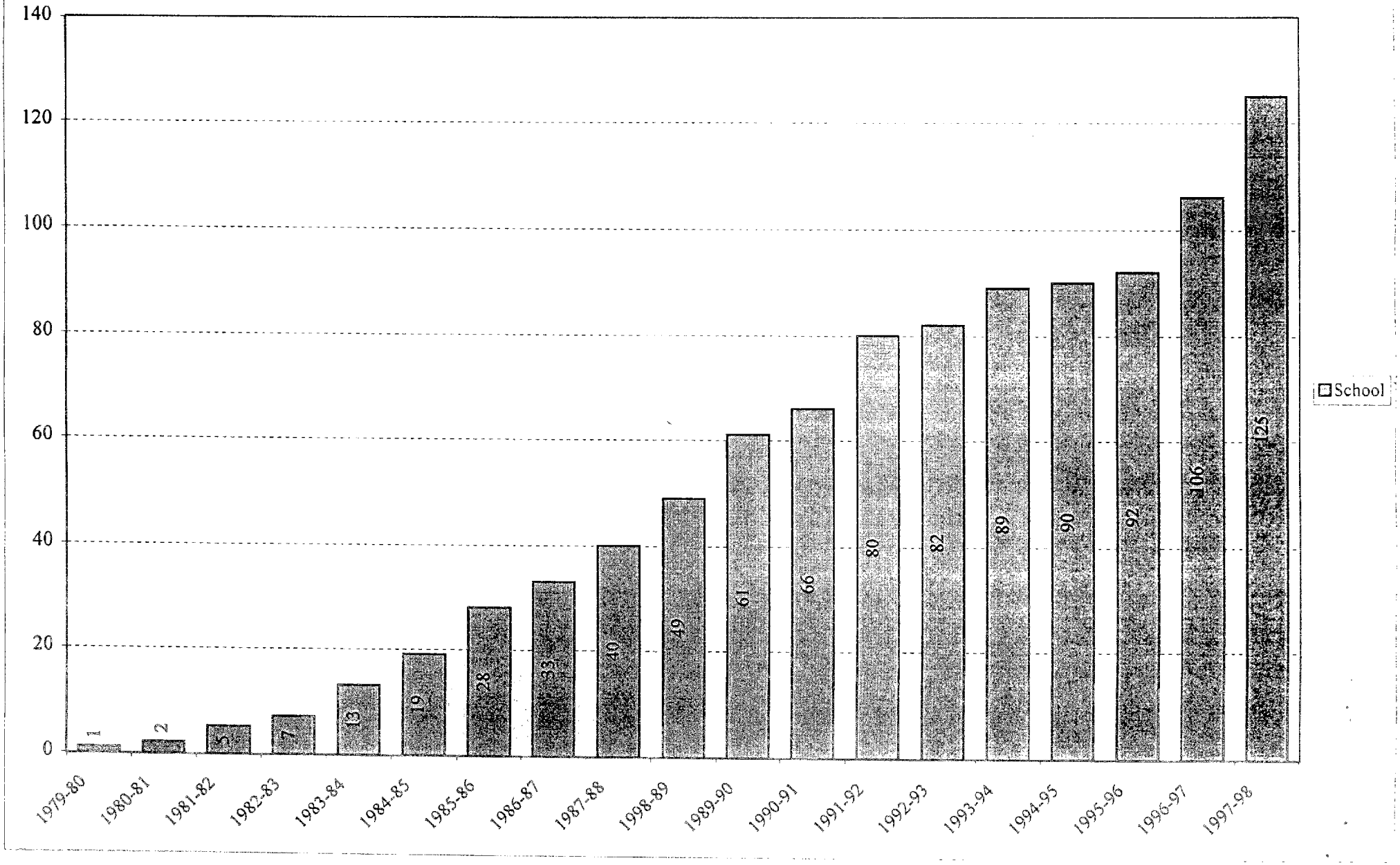
EMIS Center, Department of Planning, MoEYS(02/07/98)

EVOLUTION OF STAFF IN LOWER SECONDARY LEVEL (1980 - 1998)



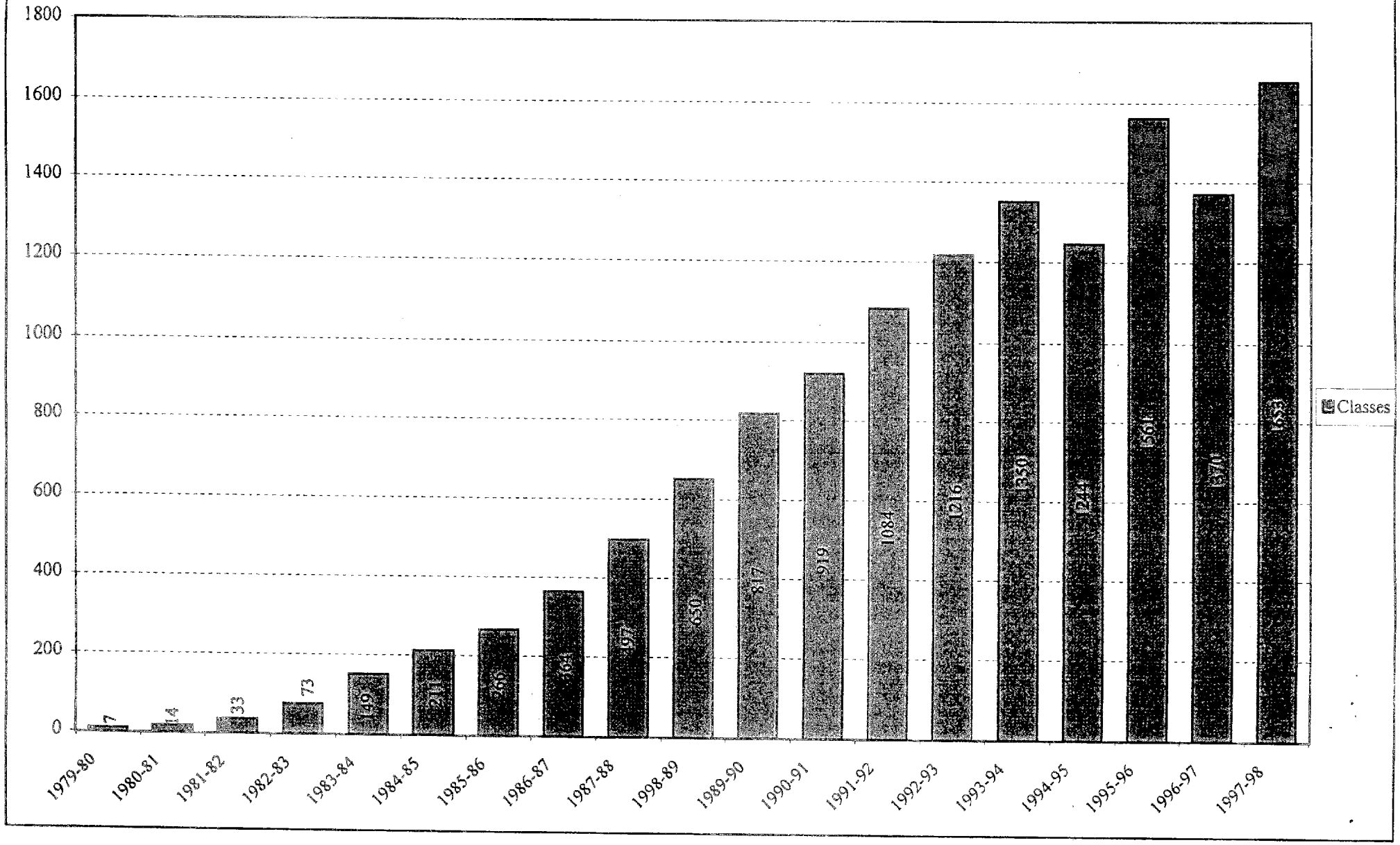
EMIS Center, Department of Planning, MoEYS(02/07/98)

EVOLUTION OF SENIOR HIGH SCHOOLS (Lycée) (1980 - 1998)



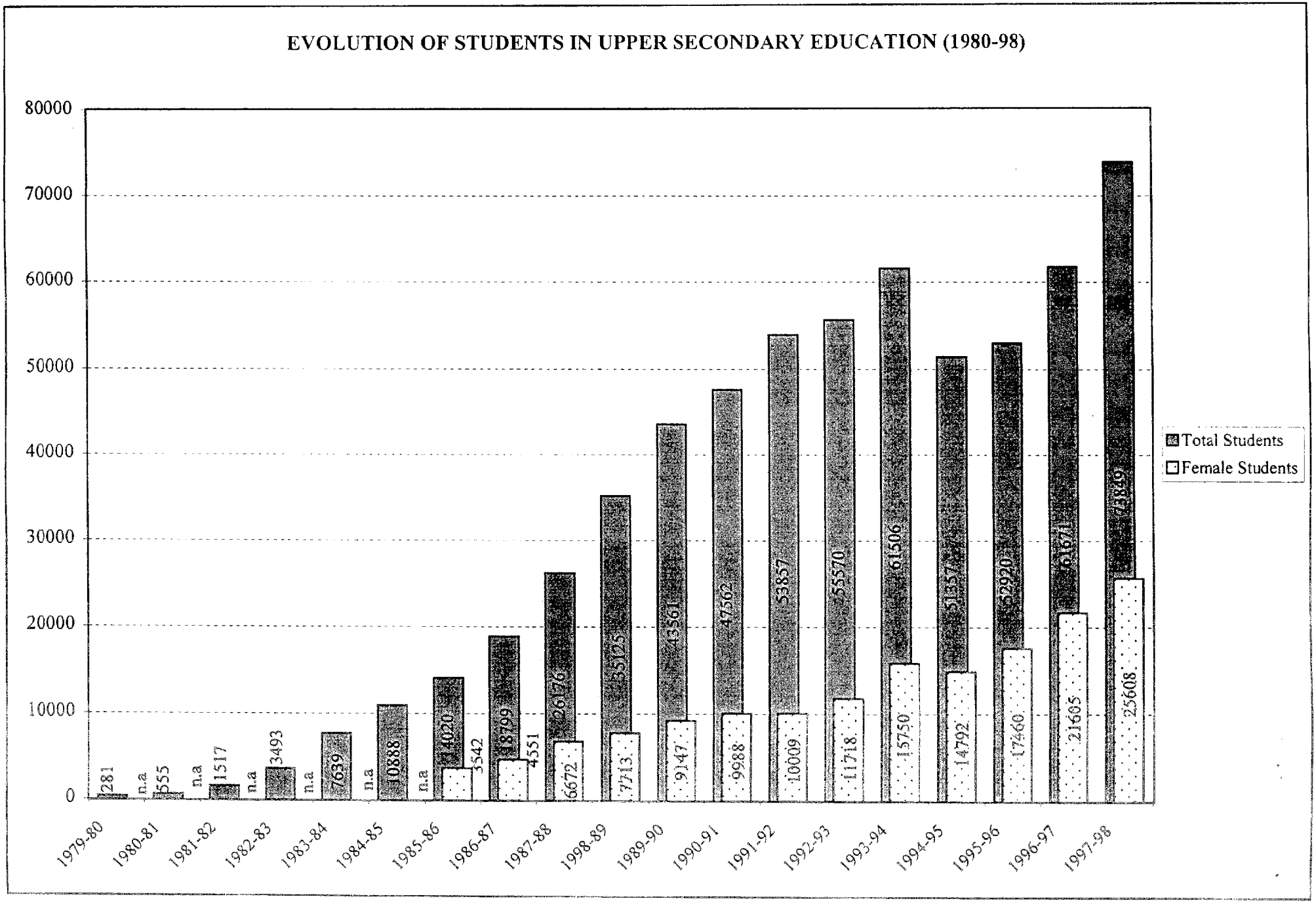
EMIS Center, Department of Planning, MoEYS(02/07/98)

EVOLUTION OF CLASSES IN UPPER SECONDARY EDUCATION (1980-98)

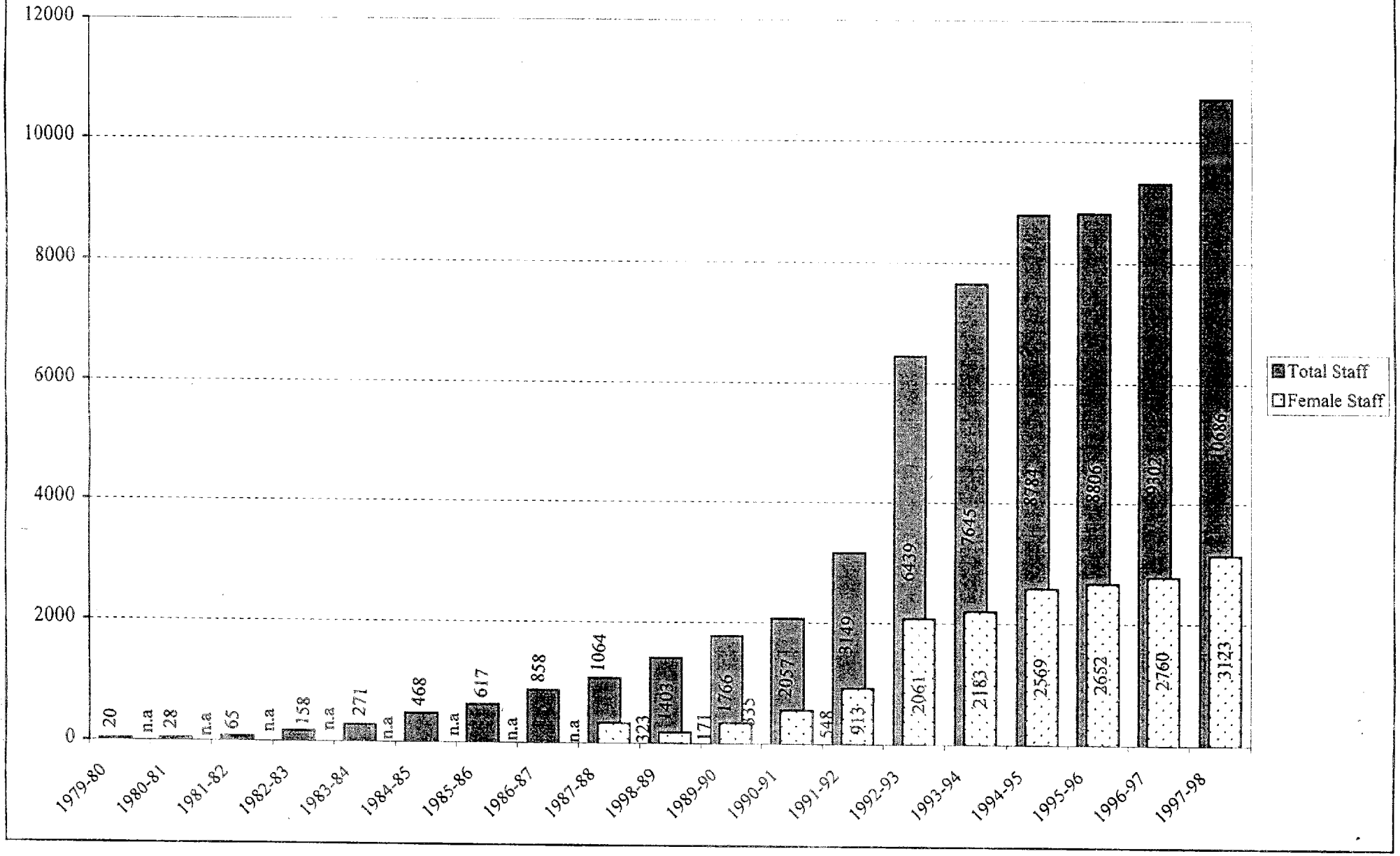


EMIS Center, Department of Planning, MoEYS(02/07/98)

EVOLUTION OF STUDENTS IN UPPER SECONDARY EDUCATION (1980-98)



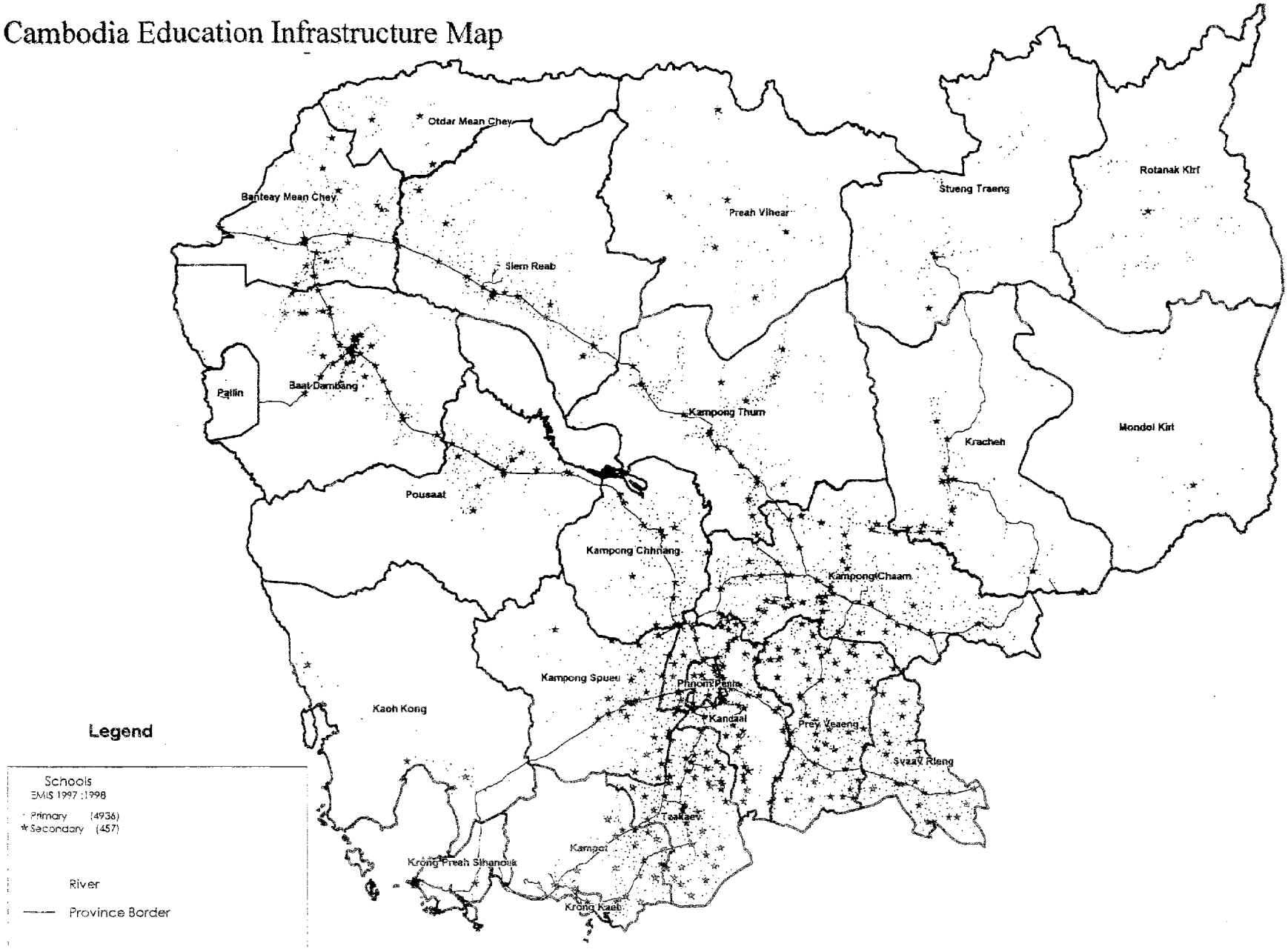
EVOLUTION OF STAFF IN UPPER SECONDARY EDUCATION (1980-98)



EMIS Center, Department of Planning, MoEYS(02/07/98)

7 . Cambodia Education Infrastructure Map, 1999, PMMO, MoEYS

Cambodia Education Infrastructure Map



8．1994年～1998年までの物理・化学・生物・数学の高校のテスト（AusAIDにて入手）

MATHS — 1994 Paper
Time Allowed: 3 Hours

I. Given function $y = f(x) = ax^4 + bx^2 + c$. If $ab \geq 0$, prove that the graph representing function $y = f(x)$ has a kick. (Score: 1.00)

II. A tan is made, of a conic shape with a known volume, by using a kind of material to cover. Prove that the making of this tan would take minimum material, if the tan's height measured as an expression of radius of the base multiplied by $\sqrt{2}$. (Score: 1.00)

III. Given function $y = f_m(x) = \dfrac{2x^2 - mx + 1}{mx - 1}$.

1. Determine the value of m so $y = f_m(x)$ has minimum value, for $x = 2$. (Score: 1.00)
2. **a.** Investigate variability and plot curve (C_1) by function $y = f_1(x)$, for $m = 1$. (Score: 1.50)
   b. Show that on curve (C_1) there are two points, where the oblique asymptote touches and are perpendicular to curve (C_1). Calculate for the abscissa of the two points. (Score: 0.50)
3. **a.** Determine the value of m so the straight line (D_m) of equation $y = -x + m$ cuts curve (C_1) at A and B. (Score: 0.50)
   b. Find the middle point I of $[AB]$. (Score: 0.50)

IV. Given right-angled triangle ABC and BCD are identical and share the same hypotenuse $[CD]$, whose length is $2x$. The two triangles' planes form an angle of $60°$. M is the middle point of $[AB]$ and N is the middle point of $[CD]$.

1. Prove that the straight line (AB) and (CD) are perpendicular to (MN). (Score: 1.00)
2. Calculate for $|AB|$and $|MN|$ as a function of x. (Score: 1.00)
3. Calculate for the volume of pyramid $ABCD$. (Score: 1.00)
4. Calculate for the total area of the pyramid $ABCD$. (Score: 1.00)

PHYSICS/CHEMISTRY — 1994 Paper
Time Allowed: 3 Hours

A. Physics:

I. Given four condensers of the same capacity. First, they are arranged in parallel (one condenser for each line), then in series. Which of the arrangements provides the higher capacity? Calculate for the difference of capacity between the two arrangements.
(Score: 0.75)

II. Given a prism of apex $A = 60°$ and index $n = \sqrt{2}$. Draw the track of a light ray, in main cross-cut surface, which is projected to the first surface of the prism under projected angle $i = 45°$. Calculate for the divergence. Is the divergence a special value? (Score: 1.00)

III. Given eight [dry] batteries with the same capacity. Each battery has electromotive force of $2\ V$ and inside resistance of $0.5\ \Omega$. The batteries are arranged in series of four batteries in each line, and the two lines of series then are arranged in parallel in between point A and B.

1. Calculate for the electromotive force and the inside resistance of the batteries.
(Score: 0.50)

2. Between A and B they install:
- A motor M
- An electrolysis container of acid solution.
- Voltameter V with strong resistance.

If the motor is held so it is in still motion voltameter shows $5\ V$ and at cathode side in the electrolysis container hydrogen evaporates $7\ cm^3$ per minute. Find:

a. Current from batteries, current in electrolysis container, and current in motor.
(Score: 0.75)

b. Resistance in electrolysis container, if its reversed force to the electromotive force is known to be $e = 1.6\ V$. (Score: 0.50)

c. Resistance in motor. (Score: 0.50)

3. If the motor now is let go in motion voltameter shows $6\ V$. Find:

a. Current from batteries. (Score: 0.50)

b. Current in electrolysis container and hydrogen's volume evaporating in every minute.
(Score: 0.50)

B. Chemistry:

I. What is *hydrocarbon*, *homologue*, and *isomer*? (Score: 0.75)

II. Given three kinds of powder Mg, Al, and Al_2O_3. Choose any chemical method to identify each of the above elements and confirm by writing down the equation/s representing the reaction. (Score: 0.75)

III. $0.297\ g$ of alkali metals (Na - Ba) is taken to have a complete reaction with water. As a result, solution A and gas B are received. To dilute solution A, in $50\ ml$ solution $0.1\ M$ of chloric acid is used.

1. Calculate for mass in gram of each metal in the alkali metals. (Score: 1.00)
2. Calculate for oxygen's volume (under normal condition) in cm^3 necessary for burning out gas B. (Score: 1.00)

IV. In a complete burning out of $2.8\ g$ of alkyne, $8.8\ g$ of CO_2 and $3.6\ g$ of H_2O are received. Density of the alkyne compared with air is 1.93.

1. Determine the formula of the alkyne. (Score: 0.75)
2. Determine the existing isomer. (Score: 0.75)

BIOLOGY — 1994 Paper
Time Allowed: 1 Hour

1. Explain the following terms: *artificial coacervate*, *homologous chromosome*, *back-cross breeding*, *polyploidy*. (Score: 1.00)

2. **a.** What is atavism? What causes this phenomenon? (Score: 0.50)
b. What is the difference between meiosis and mitosis? (Score: 0.50)

3. How many kinds of changes of breed are there? What are they? (Score: 0.50)

4. Given that a gene has 0.408μ long. How much information, that determine a protein structure containing amine acid, can it store. (Score: 0.50)

5. Mendel conducted a cross-fertilisation of colour beans from parents of the same synoecious type. The outcome he received is as follow: 135 glossy-yellow grains, 101 wrinkly-yellow grains, 108 glossy-green grains, and 32 wrinkly-green grains.
a. What reproduction law does this cross-fertilisation's outcome conform. Explain.
b. Determine synoecious type of the parent beans and of F_1 generation. (Score: 2.00)

MATHS — 1995 Paper
Time Allowed: 3 Hours

I. Find limit of $y = f(\chi) = \lg\left(\sqrt{\chi - 1} - \sqrt{7 - \chi}\right) + \sqrt{\cos\chi}$ (Score: 1.00)

II. Solve $\lim\limits_{\chi \to 1} \dfrac{1 - \chi^2}{\sin \pi\chi}$; $\lim\limits_{\chi \to 0} \dfrac{a - \sqrt{a^2 - \chi^2}}{\chi^2}$ $(a > 0)$ (Score: 1.00)

III. Given $f(\chi) = \dfrac{1 - \cos\chi}{1 + \cos\chi}$

1. Solve $f'(100\pi)$; $f'\left(\dfrac{175\pi}{2}\right)$ (Score: 0.50)
2. Define the value of χ for $f(\chi) = f'(\chi)$ (Score: 0.50)

IV. Given $g(\chi) = 29\chi^2 + 6\chi + 1995$. For $a > 0$; $b > 0$

Prove that $g\left(\dfrac{a+b}{1+a+b}\right) < g\left(\dfrac{a}{1+a} + \dfrac{b}{1+b}\right)$ (Score: 1.00)

V. Solve $f(\chi) = \int \dfrac{4\chi^4 - 5\chi^3 + 2}{\chi^3} d\chi$; where $f(1) = -4$ (Score: 0.75)

VI. A right-angled parallelepiped has base's sides of the lenghth of 3 *cm* and 4 *cm*, and the angle formed by these two sides of the base is 120°. The hight of each ridge of the side faces is equal to the geometric average of the lenghth of the base's sides. Find the diagonal of the parallelepiped. (Score: 1.50)

VII. A conic segment has bases' radius **a** and **b**. The surface area cutting abreast with the axis is equal to the difference of subtraction of the two bases' areas. Calculate for the volume of the conic segment. (Score: 0.75)

VIII. (C) denotes for the curve of function $y = f(\chi) = \dfrac{\chi^2 - 4\chi}{\chi^2 - 4\chi + 3}$.

1. Investigate the variability of function $y = f(\chi)$ and curve (C). (Score: 1.50)
2. Find the coordinate of the intersection where the straight line touches curve (C) at abscissa [0;4]. (Score: 0.75)
3. Solve by the existing graph or by the equation $(1-k)\chi^2 - 4(1-k)\chi - 3k = 0$ with discussion of the value of k. (Score: 0.75)

PHYSICS/CHEMISTRY — 1995 Paper
Time Allowed: 3 Hours

I. Physics:

1. Given resistance R_1 and R_2, where $R_1 > R_2$, and circuit with tension of 120 volts. If the resistances were wired in series the current in the circuit would be $1.2\ A$. If the resistances were wired in parallel the current in the circuit would be $5\ A$.

a. Calculate for R_1 and R_2. (Score: 1.00)

b. Calculate for the current flowing through each resistance in both series and parallel cases. (Score: 0.50)

2. Electric current of $10\ A$ is sent in 0.1 second through a length of bobbin, whose $N = 500$. A combined spirals made of conductor tying consistently, in two layers, on a cylinder of radius $R = 10\ cm$. The diameter of the conductor is $d = 1\ mm$ (excluded the insulating tape).

a. Write down the cluster of inductance L of the bobbin in relation to the number of spires, the bobbin's radius, and the diameter of the conductor. (Score: 1.00)

b. Find the electromotive force of auto-induction caused in the bobbin.
Given $\mu_0 = 4\pi \times 10^{-7}\ SI$. (Score: 0.50)

3. Define the condition for acquiring a total reflection. (Score: 0.50)

4. A given prism has a cross-cut surface of a right-angled triangle MNP, where M is a right angle with index n_1. On the surface MN adhered another prism, whose main cross-cut surface is a right-angled triangle MNQ, where M is a right angle with index n_2. A ray of light SI is projected perpendicularly to surface NQ of prism MNQ. Demonstrate that the ray coming from prism MNP is parallel with the ray projected onto prism MNQ, if $n_1 = \sqrt{2}$ and $n_2 = \sqrt{3}$. (Score: 1.50)

II. Chemistry:

1. Write down the equation/s of chemical reaction occurs in the electrolysis of Sodium Chlorine $(NaCl)$ in water. What kind of chemical reaction occurring at the electrode? Why? (Score: 1.50)

2. Adding $22.3\ g$ of Al and Fe_2O_3 mixture into a closed container and heat it up so a chemical reaction occurs. Al gets oxygen from Fe_2O_3 completely and still there being Al remains in the container. Then HCL is added into the container until all the elements have reacted completely. $5.6\ l$ (measured under normal condition) of gas is received. Calculate for mass of the Al and Fe_2O_3. Given $Al = 27$; $Fe = 56$; $O = 16$. (Score: 1.50)

3. Write down the equation/s of the chemical change as follow:
$C \rightarrow CH_4 \rightarrow \cdots \rightarrow CH_3OH \rightarrow HCHO$. (Score: 1.00)

4. An organic substance is composed of carbon and hydrogen. Burning up $7\ g$ of this substance $22\ g$ of gaseous carbon dioxide and $9\ g$ of water is received. Note that under normal condition $1\ dm^3$ of this substance has mass of $1.25\ g$. Write down the molecular formula of the substance. Given $C = 12$; $H = 1$. (Score: 1.00)

BIOLOGY — 1995 Paper

Time Allowed: 1 Hour

1. Define the following terms: *Karyotype of Species, Genetic Code, Nucleotides,* and *Attached Genes.* (Score: 1.00)

2. What is Comparative Anatomy? (Score: 0.50)
What is the benefit of this study? (Score: 0.50)

3. In the process of synthesising protein, what currents does ribosome receive?
And from where? (Score: 0.50)
Describe the currents in detail. (Score: 0.50)
Note: No drawing is required.

4. What is *back-cross breeding?* (Score: 0.50)
What benefits does it bring into agriculture? (Score: 0.50)

5. Crossbreeding a purely-white-breed chicken with a purely-black-breed chicken gives a black-and-white chicken.

a. Indicate the outcome of crossbreeding a black-and-white chicken with a black-and-white chicken. (Score: 0.50)

b. What outcome will you get, if a black-and-white chicken were crossbred with a purely-white-breed chicken? (Score: 0.50)

TRANSLATION

Exam : **Grade 12** Date : **17 August 1998**
Subject : **Mathematics** Duration : **2 hours** Score : **100** Marks

TOTAL

I. (5 marks) Write " true " or " false " in the box before each statement below :

☐ I (2 , -- 1) is the centre of symetry of the curve representing the function $f(x) = x - 1 + \frac{1}{x-2}$.

☐ If f(x) is an odd function its primitive is an even function.

☐ $\int_a^b x dx = b^2 - a^2$ ٦

☐ f (x) = x^2 + 3x +2 has positive sign x.

☐ $\frac{a}{b} + \frac{b}{a} > 2$ is verified for a > 0 ; b > 0 .

II- (4 marks) Tick in the box before the right answer :

a- The equation $3x^2$ -- x --1 = 0 has two roots different x_1 ; x_2 :

☐ $x_1 < \frac{4}{5} < x_2$ ☐ $x_1 < x_2 < \frac{4}{5}$ ☐ $x_1 > x_2 > \frac{4}{5}$ ☐ $x_1 = \frac{4}{5} < x_2$

b- A cylinder has radius R and water height R. Find the level of water h if we put a ball with radius $\frac{R}{2}$ in the cylinder :

☐ $h = \frac{3R}{2}$ ☐ h = 2R

☐ $h = \frac{7R}{6}$ ☐ h = R

III- (6 marks) Fill in the table of variation the function f (x) in the intervalle [-- 4 , 3] represented by the graph below :

x	
f'(x)	
f(x)	

IV- (15 marks) ABCDEFGH is a cube with ridge a. Calculate the volume of the tetraeder BDEG.

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V- (15 marks) Given f (x) = (1 + cosx) (2 -- cosx) calculate $\int f(x)dx$.

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VI- (15 marks) Solve the inequation $\frac{1}{2} - 2\frac{1}{2} - 3 < 0$.

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VII- (15 marks) A box has a volume of 972 cm^3 . Determine the dimensions of the box so that it has a smallest total area.

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VIII- (25 marks) f_m is a function determined by $f_m(x) = \frac{mx^2 - (m+2)x + 2}{2x - 5}$. Determine m so that f_m (x) has no extremum then draw the graph of f (x) for $m = \frac{1}{2}$.

- derivative f_m' (x) =

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- f_m(x) has no extremum if :

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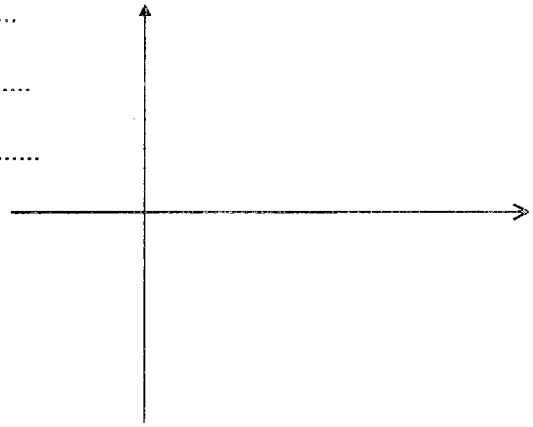
- When $m = \frac{1}{2}$ the function is f(x) = ...
- The limited domain of f(x) is = ...
- Vertical asymptot : .....
- Inclined asymptot is : .....
- sign of derivative f ' (x) .....



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- Table of variation with limits :

x	
f ' (x)	
f (x)	

TRANSLATION

Exam : **Grade 12** Date : **17 August 1998**
Subject : **Physics** Duration : **40 minutes** Score : **34** Marks

TOTAL

Instruction : 1. Examinee must cross the top of page2 which has to be cut off.
2. Examinee must write the answers of questions below on page 2 and page3.

I. (8 marks) One spherical mirror gives from a real object at 40 cm before the mirror a virtual image at 30 cm from the mirror. Find the nature and the focal distance of the spherical mirror.

II. (6 marks) An electrical line has a resistance $R_1 = 30\ \Omega$ at $50\ ^0C$ and $R_2 = 40\ \Omega$ at 150^0 C. Find the coefficient of temperature of the resistance.

III- (5 marks) A voltmeter has a resistance $R = 140\ \Omega$. Find the value of the resistance R_p which should be connected in series with the voltmeter so that the value of one division of it increases 10 times.

IV- (9 marks) Calculate the voltage between points A and B in function of the capacitances C_1 , C_2 , C_3 , C_4 and the electromotive force E.

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V- (2 marks) Tick in the box before the right answer :

a- If n is the normal vector to the surface of a frame of electrical fil placed in a uniform magnetic field (B) the value of the magnetic flux crossing the electrical fil frame is maximum when :

☐ Angle (B,n) = 0^0 ☐ Angle (B,n) = == 0^0
☐ Angle (B,n) = 90 ☐ Angle (B,n) = 180^0

b- In vacuum the magnetic induction at a point located 10 cm from a straight line crossed over by a current of 5 A is :

☐ 5.10^{-6} T ☐ $6,28.10^{-5}$ T
☐ 10^{-5} T ☐ $3,14.10^{-5}$ T

VI- (2 marks) Fill in the gaps below :

A convex lens has a curved radius : R = 15 cm made from a substance with index n = This lens has a vergence C = ... and a focal distance f = ...

VII- (5 marks) Electrical charges + Q , -- Q , + q are placed at the summits of an equilateral triangle with side a . Draw the vector-force F undergone by a charge + q .

The vector-force F has :

- origine : .....
- direction :
- sens :

TRANSLATION

Exam : **Grade 12** Date : **17 August 1998**
Subject : **Chemistry** Duration : **40 minutes** Score : **33** Marks

TOTAL

Instruction : 1. Examinee must cross the top of page2 which has to be cut off.
2. Examinee must write the answers of questions I, II and III on page 2 and page3.

I. (8 marks) Carbon oxide (CO) is reduced at high temperature. 16 g of iron oxide are used. After reaction we get a solid 11.2 g . Determine the formula of iron oxide . Fe = 56; O = 16; C = 12.

II. (14 marks) 14.8 g of a satured monoalcohol A reacts on Natrium. After reaction we get a gas 2 240 ml measured in normal conditions.

a- Determine the formula and the name of A.

b- If A reacts on CuO we get a compound B . B can give " reaction for the preparation of mirror " and we get a compound D. Write the equation representing the reaction of transformation from A to B and from B to D and give the name of B and D. C = 12; H = 1; O =16; Na = 23.

III. (5 marks) Calculate the density in comparison with air, the density in comparison with hydrogen and specific mass of ammoniac gas in normal conditions. N = 14; H = 1.

IV. (2 marks) Tick in the box before the right answer :

a- Which of these is an alloy ?

☐ Fe III oxide ☐ Brass ☐ Iron carbur
☐ Mixture of powder of iron and aluminium

b- Which reaction is right ?

☐ $C_6H_6 + Cl_2 \longrightarrow C_6H_5Cl + HCl$

☐ $C_6H_6 + 3Cl_2 \longrightarrow C_6H_6Cl_6$

☐ $C_6H_6 + Cl_2 \longrightarrow C_6H_6Cl_2$

☐ $C_6H_6 + Cl_2 \longrightarrow C_6H_4Cl_2 + 2HCl$

V. (4 marks) Choose the words in the box and fill in the gaps :

Hydratation - Esterification - Dimerisation - Hydrolyse - Dehydratation - Trimerisation

$CH_2 = CH_2 + H_2O \longrightarrow CH_3\text{--}CH_2\text{--}OH$ is a ..... reaction.

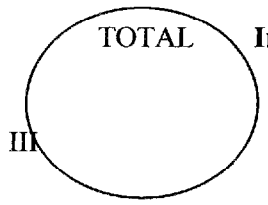
$CH_3\text{--}COO\text{--}CH_3 + H_2O \longrightarrow CH_3\text{--}COOH + CH_3\text{--}OH$ is a ..... reaction.

$C_2H_5\text{--}CH_2OH + HCl \longrightarrow C_2H_5CH_2Cl + H_2O$ is a ..... reaction.

$3C_2H_2 \longrightarrow C_6H_6$ is a ..... reaction.

TRANSLATION

Exam : **Grade 12** Date : **17 August 1998**
Subject : **Biology** Duration : **40 minutes** Score : **33** Marks



Instruction : 1. Examinee must cross the top of page2 which has to be cut off.
2. Examinee must write the answers of questions I, II and III on page 2 and page3.

I. (5 marks) Why has human being one type of ovule and two types of spermatozoid ?

II. (8 points) One segment of single chain of DNA has the following connexion order of nucleotide : --A--T--A--G--C--C--G--T--A--G--

1. Determine the connexion order on the second single chain of DNA.
2. If the second single chain is used to be a protoype in the synthesis of RNA how will the segment of RNA have the connexion order of nucleotide ?

III. (4 points) What are the factors that influence the specialised transformation of sex ? Give examples.

IV. (10 marks) For ox the character of black hair is the dominant character if compare with the character of yellow hair. Determine the result of the breeding at generation F_1 and generation F_2 .

V. (2 marks) Tick in the box before the right answer :

a. Two adjacent allels :
- ☐ are allels on the same chromosome.
- ☐ in general cannot transmit together to gamete.
- ☐ can be separated from each other in the first meiotic division.
- ☐ are far from each other and can not be separated from each other by crossing-over.

b. Hermaphrodite desease is caused by :
- ☐ genetic variation of ordinary chromosome.
- ☐ genetic variation of the number of sex chromosome.
- ☐ genetic variation of the structure of chromosome.
- ☐ genetic variation of gene.

VI. (4 marks) Choose the words in the box and fill in the gaps below :

Reproduction - Zygote - Parent cell - Organism - Daughter cell - Meiosis - Mitosis - Unicellular

In multicellular organism mitosis is a form of growth of growing cell. In mitosis a parent cell is divided into two identical ..... and furthermore resemble ..... . The mitosis causes the growing of our ..... . Then every multicellular organism is the result of mitotic division of a ..... by breeding between one male gamete and one female gamete.

MATHS — 1997 Paper
Time Allowed: 3 Hours

(10) **1.** Compare $a^5 + b^5$ and $a^4b + ab^4$; where $a > 0$; $b > 0$

(10) **2.** Calculate $\lim\limits_{x \to \frac{\pi}{4}} \dfrac{1 - \sqrt{2}\cos x}{1 - \sqrt{2}\sin x}$

(10) **3.** Calculate for the area segmented by parabola $y = \dfrac{x^2}{2}$ and straight line $y = 2$

(35) **4.**

(23) **a.** Study the variability of and plot graph (C) representing function $f(x) = \dfrac{x^2 - 4x - 5}{(x-2)^2}$ within the layout of orthonormal.

(02) **b.** (D) is a straight line with a coefficient of direction t; (D) runs through point A (-1; 0). Write the equation of (D).

(10) **c.** (D) crosses (C) at points M_1 and M_2, none of which is A. Discuss the value of t for obtaining the two points.

(15) **5.** Given a cone with radius $R = 5$ *cm* and [*side*]'s length is $2R$. Calculate for the cross-section area obtaining from a 30° angle formed by two [*sides*].

(20) **6.** A base of a pyramid is a triangle with the following sides 13 *cm*; 14 *cm*; 15 *cm*; the surface side connecting with the 14 *cm* base side is perpendicular to the base; this surface side's length is 16 *cm*. Calculate the total area of the pyramid.

PHYSICS — 1997 Paper
Time Allowed: 1.5 Hours

(08) **1.** An electron moves around the nucleus of hydrogen atom on an orbit n rounds per second, where $n = 7 \times 10^{15}$; this causes orbital electric current. Calculate for the magnetic induction B produced by the current at the centre of the electron's orbit; given that the radius of the orbit $R = 0.53 \times 10^{-10}$ m, and the electric charge of electron $e = -1.6 \times 10^{-19}$ C.

(10) **2.** Given a number of the same condensers, each of which has the capacity of $3\mu F$. In which way these condensers should be arranged and what is the minimum number of condensers to be used in order to obtain an equivalent capacity of $5\mu F$?

(09) **3.** A length of conducting wire has density μ, mass heat c, cross-section area s, and resistivity ρ. The wire conducts current I in an interval of time t. Prove that the rise of temperature of the conductor $\Delta\theta$ which is resulted from joule effect does not depend on the length l of the conductor.

(05) **4.** Determine the distance of focal point and the kind of a spherical glass that projects, from a real object placed in a distance of 40 cm from the glass, a deformed image in a distance of 30 cm from the glass.

(18) **5.** An object AB is positioned perpendicular to the main axis of lens L_1. The distance from AB to L_1 is 1.80 cm; the image received is 5 times smaller [than the object].

a. Determine the kind of image and the distance of focal point f_1 of L_1.

b. Given another lens L_2 with its distance of focal point $f_2 = 20$ cm. Now L_1 is positioned in between AB and L_2. The main axes of the two lenses coincide with each another; the object AB is still perpendicular to the main axis. The distance from AB to L_1 is a and the distance from L_1 to L_2 is 1.50 m. The L_1 and L_2 system projects a real image $A"B"$ in a distance of 30 cm from L_2. Determine a and the ratio $k = \dfrac{A"B"}{AB}$.

CHEMISTRY — 1997 Paper
Time Allowed: 1.5 Hours

(14) **1.** Why would there be always a hard layer forming on the bottom of the teapot that has been used for quite a while for boiling well water? How to prevent this phenomenon from taking place? Explain and prove by providing the equation of the chemical reaction.

(10) **2.** Write a sequence of the equations of the reaction for making acid acetic out off limestone.

(11) **3.** 1.96 *g* of iron scrapings is added into 200 *mil* of a solution of 5% copper sulphate. The solution of copper sulphate has density 1.107 *g/mil*. Calculate for the thickness in molecular weight of the elements in the solution after the reaction has completed. Let's presume that the volume of iron scrapings can be ignored.
$Cu = 64$; $S = 32$; $O = 16$; $Fe = 56$

(15) **4.** A mixture of gas containing one alkane and one alkyne has density 2.113 *g/l*. 336 cm^3 of the mixture of gas is allowed to pass through a solution of bromine. 1.6 *g* of bromine is reacted with the mixture of gas. Mass of the solution has increased 0.42 *g*. Determine the molecular formulae and name the alkane and alkyne.
$Br = 80$; $C = 12$; $H = 1$

BIOLOGY — 1997 Paper
Time Allowed: 1.5 Hours

(09) **1.** Define the following terms: *homologous chromosome*, *allelic gene*, *phenotype*, *homozygote*, and *phylum*.

(10) **2.** State about the genesis and the extinction of the giant [*theviphite*?] species.

(05) **3.** In crossbreeding, why pure breed should be chosen to crossbreed?

(06) **4.** Given the following ratios $\frac{A}{T}; \frac{A}{G}; \frac{C}{G}; \frac{T}{C}; \frac{A+C}{T+G}; \frac{T+A}{C+G}$.
Pick out constant ratio/s and explain.

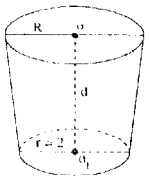
(10) **5.** What is crossbreeding development of gene? In what forms can this development take place?

(10) **6.** What is the joining property? Explain (no need to illustrate by chromosome).
What advantages are available to agriculture?

MATHS — 1996 Paper
Time Allowed: 3 Hours

(45) **I.**

1. Solve the equation $\sqrt{x^2-1}+x=m$; then discuss it by parameter m. (10)
2. Solve the integral $I=\int(\frac{1}{x^2}+\sqrt{x})dx$. (5)
3. Find the limit of $f(x)=\frac{\sqrt[3]{x^2+1}-1}{x^2}$; when $x \to 0$. (10)
4. $f(x)$ is a function with variable x determined by $f(x)=\frac{x^n}{1+x^n}$; where $x \in R+$ and $n \in N^*$. Find $f'(x)$. (5)
5. A glass of a conic fragment shape as illustrated bellow is given: $r = 2\ cm$; $R = 3.5\ cm$; $d = 9\ cm$. Find the volume of the glass. (15)



(30) **II.** A function $f(x)=\frac{2x+2}{x^2+2x-3}$ is given with (C) denotes its curve.

1. Investigate the variability of $f(x)$ and write down the equation of asymptote. (15)
2. Find the coordinate I where curve (C) intersects with axis $x'x$.
   Prove that I is a symetrical centre of curve (C); and then plot the curve. (10)
3. By using graph, investigate the existence and the signs of the roots of the equation by the value of m; where $mx^2 + 2(m - 1)x - (3m + 2) = 0$. (5)

(25) **III.** A circle (C) is drawn on plane (P) with the diameter $[AB]$, where $|AB| = 2R$, and chord $[MN]$ crossing perpendicularly at H.

Let $BAM = \alpha$; where $0 < \alpha < \frac{\pi}{2}$. A half-straight line $[Ax)$ is then drawn perpendicularly to the plane of circle (C) ; and point S is marked on $[Ax)$, where $|AS| = R$.

1. Calculate for the area of <u>each surface</u>* of the pyramid $SAMBN$. (15)
2. Find the volume of pyramid $SAMBN$. (5)
3. Define the angle α so the volume of pyramid $SMBN$ is equal to three times the volume of pyramid $SAMN$. (5)

* During the visit to the exam in June, an examiner reported that a number of candidates left out the base of the pyramid uncalculated. He claimed that the question has its intention to asks the candidates to calculate for every surface and that includes the 'base'. He reckoned it was a language[pragmatic] problem.

MATHS

MARKING SCHEME

100
100

(45) **I.**

(10) **1.** Solving $\sqrt{x^2-1}+x=m$ **(1)**

$$(1)\Leftrightarrow \sqrt{x^2-1}=m-x\Leftrightarrow \begin{cases} m-x\geq 0 \\ x^2-1=(m-x)^2 \end{cases}$$

$$\Leftrightarrow \begin{cases} x\leq m \\ x^2-1=m^2-2mx+x^2 \end{cases}\Leftrightarrow \begin{cases} x\leq m \\ 2mx=m^2+1 \end{cases} \quad (2)$$

- iff $m=0$:

$$(1)\Leftrightarrow \begin{cases} x\leq 0 \\ 0x=1 \end{cases}\Leftrightarrow x\in\varnothing \quad (1)$$

- if $m\neq 0$:

$$(1)\Leftrightarrow \begin{cases} x\leq m \\ x=\dfrac{m^2+1}{2m} \end{cases}\Leftrightarrow x=\frac{m^2+1}{2m}\leq m \quad (3)$$

Discussion:

$$\frac{m^2+1}{2m}\leq m\Leftrightarrow \frac{m^2+1}{2m}=m\leq 0\Leftrightarrow \frac{m^2+1-2m^2}{2m}\leq 0 \quad (2)$$

$$\Leftrightarrow \frac{1-m^2}{2m}\leq 0 \begin{cases} m_1=-1 \\ m_2=1 \\ m_3=0 \end{cases} \quad (1)$$

m	$-\infty$		-1		0		1		$+\infty$
$1-m^2$	-		0	+		+	0	-	
2m	-			-	0	+		+	
(2)	///	+	///	-	///	+	///	-	

(1)

- $m\in\left]-\infty\,;-1\right[\cup\left[0\,;1\right[\Rightarrow$ (1) has no root (1)
- $m\in\left[-1\,;0\right[\cup\left[1\,;+\infty\right[\Rightarrow$ (1) has one root: $x=\dfrac{m^2+1}{2m}$ (1)

(05) **2.** Solving integral $I=\int\left(\frac{1}{x^2}+\sqrt{x}\right)dx$

$$I=\int\frac{dx}{x^2}+\int\sqrt{x}\times dx=-\frac{1}{x}+\int x^{\frac{1}{2}}\times dx$$

$$=-\frac{1}{x}+\frac{x^{\frac{3}{2}}}{3}+c=-\frac{1}{x}+\frac{2}{3}x\times x^{\frac{1}{2}}+c$$

$$\boxed{I=-\frac{1}{x}+\frac{2}{3}x\times\sqrt{x}+c=-\frac{1}{x}+\frac{2}{3}x^{\frac{3}{2}}+c}$$

(get one wrong, grant (2) only)

(10) **3.** Find $\lim\limits_{x\to 0}f(x)$

$$f(x)=\frac{\sqrt[3]{x^2+1}-1}{x^2}=\frac{\left(x^2+1\right)-1}{\sqrt[3]{\left(x^2+1\right)^2}+\sqrt[3]{x^2+1}+1}\times\frac{1}{x^2}$$

$$=\frac{x^2}{\sqrt[3]{\left(x^2+1\right)^2}+\sqrt[3]{x^2+1}+1}\times\frac{1}{x^2}\qquad (4)$$

$$\Rightarrow\lim_{x\to 0}f(x)=\lim_{x\to 0}\frac{1}{\sqrt[3]{\left(x^2+1\right)^2}+\sqrt[3]{x^2+1}+1}=\frac{1}{1+1+1}=\frac{1}{3}$$

$$\boxed{\lim_{x\to 0}f(x)=\frac{1}{3}}\qquad (6)$$

(05) **4.** The derivative of $f(x)=\frac{x^n}{1+x^n}$; $n\in N^*, x\in R_+, \forall x\in R_+$

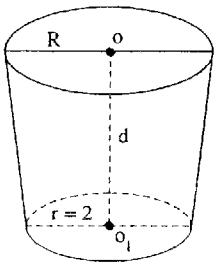
$$f'(x)=\frac{nx^{n-1}\left(1+x^n\right)-nx^{n-1}\times x^n}{\left(1+x^n\right)^2}\qquad (1)$$

$$=\frac{nx^{n-1}\left(1+x^n-x^n\right)}{\left(1+x^n\right)^2}=\frac{nx^{n-1}}{\left(1+x^n\right)^2}$$

$$\boxed{f'(x)=\frac{nx^{n-1}}{\left(1+x^n\right)^2}}\qquad (4)$$

(get it wrong from above and right at the bottom, grant nothing.)

(15) **5.** Finding the volume of the glass:



$R = 3{,}5\ cm\ ;\ r = 2\ cm\ ;\ d = 9\ cm$

$$V = \frac{1}{3}\pi \times d\left(R^2 + r^2 + Rr\right) \qquad (5)$$

$$= \frac{1}{3}\pi \times 9\left[\left(\frac{7}{2}\right)^2 + 2^2 + \frac{7}{2}\times 2\right] \qquad (2)$$

$$= 3\pi\left(\frac{49}{4} + 11\right) = 3\pi \times \frac{93}{4}$$

$$= \frac{279\pi}{4}\ cm^3 = 69{,}75\pi\ cm^3$$

$$\boxed{V = 69{,}75.\pi\ cm^3 \approx 219{,}126\ cm^3} \qquad (8)$$

(30) **II.**

(15) **1.** Variability of $f(x) = \dfrac{2x+2}{x^2+2x-3}$

- Limit:

$f(x)$ no meanig $\Leftrightarrow x^2 + 2x - 3 = 0 \Leftrightarrow x \in \{-3\ ;\ 1\}$

Hence: $D = R \setminus \{-3\ ;\ 1\}$ (2)

- Direction of variability:

The derivative: $f'(x) = \dfrac{2\left(x^2+2x-3\right) - (2x+2)(2x+2)}{\left(x^2+2x-3\right)^2}$

$$= \frac{2x^2 + 4x - 6 - 4x^2 - 8x - 4}{\left(x^2+2x-3\right)^2}$$

$$= \frac{-2x^2 - 4x - 10}{\left(x^2+2x-3\right)^2} = \frac{-2\left(x^2+2x+5\right)}{\left(x^2+2x-3\right)^2} \qquad (4)$$

But: $x^2 + 2x + 5 > 0\ ,\ \forall x \in R\left(\Delta' = 1 - 5 = -4 < 0\right)$

$$\Rightarrow f'(x) = \frac{-2\left(x^2+2x+5\right)}{\left(x^2+2x-3\right)^2} < 0\ ,\ \forall x \in D$$

x	$-\infty$		3		$+\infty$
f'(x)	-		-		-
f(x)	0 ↘	$-\infty$	$+\infty$ ↘	$-\infty$	$+\infty$ ↘ 0

(3)

(assign $\pm\infty$ and 0 incorrectly, take (1) off)

Limit: $\lim\limits_{x\to\pm\infty} f(x) = \lim\limits_{x\to\pm\infty} \dfrac{2x}{x^2} = \lim\limits_{x\to\pm\infty} \dfrac{2}{x} = 0$

$$\lim_{x\to -3} f(x) = \lim_{x\to -3\pm 0} \frac{2x+2}{(x+3)(x-1)} = \frac{-4}{(\pm 0)(-4)} = \pm\infty$$

$$\lim_{x\to 1} f(x) = \lim_{x\to -1\pm 0} \frac{2x+2}{(x+3)(x-1)} = \frac{-4}{4(\pm 0)} = \pm\infty$$ (3)

Equation of asymptote:

- Vertical asymptote: $(d_1): x = -3$; $(d_2): x = 1$
- Horizontal asymptote: axis $\vec{xx}$; equation $y = 0$ (3)

(10) **2.**

- Coordinate of I ; where $\{I\} = (C) \cap \vec{x'x}$

$$(C): y = f(x) = \frac{2x+2}{x^2+2x-3}$$

$$f(x) = 0 \Leftrightarrow 2x+2 = 0 \Leftrightarrow x = -1$$

$\boxed{I(x=-1\,;\,y=0)}$ (2)

- Proving that $I(-1\,;\,0)$ is a symetrical centre of (C)

- Methode 1: Rotate axes by $\vec{OI}$:

$$\begin{cases} x = X + x_0 = x - 1 \\ y = Y + y_0 = Y + 0 = Y \end{cases}$$

The equation of $(C): y = \dfrac{2x+2}{x^2+2x-3}$ can be written as:

$$Y = \frac{2(x-1)+2}{(x-1)^2+2(x-1)-3} = \frac{2x-2+2}{x^2-2x+1+2x-2-3} = \frac{2x}{x^2-4}$$

Let $F(x) = Y = \dfrac{2x}{x^2-4}$

$$\Rightarrow F(-x) = \frac{2(-x)}{(-x)^2-4} = \frac{-2x}{x^2-4} = -F(x)$$

$\Rightarrow \boxed{I(-1\,;\,0) \text{ is a symetrical centre of } (C)}$ (3)

- Methode 2: $-1 \pm \alpha \neq -3 \Leftrightarrow \alpha \neq \pm 2$

$-1 \pm \alpha \neq 1 \Leftrightarrow \alpha \neq \pm 2$

$\forall \alpha \in R \setminus \{-2\,;\,2\}$:

$$f(-1+\alpha)=\frac{2(-1+\alpha)+2}{(-1+\alpha)^2+2(-1+\alpha)-3}=\frac{2\alpha}{1-2\alpha+\alpha^2-2+2\alpha-3}$$

$$=\frac{2\alpha}{\alpha^2-4}$$

$$f(-1-\alpha)=\frac{2(-1-\alpha)+2}{(-1-\alpha)^2+2(-1-\alpha)-3}=\frac{-2\alpha}{1+2\alpha+\alpha^2-2\alpha-2-3}$$

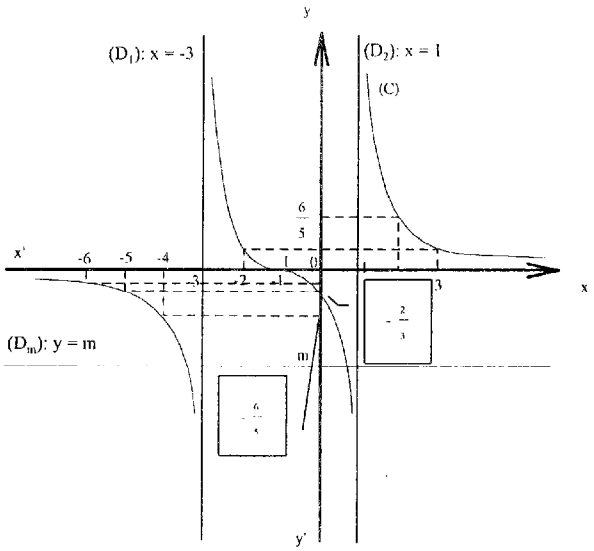
$$=\frac{-2\alpha}{\alpha^2-4}$$

$$\frac{f(-1+\alpha)+f(-1-\alpha)}{2}=\frac{1}{2}\left[\frac{2\alpha}{\alpha^2-4}+\frac{-2\alpha}{\alpha^2-4}\right]=0=y_I$$

Hence, $I(-1\,;\,0)$ is a symetrical centre of (C)

- Plotting curve (C):

x	-6	-5	-4	-2	0
y	$-\frac{10}{21}$	$-\frac{2}{3}$	$-\frac{6}{5}$	$\frac{2}{3}$	$-\frac{2}{3}$



(C) intersects axes at:

$(x=-1\,;\,y=0)$

$\left(x=0\,;\,y=-\frac{2}{3}\right)$

-draw asymptote correctly: (1)

-for the three curves: (3)

-crossing the axes: (1)

-full mark for the graph: (5)

(05) **3.** The existence snd the signs of the root of the equation **(1)**

$$mx^2+2(m-1)x-(3m+2)=0 \quad \textbf{(1)}$$

$$\textbf{(1)} \Leftrightarrow mx^2+2mx-3m=2x+2$$

$$\Leftrightarrow m(x^2+2x-3)=2x+2$$

$$\Leftrightarrow m=\frac{2x+2}{x^2+2x-3} \qquad (2)$$

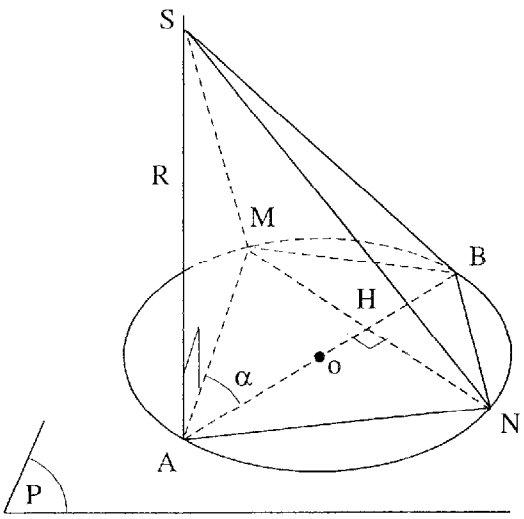
(1) is an equation of abscissa where (C) intersects (D_m): $y = m$.
According to the graph:

- $m \in \left]-\infty\,;-\frac{2}{3}\right[\Rightarrow$ (1) has two roots: $x_1 < 0 < x_2$
- $m = -\frac{2}{3} \Rightarrow$ (1) has two roots: $x_1 < x_2 = 0$
- $m \in \left]-\frac{2}{3}\,;0\right[\Rightarrow$ (1) has two roots: $x_1 < x_2 < 0$
- $m = 0 \Rightarrow$ (1) has one root $x = -1 < 0$
- $m \in]0\,;+\infty[\Rightarrow$ (1) has two roots $x_1 < 0 < x_2$ (3)

(get one wrong, take (1) off)

(25) **III.**

(15) **1.** The area of each surface of the pyramid $SAMBM$



ΔMAB and ΔNAB have their right angles at M and N, respectively. (plotted inside the circle of diameter $[AB]$) $\Rightarrow \begin{cases}[AM]\perp[MB]\\ [AN]\perp[NB]\end{cases}$

In the right angled triangle MAB:

$|AM| = |AB| \times cos\,\widehat{BAM} = 2R \times cos\alpha$ (1)

$|BM| = |AB| \times sin\,\widehat{BAM} = 2R \times sin\alpha$ (1)

$[SA] \perp (P) \Rightarrow \begin{cases}[SA]\perp[AM]\\ [SA]\perp[AN]\end{cases} \Rightarrow \Delta SAM$ and ΔSAN have their right angles at A

$$S_{SAM} = \frac{1}{2}|AM| \times |SA| = \frac{1}{2} \times 2R \times \cos\alpha \times R$$
$$= R^2 \times \cos\alpha$$

For figure grant (2)

Alternatively:

$[AM] \perp [MB]$

$[AM]$: is a divergence of $[SM]$ on (P)

$\Rightarrow [SM] \perp (MB) \Rightarrow \Delta SMB$ has the right angle at M

In the right angled triangle SAM:

$|SM|^2 = |SA|^2 + |AM|^2 = R^2 + (2R\cos\alpha)^2 = R^2(1 + 4\cos^2\alpha)$

$\Rightarrow |SM| = R\sqrt{1+4\cos^2\alpha}$ (1)

$$S_{SMB} = \frac{1}{2}|BM| \times |SM| = \frac{1}{2} \times 2R\sin\alpha \times R\sqrt{1+4\cos^2\alpha}$$

$$= R^2 \times \sin\alpha \times \sqrt{1+4\cos^2\alpha}$$

$[AB]$: diameter
$[MN]$: chord $\Rightarrow H$: midle of $[MN]$
$[MN] \perp [AB]$ at H

Alternatively: $[MN] \perp [AB]$
$[MN] \perp [SA]$ ($[Ax] \perp (P)$) $\Rightarrow [MN] \perp (SAB)$

(SAB) which is perpendicular to $[MN]$ at H, is a mediator plane of $[MN]$.
Hence: (SAB) is a symetrical dividing plane of pyramid $SAMBN$
$\Rightarrow \Delta SAN \cong \Delta SAM$ and $\Delta SMB \cong \Delta SNB$

$$\boxed{S_{SAN} = S_{SAM} = R^2\cos\alpha} \quad (4)$$

$$\boxed{S_{SNB} = S_{SMB} = R^2 \times \sin\alpha \times \sqrt{1+4\cos^2\alpha}} \quad (4)$$

$$S_{AMB} = \frac{1}{2}|AM| \times |BM|$$

$$= \frac{1}{2} \times 2R\cos\alpha \times 2R\sin\alpha = 2R^2 \times \sin\alpha \times \cos\alpha$$

$\Delta ANB \cong \Delta AMB$ (symetric by (AB))
$\Rightarrow S_{AMBN} = 2S_{AMB} = 4R^2 \times \sin\alpha \times \cos\alpha$

$$\boxed{S_{AMBN} = 4R^2 \times \sin\alpha \times \cos\alpha} \quad (2)$$

(5) **2.** Volume of pyramid $SAMBN$

$$V = \frac{1}{3} \times S_{AMBN} \times |SA| \quad (2)$$

$$= \frac{1}{3} \times 4R^2 \sin\alpha \times \cos\alpha \times R = \frac{4}{3} \times R^3 \times \sin\alpha \times \cos\alpha$$

$$\boxed{V = \frac{4}{3}R^3 \times \sin\alpha \times \cos\alpha} \quad (3)$$

(05) **3.** Define α so $V_{SMBN} = 3 \times V_{SAMN}$

$$\left.\begin{aligned} V_{SMBN} &= 3 \times V_{SAMN} \\ V_{SMBN} + 3 \times V_{SAMN} &= V - V_{SAMB} \end{aligned}\right] \Rightarrow V_{SAMN} = \frac{1}{4}V$$

$$S_{AMN} = \frac{1}{2}|AM| \times |AN| \times \sin \widehat{MAN}$$
$$= \frac{1}{2}|AM|^2 \times \sin 2\alpha = \frac{1}{2}(2R\cos\alpha)^2 \times \sin 2\alpha$$
$$= 2R^2 \cos^2 \alpha \times \sin 2\alpha$$
$$V_{SAMN} = \frac{1}{3} \times S_{AMN} \times |SA|$$
$$= \frac{1}{3} \times 2R^2 \times \cos^2 \alpha \times \sin 2\alpha \times R$$
$$= \frac{4}{3} R^3 \times \cos^3 \alpha \times \sin \alpha$$

Hence:

$$V_{SAMN} = \frac{1}{4}V \Leftrightarrow \frac{4}{3} R^3 \times \cos^3 \alpha \times \sin \alpha = \frac{1}{3} R^3 \times \sin \alpha \times \cos \alpha$$
$$\Leftrightarrow \frac{1}{3} R^3 \times \sin \alpha \times \cos \alpha \times (4\cos^2 \alpha - 1) = 0$$
$$\Leftrightarrow \begin{bmatrix} \sin \alpha = 0 \\ \cos \alpha = 0 \\ 4\cos^2 \alpha - 1 = 0 \end{bmatrix} \Leftrightarrow \begin{bmatrix} \alpha = 0: \text{ not taken} \\ \alpha = \frac{\pi}{2}: \text{ not taken} \\ \cos^2 \alpha = \frac{1}{4}: \end{bmatrix}$$
$$\Leftrightarrow \cos \alpha = \frac{1}{2} \quad (0 < \alpha < \frac{\pi}{2})$$
$$\Leftrightarrow \alpha = \frac{\pi}{3}$$

$$\boxed{\alpha = \frac{\pi}{3}}$$

Set up the equations in any way and correctly grant (3)

Solution: $\alpha = \frac{\pi}{3}$ grant (2)

PHYSICS — 1996 Paper
Time Allowed: 1.5 Hours

(10) **1.** A pair of metal sheets set parallel to each other is connected to an electronic apparatus causing potential difference $U = 1000$ volts in between the two sheets. d denotes the distance between the two sheets; where $d = 10$ *cm*.

a. Find the intensity of electric field exists in between the two sheets.

b. In between the two sheets, an electrical pendulum is suspended by fine insulating thread. The mass of the pendulum is 2 *g*, and the electric charge there [in the pendulum] is $q = 3\times10^{-7}$ coulombs. Find the angle formed by the tread in relation to its [previous] vertical position. $q = 10$ m/s^2.

(05) **2.** Resistance R_1 of an electric lamp is connected to the current of 220 volts. Resistance R_2 of another lamp of the same capacity is connected to the current of 110 volts. Should R_1 be equal to how many times R_2?

(05) **3.** Calculate for the time duration t necessary to receive 0.5 *g* of bronze on a plane electrode of a square shape, the angle of which is 5 *cm*, sunk into the solution of electrolyte in 10 *cm* deep. The density of the current passing through in the analysis container is 100 A/m^2. $Cu = 63{,}5$; the number of valency of *Cu* is 2.

(15) **4.** A long pair of conducting wires is set parallel with a distance from each other of 50 *cm*. Electric current passing through the first wire and the second wire are $I_1 = 25A$ and $I_2 = 75A$, respectively.

a. In the case of the two currents flow in the same directions, calculate for the joined magnetic induction at the point in the plane of the two wires, at an equal distance to both wires. Find the scattered points where the joined magnetic induction is equal zero.

b. The same as in **a.** in the case of the two currents flow in opposite directions. Earth magnetic field is not considered.

(15) **5.** A real object is projected its image onto a screen. The image is three times bigger than the object. The distance between the object and the screen is 80 *cm*.

a. Is a converging lens be used or a diverging ones?

b. Calculate for the distance of the focal point of the lens.

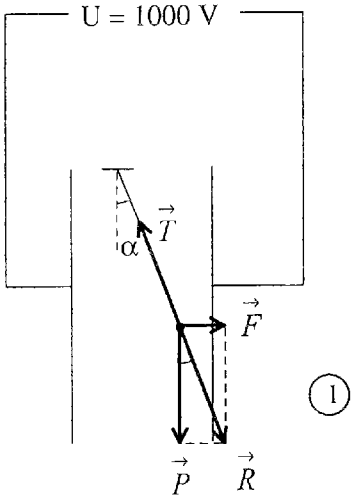
PHYSICS

MARKING SCHEME

$\frac{50}{50}$

(10) **1.**

a. Find the intensity of electric field exists in between the two sheets:



(1)

By the relationship between the intensity of uniform electric field and potential difference, we have:

$$E = \frac{U}{d} \qquad \begin{cases} U \text{ in } V \\ d \text{ in } m \\ E \text{ in } V/m \end{cases}$$ (1)

Since $U = 10^3\ V$; $d = 10^{-1}\ m$ (1)

We have: $E = \frac{10^3}{10^{-1}} = \boxed{10^4\ V/m}$ (1)

b. Find the angle formed by the thread:

The pendulum resumes its balance under three forces:

- Electrostatic force $\vec{F}$ which has force $F = qE$
- Weight $\vec{P}$ which has force $P = mg$
- Strength of the thread $\vec{T}$ (1)

Balancing condition: $\vec{F} + \vec{P} + \vec{T} = 0$

Since, $\vec{F} + \vec{P} = \vec{R}$, we have $\vec{R} + \vec{T} = \vec{O} \Rightarrow \vec{R} = -\vec{T}$

This shows that $\vec{R}$ and $\vec{T}$ lie on the same support. (1)

We have: $tg\alpha = \frac{F}{P} = \frac{qE}{mg}$ (1)

Since, $m = 2\times10^{-3}\ kg$; $g = 10\ m/s^2$; $q = 3\times10^{-7}\ c$; $E = 10^4\ V/m$ (1)

$$tg\alpha = \frac{3\times10^{-7}\times10^4}{2\times10^{-3}\times10} = \frac{3}{2}\times10^{-1} = 0{,}15$$ (1)

$tg\alpha = 0{,}15 \Rightarrow \alpha 8{,}53^\circ$ or $\boxed{\alpha = 8^\circ 32'}$ (1)

(05) **2. Should R_1 be equal to how many times R_2:**

Resistance R_1 of an electric lamp is connected to the current of 220 V

has capacity $P_1 = \dfrac{U_1^2}{R_1}$ (1)

R_2 of another lamp is connected to the current of 110 V

has capacity $P_2 = \dfrac{U_2^2}{R_2}$ (1)

Consequently, $P_1 = P_2 \Rightarrow \dfrac{U_1^2}{R_1} = \dfrac{U_2^2}{R_2} \Rightarrow \dfrac{R_1}{R_2} = \dfrac{U_1^2}{U_2^2} = \left(\dfrac{U_1}{U_2}\right)^2$ (1)

Applying the numeric value: $U_1 = 220\,V$; $U_2 = 110\,V$

Hence, $\dfrac{R_1}{R_2} = \dfrac{(220)^2}{(110)^2} = \dfrac{4\times 110^2}{110^2} = 4$ (1)

$\boxed{R_1 = 4R_2}$

(05) **3. Calculate for the time duration t necessary to receive 0.5 g of bronze:**

We know that the density of electric current: $J = \dfrac{I}{S} \Rightarrow I = JS$

But $S = a^2 \Rightarrow I = Ja^2$ (1)

Applying the numeric value:

$J = 100\,A/m^2$; $a = 5\times 10^2\ m$; $h = 100\ m = 10^{-1}\ m$

$I = 100\times\left(5\times 10^2\right)^2 = 0{,}25\ A$ (1)

The current passing through solution in duration $t_{(s)}$ contains mass of bronze given by Faraday's formula:

$m = \dfrac{1}{96500}\times\dfrac{A}{n}\times It \Rightarrow t = \dfrac{96500}{AI}mn$ (2)

Since, $m = 0{,}5\ g$; $n = 2$; $A = 63{,}5$; $I = 0{,}25\ A$

$t = \dfrac{96500\times 0{,}5\times 2}{63{,}5\times 0{,}25} = \boxed{6078\ s = 101\ mn 18\ s}$ (1)

Alternatively:

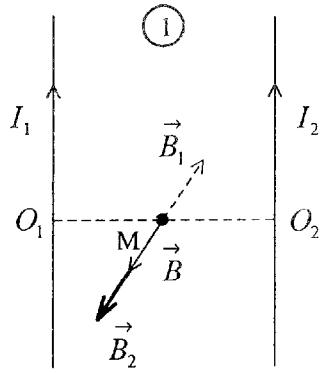
$I = Jah = 10^2\times 5\times 10^{-2}\times 10^{-1}$

$I = 0{,}5\ A$

Hence, $\underline{t = 3039\ s = 50\ mn\ 39\ s}$

(15) **4.**

(10) **a. In the case of the currents flow in the same directions:**



Current I_1 and I_2 flowing through in the two wires, create vectors of induction $\vec{B}_1$ and $\vec{B}_2$ at M that have:

- Direction perpendicular to the plane between the wires
- Direction of a tug-of-war match
- Forces (1)

$$B_1 = \frac{\mu_o \mu_r I_1}{2\pi |O_1 M|} = \frac{4\pi \times 10^{-10} \times 1 \times I_1}{2\pi |O_1 M|} = 2\times 10^{-7} \frac{I_1}{|O_1 M|}$$ (1)

Applying the numeric value: $I_1 = 25\ A$; $|O_1 M| = 25\times 10^{-2}\ m$

$$B_1 = 2\times 10^{-1} \frac{25}{25\times 10^{-2}} = 2\times 10^{-5}\ T$$ (1)

$$B_2 = \frac{\mu_o \mu_r I_2}{2\pi |O_2 M|} = \frac{4\pi \times 10^{-7} \times 1 \times I_2}{2\pi |O_2 M|} = 2\times 10^{-7} \frac{I_2}{|O_2 M|}$$ (1)

Applying the numeric value: $I_2 = 75\ A$; $|O_2 M| = 25\times 10^{-2}\ m$

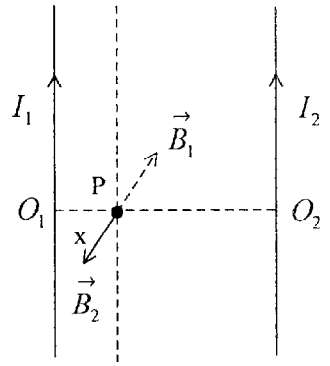
$$B_2 = 2\times 10^{-7} \frac{75}{25\times 10^{-2}} = 6\times 10^{-5}\ T$$ (1)

If $\vec{B}$ is the joined induction, we have: $\vec{B} = \vec{B}_1 + \vec{B}_2$

$B = B_2 - B_1 = 6\times 10^{-5} - 2\times 10^{-5}$

$\boxed{B = 4\times 15^{-5}\ T}$ (1)

Find the scattered points where the joined magnetic induction is equal zero:



(1)

Let P be the point in between the two wires and in a distance x from the first wire.

$$B_1 = 2\times 10^{-7} \times \frac{I_1}{x}$$

$$B_2 = 2\times 10^{-7} \times \frac{I_2}{a-x}$$ (1)

Consequently, $\vec{B}_1 + \vec{B}_2 = \vec{O} \Rightarrow \vec{B}_1 = -\vec{B}_2$

$$B_1 = B_2$$

$$2\times10^{-7}\times\frac{I_1}{x} = 2\times10^{-7}\times\frac{I_2}{a-x} \Rightarrow \frac{I_1}{x} = \frac{I_2}{a-x}$$

$$\frac{25}{x} = \frac{75}{a-x} \Rightarrow 3x = a - x$$

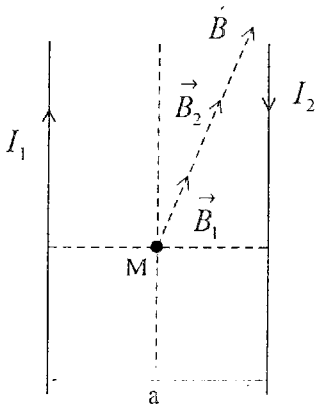
$$4x = a \Rightarrow x\frac{a}{4}$$

Since, $a = 50\ cm$

$$x = \frac{50}{4} = 12{,}5\ cm$$

Hence, the scattered points is a straight line cutting across P and parallel with both wires, and in a distance of 12,5 *cm* from the first wire. (1)

(05) **b. In the case of the two currents flowing in the opposite directions:**



$$B_1 = 2\times10^{-7}\times\frac{I_1}{|O_1M|} = 2\times10^{-7}\times\frac{25}{25\times10^{-2}}$$

$$B_1 = 2\times10^{-5}\ T$$

$$B_2 = 2\times10^{-7}\times\frac{I_2}{O_2M} = 2\times10^{-7}\times\frac{75}{25\times10^{-2}}$$

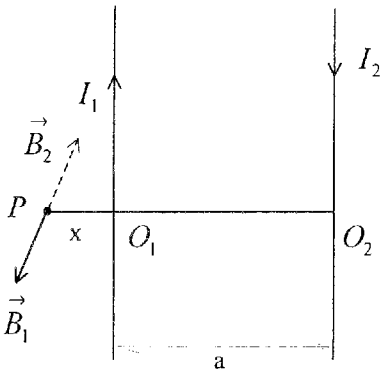
$$B_2 = 6\times10^{-5}\ T$$

If $\vec{B}$ is the joined induction: $\vec{B'} = \vec{B}_1 + \vec{B}_2$

$$B' = B_1 + B_2 = 2\times10^{-5} + 6\times10^{-5}$$

$$\boxed{B' = 8\times10^{-5}\ T}$$ (1)

Finding the scattered points:



(1)

$$B_1 = 2\times10^{-7}\times\frac{I_1}{x} \quad ; \quad B_2 = 2\times10^{-7}\times\frac{I_2}{a+x}$$ (1)

Consequently,

$$\vec{B}_1 + \vec{B}_2 = \vec{O} \Rightarrow \vec{B}_1 = -\vec{B}_2 \Rightarrow B_1 = B_2$$

$$2\times10^{-7}\frac{I_1}{x} = 2\times10^{-7}\times\frac{I_2}{a+x} \Rightarrow \frac{I_1}{x} = \frac{I_2}{a+x}$$

$$\frac{25}{x} = \frac{75}{a+x} \Rightarrow a + x = 3x$$

$$2x = a \Rightarrow x = \frac{a}{x}$$

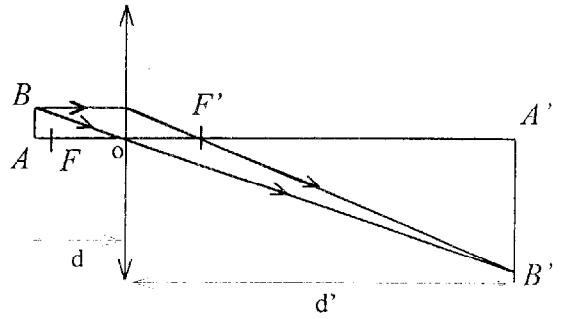
$$x = \frac{50}{2} = 25\ cm$$

Hence, the scattered points is a straight line cutting across P and parallel with both wires, and in a distance of 25 *cm* from the first wire and of 75 *cm* from the second wire. (1)

(15) 5.

(05) **a. Is a converging lens be used or a diverging lens:**
[If] real object is projected its image onto a screen [then] the lens [used] is called converging lens. Since if a diverging lens [is used] from real object the image projected is unreal - always smaller.

(10) **b. Calculate for the distance of the focal point of the lens:**



Since the image is three times bigger the object, we have: $|A'B'| = 3|AB|$

$$\frac{|A'B'|}{AB} = 3 \quad (2)$$

Since: $\frac{|A'B'|}{|AB|} = \frac{d'}{d} \Rightarrow \frac{d'}{d} = 3 \Rightarrow d' = 3d$ (2)

The distance from the object to the screen: $d + d' = 80$ (2)

$$d + 3d = 80$$

$$4d = 80 \Rightarrow d\frac{80}{4} = 20\ cm \quad (1)$$

By formula: $\frac{1}{f} = \frac{1}{d} + \frac{1}{d'} = \frac{1}{d} + \frac{1}{3d} = \frac{3+1}{3d} = \frac{4}{3d}$

$$f = \frac{3d}{4} = \frac{3 \times 20}{4} = 15\ cm$$

$\boxed{f = 15\ cm}$ (3)

CHEMISTRY — 1996 Paper
Time Allowed: 1.5 Hours

(12) **1.** Complete and balance the following equations of reactions:

a. $NaHCO_3 + NaOH \rightarrow$

b. $Na_2SO_4 + Ba(OH)_2 \rightarrow$

c. $Cu + HNO_3 \rightarrow Cu(NO_3)_2 + NO_2 + H_2O$

d. $FeS + HNO_3 \rightarrow Fe(NO_3)_3 + Fe_2(SO_4)_3 + NO + H_2O$

Which element is oxidising agent and which elements are reducing agents?

(08) **2.** A mixed solution contains $FeSO_4$ and $CuSO_4$. You want to decompose $FeSO_4$ from the mixture with a simple chemical method. How do you do this? Write the chemical equation of the reaction occured.

(06) **3.** What is metal corrosion? chemial corrosion? electrochemical corrosion?

(10) **4.** Pentane has 5 isomers. Write the semi-developing formulars and name those isomers.

(08) **5.** Two organic compounds contain the same composition per cent, ie. $C = 92.3\%$ and $H = 7.7\%$: The density of the first compound compared to hydrogen is 13. Mass of 1 litre of vapor of the second compound (measured under normal condition) is 3.49 g Write the formulas of the two compounds.

(06) **6.** A saturated monoalcohol contains 26.6% oxygen in mass. Write the molecular formular and name it.

CHEMISTRY

MARKING SCHEME

50
50

(12) **1.**

a. $NaHCO_3 + NaOH \rightarrow Na_2CO_3 + H_2O$ (2)

b. $Na_2SO_4 + Ba(OH)_2 \rightarrow BaSO_4\downarrow + 2NaOH$ (2)

c. $Cu + 4HNO_3 \rightarrow Cu(NO_3)_2 + 2NO_2 + 2H_2O$ (2)

d. $3FeS + 12HNO_3 \rightarrow Fe(NO_3)_3 + Fe_2(SO_4)_3 + 9NO + 6H_2O$ (2)

Reducing agent: Cu (1) FeS (1)
Oxidising agent: HNO_3 (2)

(08) **2.**

Activate the mixture of solution $FeSo_4$ and $CuSO_4$ with iron in extra quantity.
Fe reduces ion, Cu^{2+} is metal Cu
Decanting off the undissolved part to receive pure $FeSo_4$. (4)
$Fe + CuSO_4 \rightarrow FeSo_4 + Cu$ (4)

(06) **3.**

- Metal corrosion: how metal and nonmetal are damaged under the chemical effect of the surrounding environment. (2)
- Chemical corrosion: how metal and nonmetal are damaged by the direct chemical effect of the surrounding environment. (2)
- Electrochemical corrosion: metal corrosion in which electric current occurs. (2)

(10) **4.**

1. $CH_2 = CH - CH_2 - CH_2 - CH_3$ Pentane-1 (2)
2. $CH_3 - CH = CH - CH_2 - CH_3$ Pentane-2 (2)
3. $CH_2 = \underset{\displaystyle CH_3}{\overset{\displaystyle |}{C}} - CH_2 - CH_3$ 2-methylbutane-1 (2)
4. $CH_2 = CH - \underset{\displaystyle CH_3}{\overset{\displaystyle |}{CH}} - CH_3$ 3-methylbutane-1 (2)
5. $CH_3 - \underset{\displaystyle CH_3}{\overset{\displaystyle |}{C}} = CH - CH_3$ 2-methylbutane-2 (2)

(08) **5.**

- Molecular weight of the first compound: $13 \times 2 = 26$ g
  Molecular weight of the second compound: $3.49 \times 22.4 = 78$ g
- In the first compound: atomic number of carbon: $\frac{26 \times 92.3}{12 \times 100} = 2$

  atomic number of H: $\frac{26 \times 7.7}{1 \times 100} = 2 \Rightarrow C_2H_2$
- Molecular mass of the second compound is equal to 3 times molecular mass of the first compound: $(C_2H_2)_n = 78 \Rightarrow n = 3 \Rightarrow C_6H_6$

(06) **6.**

Saturated monoalcohol: $C_nH_{2n+1} - OH$ (2)

Molecular mass: $M = 12n + 2n + 18 = 14n + 18$ (1)

$\frac{14n+18}{100} = \frac{16}{26.6} \Rightarrow n = 3 \Rightarrow C_3H_7OH$

(1) (1)

Name: Propanal (1)

BIOLOGY — 1996 Paper
Time Allowed: 1.5 Hours

(08) **1.** Explain the terms: ***Devonian, Etherochromosome, Antibody,*** and ***Gene***.

(17) **2.**

a. State the special characteristics of mitosis. (4)

b. In experiment of the reproduction law, what plant did Mendel prefer to take for the subject? And why? (4)

c. What is it, the reproduction through cytoplasm. (3)

d. List the differences between the reproduction through cytoplasm and the reproduction through chromosome. (6)

(03) **3.** Pick only one correct answer:
Two pure-breed bean plants are cross-fertilised, ie. a plant of glossy-yellow beans (superior characteristic) with a plant of wrinkly-green beans. The outcome is that the beans are all:

a. glossy-yellow.
b. wrinkly-green.
c. glossy-yellow mixed with wrinkly-green.
d. glossy-green and wrinkly-green.

(04) **4.** In what period and in what era, when human beings came into existence on Earth?

(06) **5.** Genetics:

- in what area of agriculture does it help.
- in what area of medicine does it help.

(12) **6.** In the case of having the bean plants that yield yellow or green beans, cross-fertilising them, yield the following outcome:

Cross-fertilising Bean plant of		Bean plant of	Result
yellow	×	yellow	1,610 yellow
yellow	×	yellow	1,249 yellow and 432 green
yellow	×	green	1,542 yellow
green	×	green	1,679 green
yellow	×	green	793 yellow and 815 green

a. Which criterion demonstrates a superior characteristic?

b. Find the genotype of all the parent plants that are cross-fertilised in the above cases.

BIOLOGY

MARKING SCHEME

50/50

(08) **1.**

- ***Devonian*** is the name of the third period of the third era; or a period during the third era; or a period of the Palaeozoic era.
- ***Etherochromosome*** (or etherosome) is a gender chromosome that determines the gender for an individuality; or a chromosome that has distinctive form between ♀ & ♂, and has the function to determine the gender for living beings; or a gender chromosome.
- ***Antibody*** is the substance that has the function to protect the body against disease; or it is the blood protein that has the function to protect the body against disease; or it is the substance produced by the body to response to and then counteracting antigens.
- ***Gene*** is a unit of *DAN* that stores information for determining the form of specific protein; or it is a unit of *DAN* that conducts the synthesis of proteins; or a unit of *DAN* . *NB: for one correct definition of a term, grant* (2) .

(17) **2.**

a. Special characteristic of mitosis:

1. First of all there is a self expansion in double of chromatid (or chromosome).
2. Each offspring cell has the same distribution of chromosomes.
3. The number of chromosomes remains even (2×n) always.
4. The number and form of chromosomes of each offspring cell are exactly the same as the female parent one; this is the karyotype of species.

NB: Answers 1 & 3 grant (4) ; *answers 1 & 4 grant* (4) ; *answers 1, 3, & 4 grant* (4) . *If there is lack of answer 1, take off* (2) .

b. In the experiment of reproduction law, Mendel preferred Hollandaise bean or pea. (2)
Because the reproduction organs, filament♀ and filament♂ are protected with shell of tissues. Therefore, for pea there must be only self-breeding and there should be no cross-breed, and it makes it easy to get pure-breed. Pea is easy to recognise its characteristics. (2)

If the answer only mentions bean, grant (1) ; *if stating 'self-breeding', grant* (1) ; *if stating 'filament♀ and filament♂ are protected with shell of tissues', grant* (2) ; *if stating 'there should be no cross-breed or there can hardly be cross-breed', grant* (2)

c. Reproduction through cytoplasm is a reproduction which:

1. passes from female parent.
2. determined by gene existing in cytoplasm (or outside chromosome).
3. offspring individuality is alike the female parents' in terms of characteristics.
4. female parent passes on a set of its individual characteristics to the offspring through ovule's cytoplasm.

NB: answer 2, grant (3) ; *if giving answer 1, or 3, or 4, grant* (2) .

d. The differences between the reproduction through cytoplasm and the

reproduction through chromosome:

Cytoplasm:	**Chromosome:**
• determined by gene in cytoplasm	• determined by gene in nucleus
• gametic duty of ♀ is greater than that of ♂	• gametic duty of ♀ is equal to that of ♂
• offspring individuality is alike the female parents' (not conforming Mendel's law)	• offspring individuality is alike the female or male parents' (conforming Mendel's law)

(first point is worth (2) marks; second (2) ; and third is (2))

(03) **3. a.** or **a.** glossy-yellow. (03)
(if more than one answer is given give (0))

(04) **4.** Human beings came into existence on Earth in the fourth period or Quaternary period of Cainozoic era; or in the Second period of the fifth era, or at the end of the Tercentennial period or at the beginning of the Quaternary period.
(giving correct period grant (2) ; correct era (2))

(06) **5.** Genetics helps:

In agriculture:
- breed selection (01)
- reproducing new and good breed (01)
- *additional explanation* (01)

In medicine:
- informing on the reproductive diseases (01)
- preventing and treatment of reproductive diseases and others (01)
- *additional explanation* (01)

(12) **6. a.** Find superior characterristic (03)

Cross-fertilisation: P = yellow × yellow

$$F_1 = \frac{1249 \text{ yellow}}{423 \text{ green}} \approx \frac{3 \text{ yellow}}{1 \text{ green}}$$

the propotion $\frac{3}{1}$ proves that according to the Second rule, i.e. disintegrating rule of that ⇔ P yellow is etherozygote, and the yellow grain characteristic is the superior characteristic and the green grain characteristic is the inferior one.

Cross-fertilisation: P = yellow × green

F_1 = 1542 yellow

The outcome of cross-fertilisation is agreed with the First rule, i.e. the uniformity rule of hybrid F_1 ⇔ P pure breed.

As the yellow colour came out F_1 ⇒ the yellow colour is superior and the green colour is inferior. Hence, the yellow colour is superior characteristic and the green colour is inferior characteristic.

Given gene A = yellow > a = green.

b. Find genotype

- P = yellow × yellow

F_1 = 1610 yellow

There are two cases of parents genotype:

$P = AA \times AA$
$P = AA \times Aa$

(02)

Confirmation: $P = AA \times AA$

Gamete = A A

$F_1 = AA$ = yellow = 100%

$P = AA \times Aa$

Gamete = A $A; a$

$F_1 = AA; Aa$

yellow = 100%

- P = yellow × yellow

$$F_1 = \frac{1249 \text{ yellow}}{423 \text{ green}} \approx \frac{3 \text{ yellow}}{1 \text{ green}}$$

$$\frac{3 \text{ yellow}}{1 \text{ green}} \Rightarrow P = Aa \times Aa \quad (02)$$

Confirmation: Gamete = $A; a$ $A; a$

$F_1 = AA; 2Aa; aa$

yellow ¾ green ¼

- P = yellow × green

F_1 = 1542 yellow

F_1 all yellow ⇔ $P = AA \times aa$ (02)

Confirmation: Gamete = A a

$F_1 = Aa$ = yellow = 100%

- P = green × green

F_1 = 1679 green

at F_1 there is only green (inferior green) ⇔ $P = aa \times aa$ (01)

Confirmation: Gamete = a a

$F_1 = aa$ = green

- P = yellow × green

$$F_1 = \frac{793 \text{ yellow}}{815 \text{ green}} \approx \frac{1 \text{ yellow}}{1 \text{ green}}$$

This propotion is agreed with the back-crossing fertilisation ⇔ P yellow etherozygote Aa & green aa. (02)

Confirmation: $P = Aa \times aa$

Gamete = $A; a$ a

$F_1 = Aa; aa$

yellow ½ green ½

(*For question* **b.** *the giving of confirmation is optional*)

9. Performance in Mathematics and Science Subject in the Cambodia Grade 11 Examinations of 1994, 1995 and 1996

DRAFT

PERFORMANCE IN MATHEMATICS AND SCIENCE SUBJECTS IN THE CAMBODIAN GRADE 11 EXAMINATIONS OF 1994, 1995 AND 1996

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INTRODUCTION

The signing of the Paris Peace Agreements on Cambodia on October 23, 1991, providing for a comprehensive settlement of the Cambodia conflict, and the subsequent fair elections and formation of a coalition government in 1993, mark the beginning of a new phase in Cambodia's history. This phase has been characterised by vigorous efforts being directed towards reconstructing Cambodian society, which had suffered severe damage as a result of many years of conflict. Reform and modernisation of the education system is one high priority area for the Royal Government of Cambodia. These are being undertaken under the direction of the Ministry of Education, Youth and Sport (MoEYS), with substantial financial and technical support from foreign government and non-government aid programs (Asian Development Bank, 1996; Kingdom Of Cambodia, 1994a, 1994b; Royal Government of Cambodia, 1994a, 1994b; United Nations Development Programme, 1994).

One of the main areas for reform in the Cambodian education system is the Grade 11 examination, which in the 1996/97 academic year will be called the Grade 12 examination. The change from a Grade 11 to a Grade 12 examination is the result of an extra year being introduced on top of the existing five years of primary education, resulting in a change from a 5 + 3 + 3 grade structure to a 6 + 3 + 3 grade structure. This change is designed to align the grade structure in Cambodia with that of many other countries.

As the national exit examination for secondary education in Cambodia, the Grade 11 examination serves a critical selection function in providing opportunity to further education, particularly to Phnom Penh University and to institutions of higher learning specialising in various professions. Because of the low pass rates that have been set for the examination in the past three years, a great deal of pressure has built up on candidates to do well in the examination. As a result, candidates and others with a stake in the outcomes of the examination would need to be assured that the tests in the examination are reliable, valid and equitable to all candidates.

Besides the selection function, the Grade 11 examination also provides a valuable source of information to the MoEYS. Where possible, examination results will be linked with other information available for students, teachers and schools, to provide comprehensive databases for supporting routine Ministry operations as well as research targeted at important issues such as the effectiveness of teaching and learning, the appropriateness of curricula, the reliability and validity of examining, and the validity of educational standards embodied in the examination. Comprehensive databases of the kind envisage here should significantly improve the Ministry's capacity to address various issues confronting it, as well as to plan and manage aspects of the education system and to generate information useful for supporting policy making and policy implementation.

The Grade 11 examination results are not just the summative assessments of students' academic achievements in Grade 11 subjects. They also reflect, to a larger or smaller extent, candidates' prior learning and experience, as well as the effects of a host of other background factors affecting their achievements in the examination. In order to fully understand why differences in achievement occur among different student groups in Cambodia, it will be necessary to identify the important factors of achievement and to evaluate the strength of their effects on achievement. Only systematic research will produce a proper understanding of the relevance and the impact of these factors on achievement in the examination.

This paper reports results for Mathematics, Physics, Chemistry and Biology, from the last three Grade 11 examinations: 1994, 1995 and 1996. The 1994 Grade 11 examination was administered in one sitting, but the 1995 and 1996 examinations were administered in two sittings: a first examination followed by a supplementary examination a few weeks later. The supplementary

examination was introduced to give candidates who had almost passed on the first examination a second chance at passing. The performance of other subjects in the examination, namely Khmer Essay, Geography, Philosophy and History, will be reported later. The present study is part of a short-term program of technical assistance to improve the Grade 11 examination, which has been funded by AusAID (previously the Australian International Development Assistance Bureau). The study is the first of its kind to be undertaken in Cambodia, and is seeking to provided insights into aspects of the Grade 11 examination and its candidatures, which were previously unavailable. One important goal is to account for the performance of the candidates in terms of the structure, content and psychometric properties of the tests that were set, and in terms of province, gender, age, and other characteristics of the candidates.

In addition to summarising and reporting the performance of students on the four tests, and comparing performance across the three years, both within and across years, the paper also illustrate how item response theory (IRT) was applied to analyse the question-level test data. This methodology proved useful in gauging the consistency of the questions in making up the different tests and for measuring candidates' achievements in relation to the scaled item difficulty measures.

Valid and reliable examinations are possible only if there is a clear understanding of the psychometric properties of the tests, particularly at the question level. Such understanding aids test development, and encourages the construction of good quality tests with desirable psychometric properties. In addition, the appropriateness and adequacy of tests for specific purposes such as for grading and selection, for example, must be evaluated only in terms of the performance of the questions in tests. Comprehensive surveys of public examininations and issues in examining can be found in Luijten (1991) and Keeves (1994).

MATHEMATICS AND SCIENCE ACHIEVEMENT TESTS

The Mathematics, Physics, Chemistry and Biology tests in the 1994, 1995 and 1996 Grade 11 examinations consisted of open-ended questions, except for one multiple-choice question in the 1996 Biology test. Table 1 briefly describes the structure and content of the tests, and presents a categorisation of the items in terms of the main cognitive behaviours tapped by the items (Bloom, 1956). The table also indicates the time allocated to each test and the maximum score possible for each question. Many of the questions in the tests had sub-questions, but they have not been considered specifically in this paper. It suffices to say that the sub-questions of a question were alike in the cognitive behaviours they tested and they generally addressed a common theme (see the 'task' column of Table 1).

Note that for the 1996 tests, the maximum possible marks were increased for all tests: from 10 to 100 for Maths; and from 5 to 50 for Physics, Chemistry and Biology. This change was adopted by the MoEYS to allow more whole numbers to be used in the marking, in the expectation that greater discrimination in the awarding of marks to candidates would result.

Testing in Mathematics and the sciences at Grade 11 is seen as the means for assessing candidates' mastery of content outlined in prescribed curricula, which in most instances has meant the mastery of the content of one text book for each subject. Assessment has in general involved simply testing knowledge and technical facility, as is evidenced by the narrow range of cognitive behaviours tapped by the test questions (Table 1), and the fact that little if any effort has been expended in trying to include questions in the tests which would assess higher-order thinking and reasoning skills, such as synthesis and evaluation. Moreover, the questions set have seldom challenged candidates to demonstrate their understanding and competence in topics and issues outside the bounds of the prescribed curricula.

The present curricula for Grade 11 was devised in the early 1980s. At that time there was a severe shortage of qualified teachers and educators who could contribute to curriculum development, and consequently much of the curriculum reflects borrowing from other countries,

particularly Vietnam. The new initiatives in curriculum reform being undertaken by the Research Institute of MoEYS, however, will over time allow a steady transition to curricula that specifically address Cambodia' needs.

At present science courses in Cambodia offer very little laboratory work, if any, and there is no practical assessment at all in the Grade 11 examination. The vast majority of schools in Cambodia lack science laboratories, or even the most basic of science equipment that teachers could use in the classroom to demonstrate scientific principles and processes. For this reason science curricula are almost entirely theory-based, with virtually no emphasis on practical science training. However, the government has foreshadowed a major investment program to improve science and mathematics education (Royal Government of Cambodia, 1996a, 1996b).

The Mathematics test is a three-hour paper which was marked out of 10 in 1994 and 1995, and out of 100 in 1996.

The 1995 Mathematics test, for example, had eight questions. The first four dealt with the properties of functions, including limits, inequalities and derivatives. Question 5 asked candidates to determine an integral of a rational algebraic function. The next two questions were on geometry: question 6 asked candidates to find the length of a diagonal of a parallelepiped and question 7 the volume of a frustum of a cone. The last question dealt with further properties of functions and determining the roots of a particular quadratic equation involving a parameter.

The Physics test has been administered with the Chemistry test in a single paper taking three hours - 1 1/2 hours for each test. The Physics questions and the Chemistry questions were presented in two separate sections. In the 1995 paper, the Chemistry section came first. The Physics test was marked out of 5 in 1994 and 1995 and out of 50 in 1996.

The 1995 Physics test, for example, had four questions. The first question deals with two simple resistive circuits: one involving two resistors connected in series and another in which the resistors are connected in parallel. The second question dealt with magnetic inductance in coils. Candidates were required to find the inductance and induced emf in the coil. Question 3 asked candidates to find the conditions for total reflection of light in a medium. Question 4 dealt with the refraction of a ray of light passing through glass prisms of different refractive indices, joined at two faces. Candidates were required to show for the given arrangement that the emergent ray is parallel to the incident ray.

The Chemistry test was administered in 1 1/2 hours. It appeared with the Physics test on one side of a single sheet of paper (see the comments above for Physics). The Chemistry test was marked out of 5 in 1994 and 1995 and out of 50 in 1996.

The Chemistry test in the 1995 examination, for example, had four questions. The first asked candidates to write an equation for the electrolysis of a solution of sodium chloride and to explain what happens at the two electrodes. The second question dealt with an experiment in which a mixture of aluminium and ferrous oxide was heated in a sealed airtight container. The aluminium completely absorbed the oxygen in the oxide, and aluminium was left in the container. HCl was then added to the contents until the reaction ceased. 5.6 L of gas were obtained under normal conditions. Candidates were asked to compute the masses of the aluminium and ferrous oxide used in the experiment, using the atomic weights of aluminium, iron and oxygen, which were provided.

Question 3 presented a series of chain reactions involving organic molecules. Candidates were asked to write chemical equations for each step in the given sequence. In question 4, 7 g of an organic chemical containing carbon and hydrogen was burned in air. Certain quantities of carbon dioxide and water were obtained under normal conditions. Candidates were required to find the molecular formula of the organic chemical.

The Biology test was a one-hour test in 1994 and 1995 and a 1 1/2 test in 1996. In 1994 and 1995 it was marked out of 5 and in 1996 it was marked out of 50.

The 1995 Biology test, for example, had five questions. The first dealt with comparative anatomy and the benefits of studying the subject. The second question dealt with the synthesis of proteins at ribosomes. The last two questions dealt with aspects of genetics in the breeding of animals. Thus in question 5, an experiment was described in which a white chicken was crossed with a black chicken to produce an off-spring that had black and white feathers. The question asked candidates to demonstrate the genotypes of the mating, and to predict what would happen genetically if this off-spring were mated with a purely white chicken.

Although question 5 dealt with a practical situation, most candidates would have had little if any prior opportunity to carry out genetics experiments in a laboratory or field setting to assist their learning of genetic concepts and practices. However, most candidates would have had some experience with farm animals, such as chickens, and this may have assisted their learning of the practical significance of the genetics posed in the question.

RESULTS FROM THE 1994, 1995 AND 1996 EXAMINATIONS

Table 2 gives the numbers of candidates presenting for the examination in 1994, 1995 and 1996, by province and sex. The data reveal the relatively small size of the female candidatures, which reflects the low participation levels for females in Cambodian education generally.

The overall performance of candidates in these years are summarised in Table 3, which gives means and standard deviations of raw test scores on the tests, in Table 4, which reports the raw product moment correlations among the four tests and the total score (on all tests) for the first examination (ie, not the supplementary examination in 1995 and 1996), and in Figures 1 to 5. Except for the correlations data in Table 4, only the results for the first examination in 1995 and 1996 are reported. In comparing performance across years care must be exercised since the tests had not been equated to a common measurement scale. Thus the same mean scores in different years do not necessarily imply the same level of achievement or performance.

The Mathematics and science tests revealed a strong and clear clustering of performance in 1994 and in 1996, but a much weaker one in 1995 (Table 4). In 1994 the strongest correlation was between Mathematics and Chemistry at 0.52, and in 1996 between Mathematics and Chemistry at 0.68. The correlations among the tests for the first examination in 1995 were clearly much weaker than those for the 1994 and 1996 (first) examinations. Why the correlations in 1995 were much lower than in 1994 can not be answered conclusively here, but there is strong evidence to suggest that large fluctuations in marking and recording accuracy may have been factors. Indeed the MoEYS has been grappling with these and related problem in order to introduce rigour and accuracy into the processing of examinations results. The centralisation of marking to Phnom Penh in 1996 has possibly had a significant impact in improving the correlations observed for that examination. In 1994 and 1995 marking was done in the provinces and very little control was able to be exercised by the MoEYS to ensure that marking and coding were consistently applied across province.

Figure 1 plots the mean scores on the four tests by province and gender. The results show that on average females outperformed males on all the tests and that this was generally consistent across the provinces. The box-and-whisker plots in Figures 2 to 5 summarise graphically the distributions of raw scores for each of the tests by province and year. The boxes show the range in which 50 per cent of the candidates scored, and the few candidates classified as outlying or extreme are indicated by plotted symbols along the whiskers. The box-and-whisker plots clearly reveal the strong positive skewness of the raw score distributions and the variability in performance between provinces and years for each of the tests.

The strong positive skewness of the distributions, and the fact that most candidates did not get near to half the maximum score possible, indicate the tests were far too difficult for most. These results show a clear mismatch between test difficulty and student achievements overall. From the point of view of good test practice, extreme score distributions of this kind are undesirable for public examinations, because they give students a low expectation of doing well in the examinations. The difficulty of the tests should have been better targeted to the achievement levels of the candidates in order to yield a better spread of scores across the available score ranges. The resulting benefits would include a raising of student's expectations of scoring well and an increase in the number of students who would feel equitably challenged by the tests. The setting easier tests in the Grade 11 examination would not have automatically resulted in a lowering of standards. Indeed the passing (cut-off) score, or standard, for each of the tests should have been decided separately and only after the score distribution was known. If there was sufficient discrimination of the students near the cut-off score, fine-tuning of the proportion of passing students could then have taken place by simply moving the cut-off score up or down the score scale.

It is worth reflecting here on the pass rates. In 1994, 668 (4.4%) candidates passed the Grade 11 examination. In 1995, 1349 (6.9%) passed the first examination and a further 1072 (12.5%) passed the supplementary examination, yielding an overall pass rate of 12.4%. The pass rate improved markedly in 1996, where 3857 (19.2%) passed the first examination, and a further 2177 (22.9%) passed the supplementary examination, yielding an overall pass rate of 30.0%. Despite the improvement in 1996, the pass rate is still low compared to pass rates set in most developed countries.

Item Response Theory Analysis

This section of the paper briefly reports some details of item response theory (IRT) analysis for the questions in the 1996 tests that were undertaken as part of a larger study. The particular IRT procedure that was employed is widely known as the *Partial Credit Model* (Adams and Khoo, 1993). The 1996 results reported here are sufficient to illustrate the power of this methodology for routine monitoring of the match between item difficulties and candidate achievements for a test and for informing subsequent test development.

Partial credit analyses were carried out for each of the four tests using a special sample of 329 candidates drawn from three provinces: Phnom Penh, Battambang and Preah Vihear. Prior to analysis, the raw score range for each question was arbitrarily divided into a number of sub-ranges, representing partial score (credit) categories for the item. The number of categories and their width for a question was guided by the nature of the question and the overall distribution of raw scores for the question. The constructed partial score categories were then assigned successive integer scores, starting at zero. For example, for question 1 in the Mathematics test, the successive integer scores were defined as follows:

0 assigned to raw scores in the range [0, 5.0)
1 assigned to raw scores in the range [5.0, 20.0)
2 assigned to raw scores in the range [20.0, 30.0)
3 assigned to raw scores in the range [30.0, 40.0)
4 assigned to raw scores in the range [40.0, 45.0)

Figures 6 shows person-item plots for the Mathematics and Physics tests and Figure 7 shows similar plots for the Chemistry and Biology tests. Each plot shows the item thresholds (difficulty estimates) and the estimated person achievement measures with respect to a latent scale of achievement for the test. The underlying latent scale of achievement is marked out on the left by a sequence of numbers (called logits) rising in value towards the top of the map. These numbers represent measures of student achievement for the given test; students with large achievement measures having done better on the test than those with smaller measures. The 'X's to the left of

the vertical line describe the distribution of achievement measures of the students who sat the examination. (Note that only those students falling in the interval of the latent scale shown are plotted.)

To the right of the vertical line are shown the (relative) estimated values of the threshold parameters for the steps of each item. A threshold is an item step location on the scale where candidates with a matching ability measure would have had a 50 per cent chance of passing that step. For example, in Figure 6 for Mathematics, the estimated first threshold step for item 3, denoted by 3.1 in the figure, has a value of about -0.5 logits, and the second threshold step, denoted by 3.2, has a value of about 2.2 logits. The most difficult step was step 4 in item 1 and the easiest step was step 1 in the same item.

The partial score threshold steps of an item may be viewed as steps in a ladder which run up the latent scale. The estimated location of a student on the latent scale provides an indication of the likelihood that the student would "hurdle" the steps. If a step is above the corresponding location of the student on the scale, the student had a less than a 50% chance of successfully "hurdling" that step to reach the next score category, ie, gain the additional mark to put them in the next score category. If the step is below the location of the student this probability is greater than 50%.

Figures 6 and 7 clearly indicate that many candidates found a large number of the questions, in part or in whole, very difficult. The mismatch between students and items (represented by the average separation between them) is quite large in all cases.

EXAMINATIONS AND POLICY DEVELOPMENT

At present there are inordinate pressures on candidates preparing for the Grade 11 Examination, largely due to the extreme selectivity of the examination in the past few years. Compared with the 1993 examination, when over 70 per cent of candidates passed, the 1994 and 1995 examinations saw a dramatic drop, each yielding less than ten per cent of passing candidates. This sudden and severe restriction of opportunity for access to higher education has forced many candidates to seek special tuition outside the government school system in order to maximise their chances of success in the examination. As a result there has been an explosive growth in the number of private coaching establishments and private tutors, the latter including many government teachers seeking to supplement their low government incomes.

However students seeking extra tuition outside the school system may not receive the expected rewards since qualified teachers are in very short supply, and even more so in rural and remote parts of the country. Consequently improving teacher qualifications through teacher training and in-servising of teachers are critical policy considerations for the Cambodian government. It is clear that student standards will be impossible to raise until teacher standards have risen sufficiently themselves. A good well-qualified teacher is the most fundamental element in any teaching-learning process.

Another serious threat to raising educational standards is the lack of a good range of textbooks in the Khmer language. As a result access to knowledge is severely restricted unless a candidate can read a foreign language such as English and has the financial capacity to purchase foreign text books, if they are available. For most, the high cost of printed materials, especially from abroad, puts such material well beyond their budgets.

Until recently the MoEYS has been severely handicapped in its ability to gather reliable data on these kinds of difficulties and their effects on aspects of the education system. A start has been made in this direction by the AusAID short-term technical assistance to the Grade 11 examination, which has gone some way to improving the Ministry's capacity for collecting, processing, and analysing examinations data and background data on candidates, schools and the home environment. This improved information capacity will allow the MoEYS to research the

Grade 11 examination and the factors which impact on it in more rigorous and meaningful ways than were possible previously.

Some worthwhile policy considerations for the MoEYS are: (1) the marking of the Grade 11 tests should include centrally determined marking criteria and sample answers, (2) rigorous quality control procedures should be set up for marking, (3) guidelines and procedures should be developed and applied to ensure comparability of standards across marking centres, (4) double marking of some examination questions should be undertaken routinely as a quality control measure, (5) fewer markers should be employed and they should each mark sufficient number of scripts, (6) the provision of a longer period of time for marking the papers, (7) central marking of all papers, and (8) a clear and publicly visible standards setting procedure to determine the overall pass rate.

Finally, it is worth noting that in the context of a developing country like Cambodia, monitoring candidate performance systematically over time can be a very cost-effective process for maintaining control over standards against a background of rapid reform and modernisation. Good and effective policy making requires a reliable information base, and an effective monitoring study will provide a coherent picture over time of student and examination performance. Linking tests from different years through small sets of common questions will allow the tests to be equated to common scales using IRT procedures, so that the relative performances of candidates and questions can be reliably assessed and compared across years.

CONCLUSION

This paper has presented some information on the nature of mathematics and science tests in the Cambodian Grade 11 Examination. This is only a limited view of the examination, as it leaves out the tests in the humanities and social sciences.

It has to be recognised that reform will not come easily. There are serious impediments to rapid reform of the Cambodian examination system. These include the shortage of qualified staff in schools and the Ministry, a poorly developed communications and information gathering/processing infrastructure, and various socio-economic factors which adversely affect work practices. Despite the impediments, there is a keen desire by Cambodians to institute reforms that will transform the examination system to a level comparable with good international practice. To this end, the current short-term project and the proposed AusAID program of long-term assistance should provide much of the badly needed technical assistance, resources and impetus to accomplish this transformation.

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Table 1 Categorisation of Questions in Tests

Year / Test	Quest. Num.	Task	Behav.	Max Score
1994				
Maths (3 h)	1	Prove that graph of a quartic polynomial has 'kick' in it.	Ap	1.00
	2	For a given volume, find the height of a circular cone which gives minimum surface area.	Ap	1.00
	3	Investigate properties of a rational function.	Ap	4.00
	4	Prove a proposition in a solid geometry problem and calculate given quantities.	Ap & An	4.00
Physics (1.5 h)	1	Calculate capacitances of capacitors connected in parallel and series.	Ap	0.75
	2	Plot the path of light ray through a prism; calculate its exit angle.	Ap	1.00
	3	Calculate various quantities for an electric circuit containing batteries, resistances, an electrolysis cell, and a dc motor.	Ap & An	3.25
Chemistry (1.5 h)	1	Explain meaning of chemical terms.	Kn	0.75
	2	Describe methods for identifying three given chemicals: give relevant chemical equations.	Kn & Ap	0.75
	3	Calculate mass and volume of quantities involved in reactions of alkali metals with water.	Ap	2.00
	4	Determine formula and isomer of alkyne from given information.	An	1.5
Biology (1 h)	1	Explain meaning of genetic terms.	Kn	1.00
	2	Explain atavism; explain difference between meiosis and mitosis.	Kn & Co	1.00
	3	Explain concept of breeding.	Kn	0.50
	4	Question addressing information storage in DNA.	An	0.50
	5	Questions on mendelian genetics.	Ap	2.00
1995				
Maths (3 h)	1-2	Find limits of functions	Ap	2.00
	3	Calculate derivatives of a rational function of cos x.	Ap	1.00
	4	Prove an inequality involving a quadratic polynomial.	Ap	1.00
	5	Integrate a rational function	Ap	0.75
	6	Find length of diagonal of a right-angled parallelepiped.	Ap	1.50
	7	Calculate the volume of a conic segment.	Ap	0.75
	8	Investigate various properties of a rational function	Ap & An	3.00
Physics (1.5 h)	1	Solve problems on resistive circuits.	Ap	1.50
	2	Solve problems on inductance involving a coil with two-layers of wire.	Ap	1.50
	3	Define condition for total reflection of light.	Kn	0.50
	4	Solve a problem on refraction of light through two joined prisms of different refractive indices.	Ap	1.50
Chemistry (1.5 h)	1	Describe chemical reactions in electrolysis of sodium chloride in water.	Ap	1.50
	2	Calculate masses of products in a chemical reaction.	An	1.50
	3	Complete a chemical equation describing a sequence of chemical transformations.	Ap	1.00
	4	Determine the chemical formula of a substance from the given results of an experiment.	Ap	1.00
Biology (1 h)	1	Explain meaning of genetic terms.	Kn	1.00
	2	Explain comparative anatomy.	Kn	1.00

	3	Explain the process of synthesising proteins at ribosomes.	Ap	1.00
	4	Explain back-cross breeding and its benefits to agriculture.	Ap	0.50
	5	Solve problems on mendelian genetics.	Ap	1.00
1996				
Maths (3 h)	1	Solve an algebraic equation, compute the derivative and integral of functions, find the limit of a function, determine the volume of a segment of a cone.	Ap	45
	2	Investigate the properties of a rational function.	Ap & An	30
	3	Solve three problems in solid geometry involving a pyramid.	Ap	25
Physics (1.5 h)	1	Calculate the electric field between two charged, parallel plates; find the angle from vertical of a pendulum (string plus charged mass) placed between the plates.	An	10
	2	Find relative resistances of two lamps, when they are connected to different voltage sources.	Ap	5
	3	Calculate time to deposit an amount of copper on an electrode in an electrolytic process.	Ap	5
	4	Solve problems on magnetic induction involving current in parallel wires.	Ap	15
	5	Decide whether a converging or diverging lens has been used to form a real image on a screen; calculate focal length of the lens.	Ap	15
Chemistry (1.5 h)	1	Complete and balance a set of chemical equations; identify the oxidising and reducing elements.	Ap	12
	2	Describe how a particular compound can be separated from a mixture; write chemical equations.	Ap	8
	3	Describe chemical effects of environmental factors on metals and non-metals.	Ap	6
	4	Name and write formulas for the isomers of pentane.	Kn	10
	5	Given data from a chemical analysis of two organic compounds, determine their chemical formulas.	An	8
	6	Determine the chemical formula of an organic compound given the relative oxygen content by mass.	Ap	6
Biology (1.5 h)	1	Explain meaning of biological terms.	Kn	8
	2	Answer questions on mendelian genetics.	Kn & Ap	17
	3	A multiple-choice question on cross-fertilisation of bean plants.	Ap	3
	4	Describe human evolution.	An	4
	5	Describe how genetics is useful in agriculture and medicine.	An	6
	6	Determine characteristics and genotypes of bean plants from cross-fertilisation data.	An	12

Table 2 Distribution of candidates by year of examination, province and sex.

		1994	1995	1996
Province	Sex	Row Totals	Row Totals	Row Totals
Banteay Meanchey	male	331	463	429
	female	104	167	194
	Total	435	630	623
Battambang	male	674	1407	1172
	female	163	217	723
	Total	837	1624	1895
Kah Kong	male	43	54	42
	female	2	0	8
	Total	45	54	50
Kampong Cham	male	1226	1737	1673
	female	268	523	730
	Total	1494	2260	2403
Kampong Chhn	male	260	305	294
	female	42	57	79
	Total	302	362	373
Kampong Speu	male	445	429	408
	female	48	66	102
	Total	493	495	510
Kampong Thom	male	401	636	565
	female	66	82	256
	Total	467	718	821
Kampot	male	687	748	560
	female	114	207	164
	Total	801	955	724
Kandal	male	1986	1906	1348
	female	260	550	591
	Total	2246	2456	1939
Kratie	male	290	372	261
	female	130	211	197
	Total	420	583	458
Phnom Penh	male	2279	3216	3581
	female	920	1450	2073
	Total	3199	4666	5654
Preah Vihear	male	24	29	29
	female	1	5	0
	Total	25	34	29
Prey Veng	male	1161	1157	987
	female	131	234	300
	Total	1292	1391	1287
Pursat	male	286	253	212
	female	49	51	88
	Total	335	304	300
Siem Reap	male	351	501	508
	female	117	204	224
	Total	468	705	732
Sihanoukville	male	145	157	155
	female	28	45	51
	Total	173	202	206
Stoeng Treng	male	23	33	47
	female	1	6	9
	Total	24	39	56
Svay Reang	male	541	697	671
	female	69	114	149
	Total	610	811	820
Takeo	male	1307	1106	958
	female	109	141	226
	Total	1416	1247	1194
Ratanak Kiri	male			18
	female			0
	Total			18
Column Total		15082	19536	20082

Table 3 Overall summary of test performance across years

		Maths	Physics	Chemistry	Biology
1994	mean	1.30	.68	1.14	.98
	sd	1.37	.71	.94	.65
	N=15086				
1995	mean	1.91	.85	1.38	1.36
	sd	1.45	.77	.98	.89
	N=19543				
1996	mean	35.09	10.94	19.31	17.68
	sd	21.48	8.33	11.28	9.43
	N=20085				

Table 4 Product-moment correlations among tests (* significant at $p < .05$)

1994 Examination

Variable	MATHS	PHYSICS	CHEMISTR	BIOLOGY	TOTALSCR
MATHS	1.00	.48 *	.52 *	.46 *	.72 *
PHYSICS	.48 *	1.00	.49 *	.37 *	.59 *
CHEMISTR	.52 *	.49 *	1.00	.45 *	.69 *
BIOLOGY	.46 *	.37 *	.45 *	1.00	.65 *
TOTALSCR	.72 *	.59 *	.69 *	.65 *	1.00

1995 Examination

Variable	Maths 1	Physics 1	Chemistr 1	Biology 1	Total Score 1	Maths 2	Physics 2	Chemistr 2	Biology 2	Total Score 2
Maths 1	1.00	.27*	.23*	.17*	.50*	.28*	.16*	.17*	.16*	.21*
Physics 1	.27*	1.00	.31*	.14*	.39*	.14*	.07*	.12*	.13*	.10*
Chemistr 1	.23*	.31*	1.00	.19*	.42*	.17*	.14*	.21*	.15*	.16*
Biology 1	.17*	.14*	.19*	1.00	.44*	.20*	.12*	.19*	.24*	.25*
Total Score 1	.50*	.39*	.42*	.44*	1.00	.27*	.17*	.24*	.26*	.34*
Maths 2	.28*	.14*	.17*	.20*	.27*	1.00	.32*	.41*	.39*	.71*
Physics 2	.16*	.07*	.14*	.12*	.17*	.32*	1.00	.30*	.24*	.44*
Chemistr 2	.17*	.12*	.21*	.19*	.24*	.41*	.30*	1.00	.36*	.64*
Biology 2	.16*	.13*	.15*	.24*	.26*	.39*	.24*	.36*	1.00	.65*
Total Score 2	.21*	.10*	.16*	.25*	.34*	.71*	.44*	.64*	.65*	1.00

1996 Examination

Variable	Maths 1	Physics 1	Chemistr 1	Biology 1	Total Score 1	Maths 2	Physics 2	Chemistr 2	Biology 2	Total Score 2
Maths 1	1.00	.63*	.68*	.65*	.77*	.13*	.12*	.14*	.12*	.13*
Physics 1	.63*	1.00	.65*	.60*	.67*	.05*	.06*	.05*	.04*	.04*
Chemistr 1	.68*	.65*	1.00	.66*	.73*	.14*	.15*	.18*	.17*	.17*
Biology 1	.65*	.60*	.66*	1.00	.73*	.10*	.11*	.12*	.15*	.14*
Total Score 1	.77*	.67*	.73*	.73*	1.00	.14*	.14*	.15*	.16*	.16*
Maths 2	.13*	.05*	.14*	.10*	.14*	1.00	.79*	.80*	.77*	.86*
Physics 2	.12*	.06*	.15*	.11*	.14*	.79*	1.00	.83*	.82*	.88*
Chemistr 2	.14*	.05*	.18*	.12*	.15*	.80*	.83*	1.00	.86*	.92*
Biology 2	.12*	.04*	.17*	.15*	.16*	.77*	.82*	.86*	1.00	.95*
Total Score 2	.13*	.04*	.17*	.14*	.16*	.86*	.88*	.92*	.95*	1.00

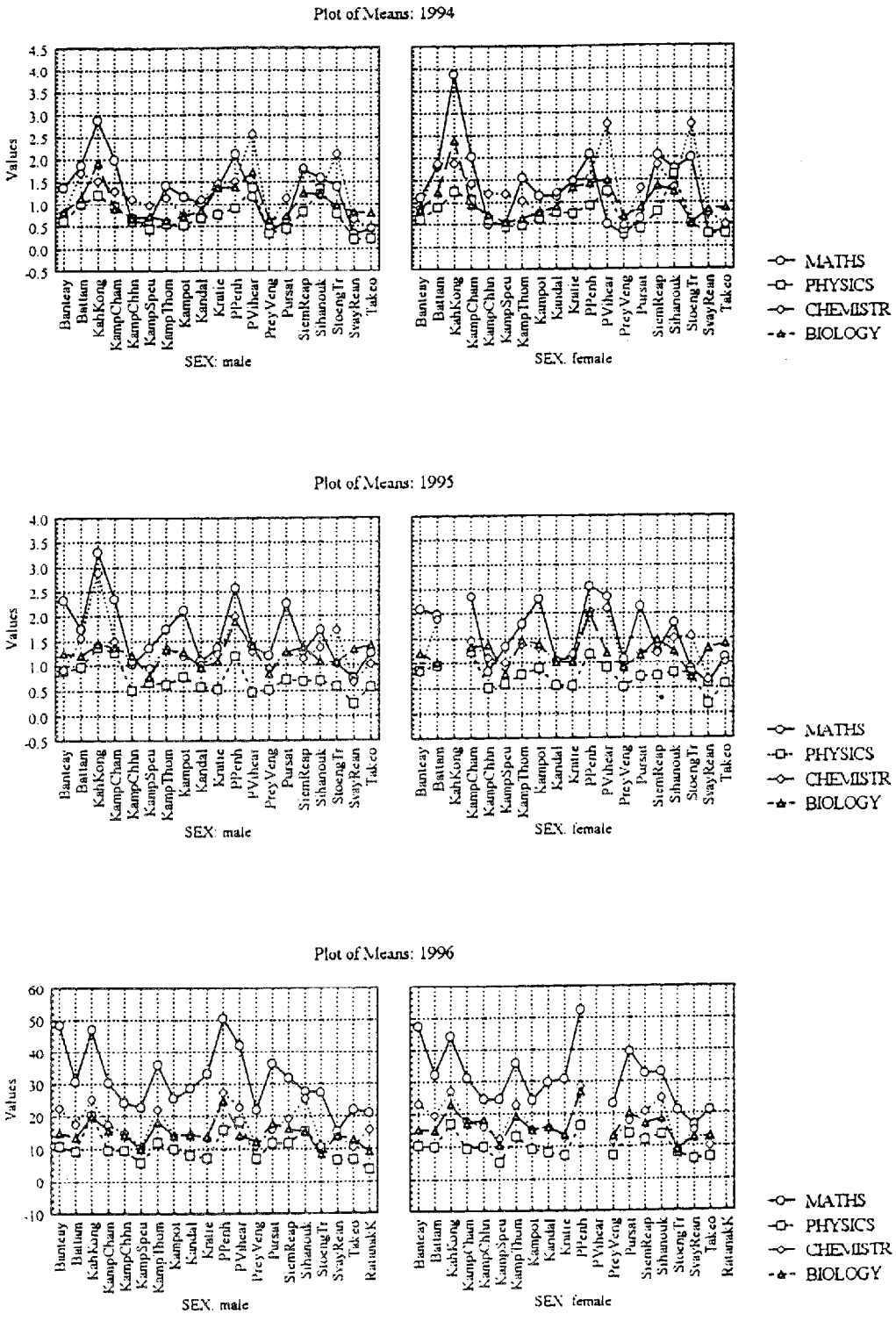


Figure 1 Plot of mean scores by province and sex

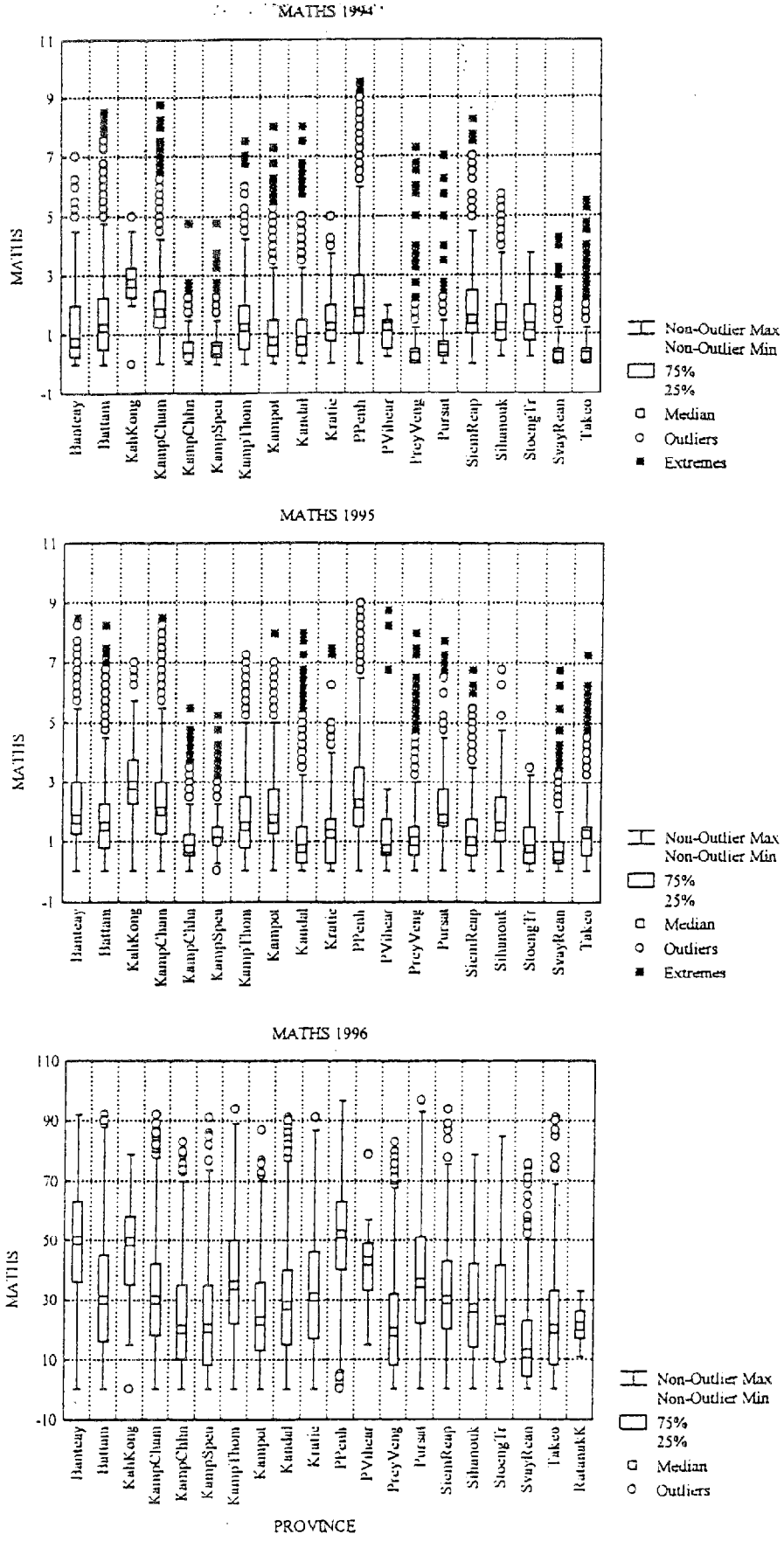


Figure 2 Box plots for mathematics by province

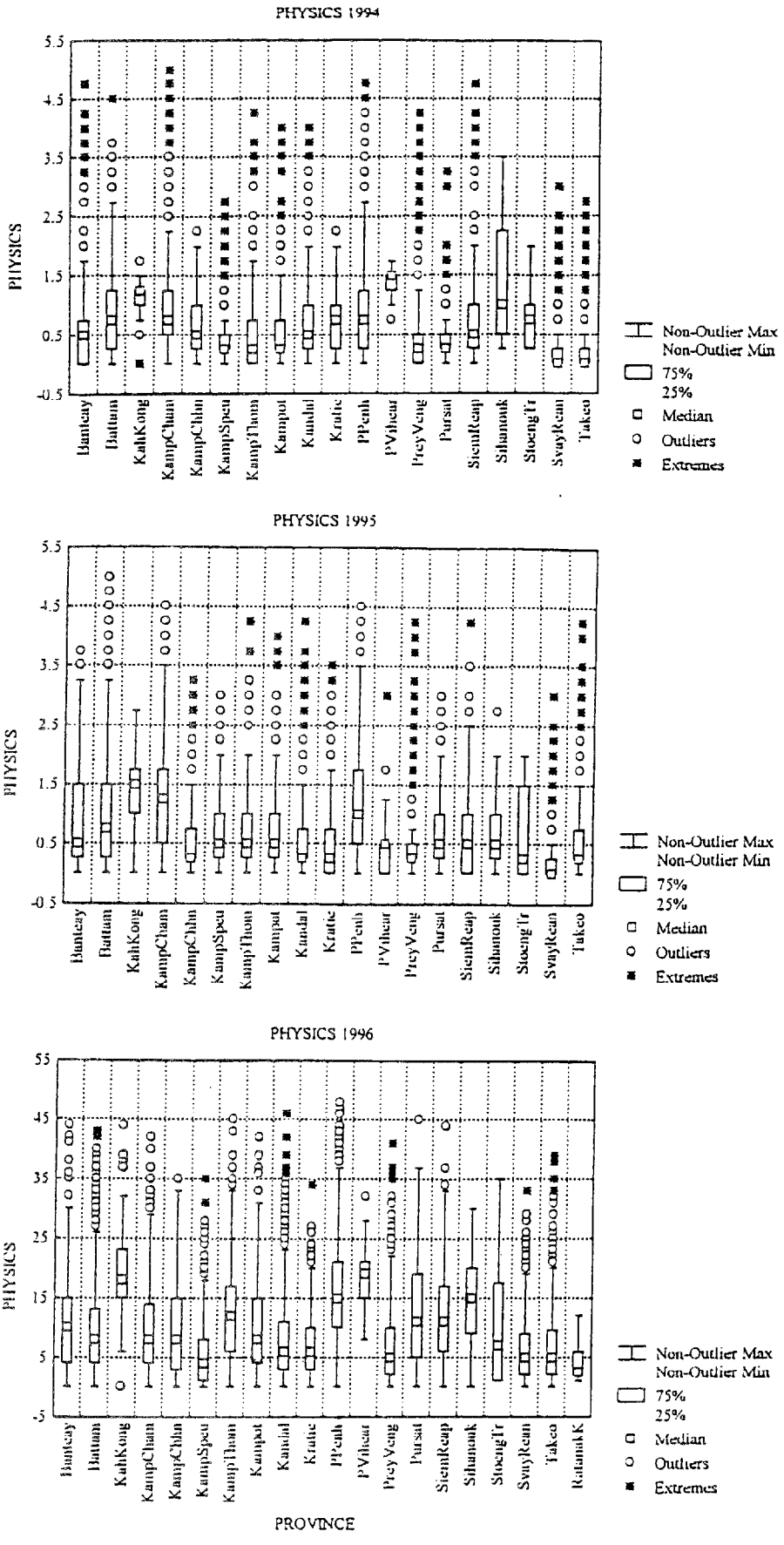


Figure 3 Box plots for physics by province

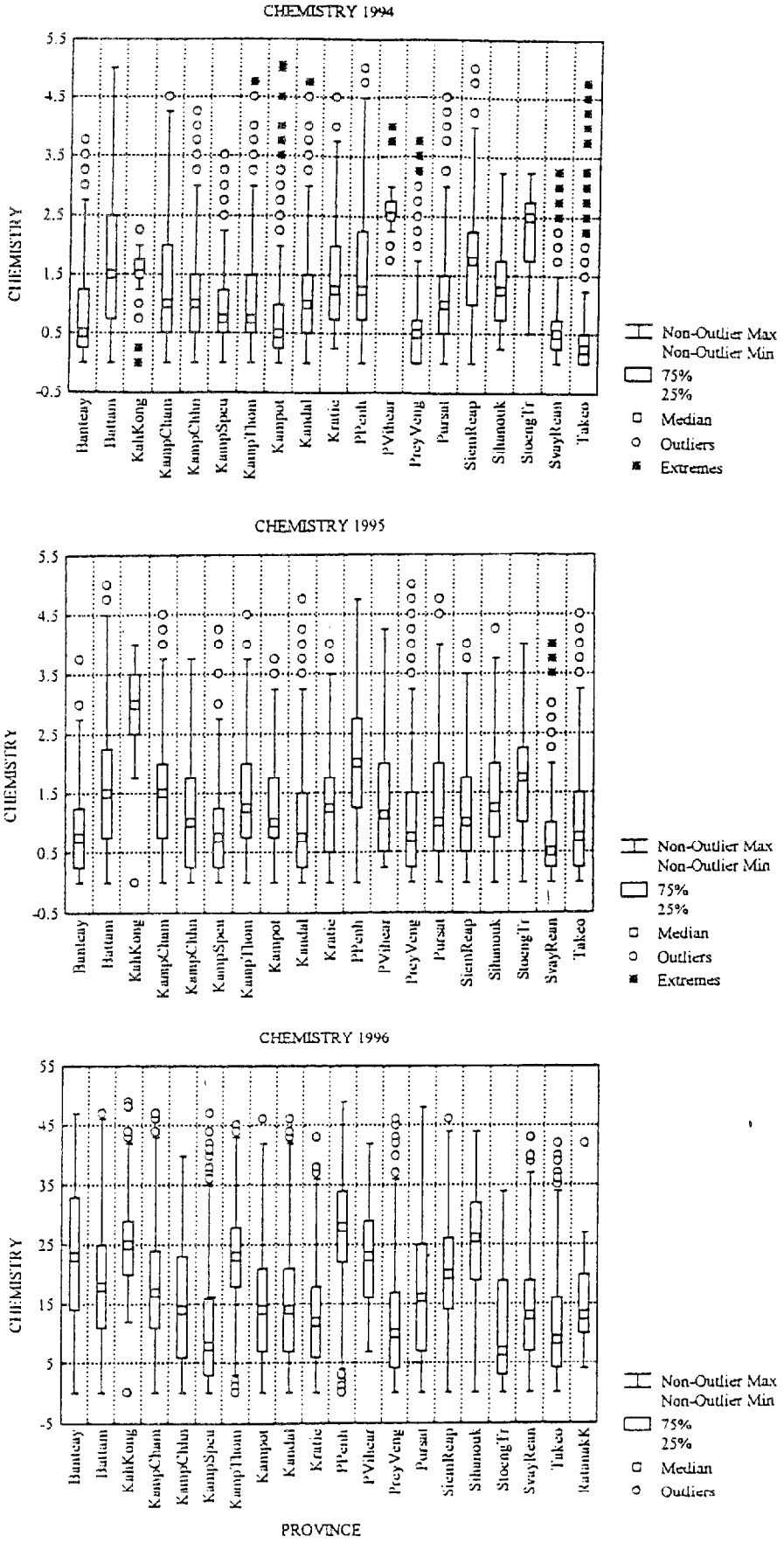


Figure 4 Box plots for chemistry by province

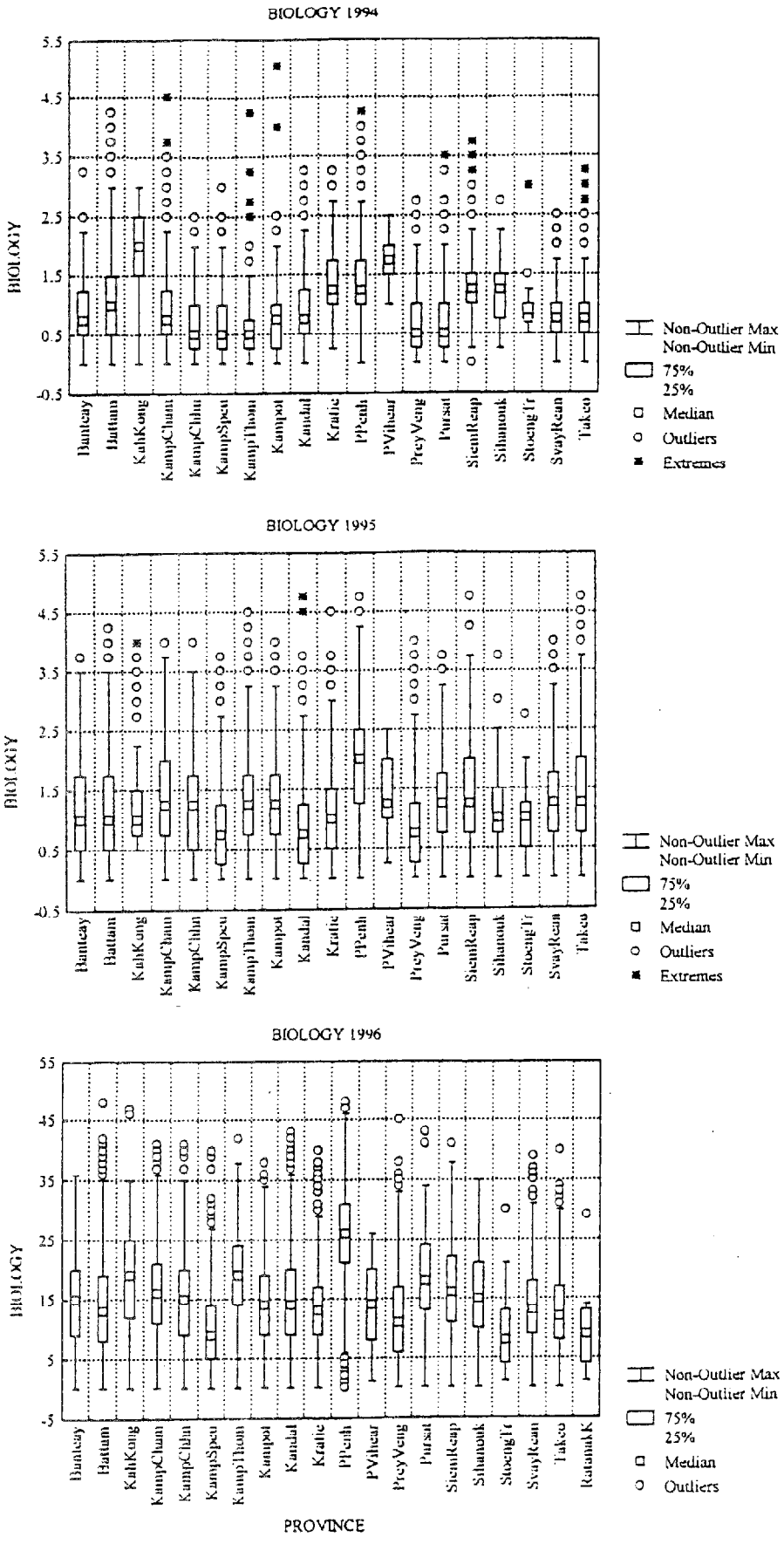
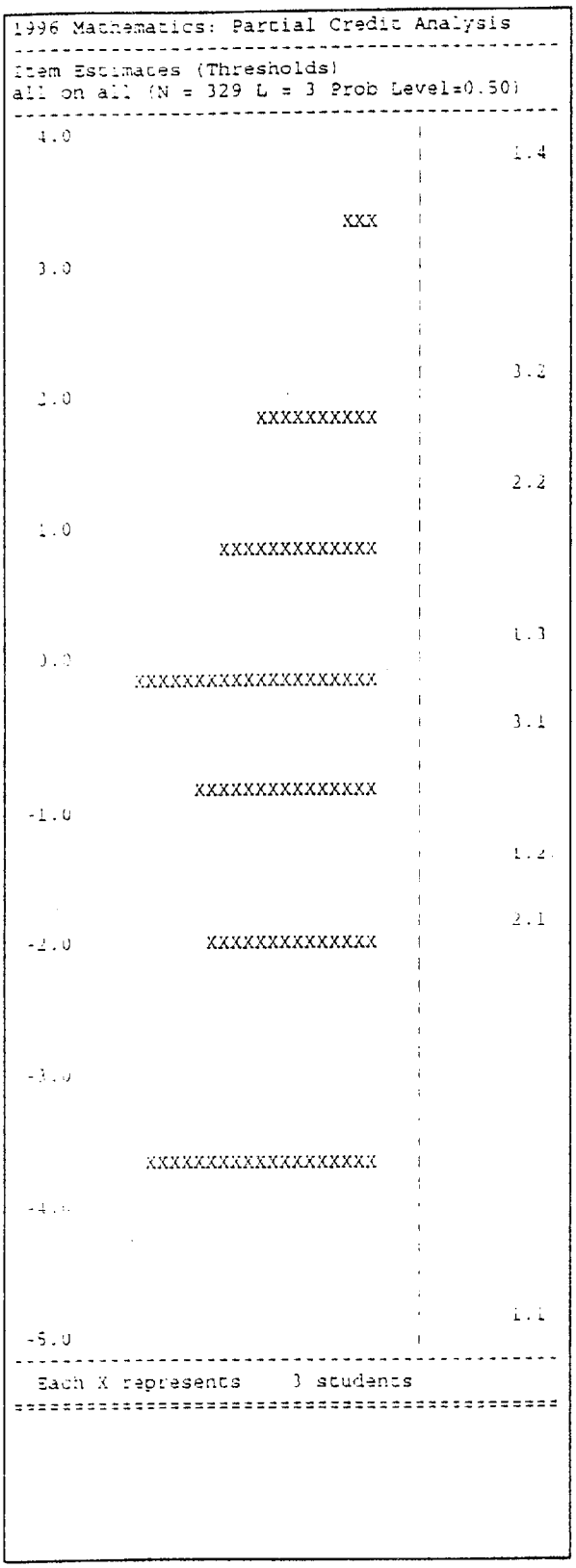


Figure 5 Box plots for biology by province



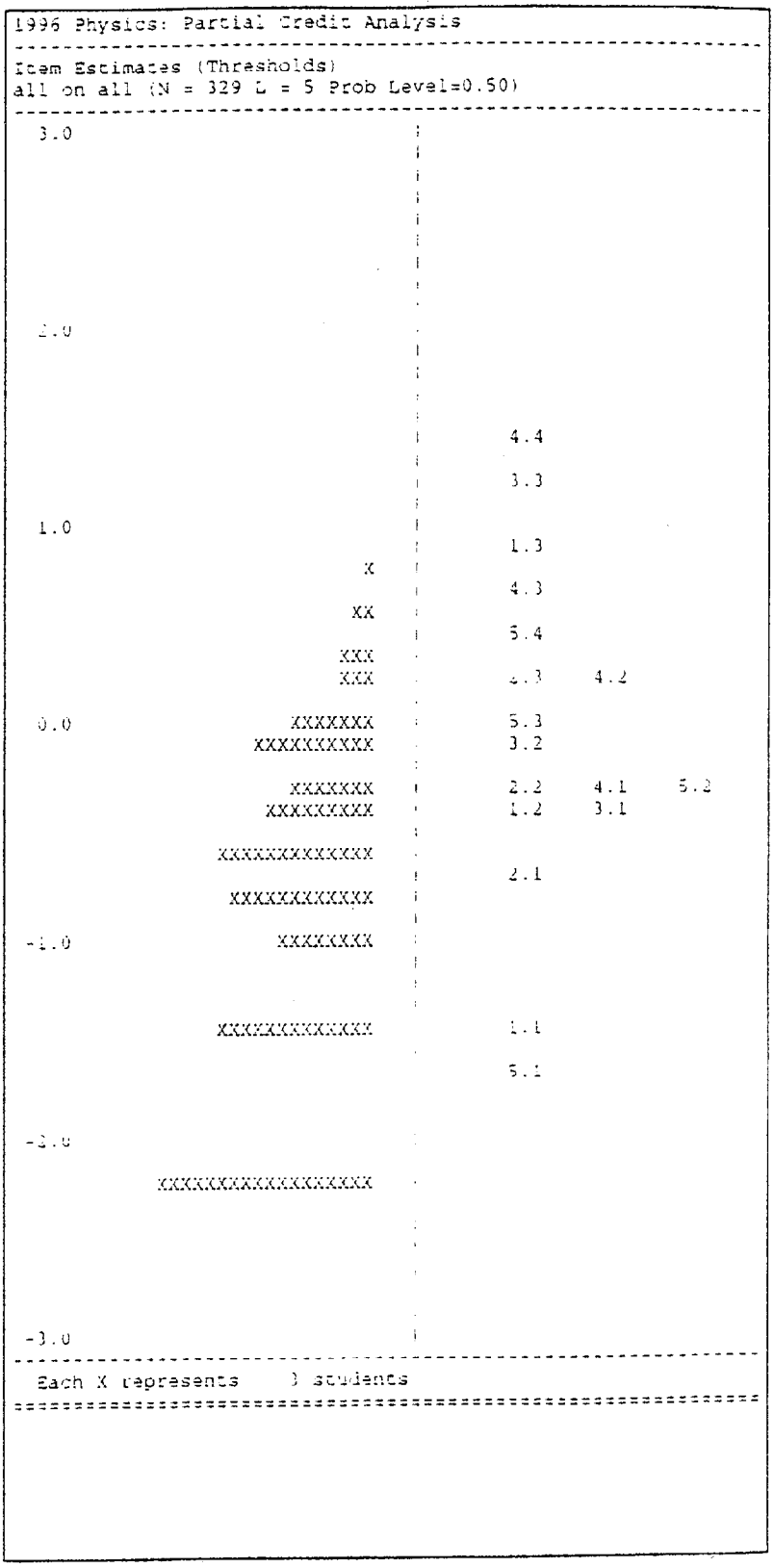
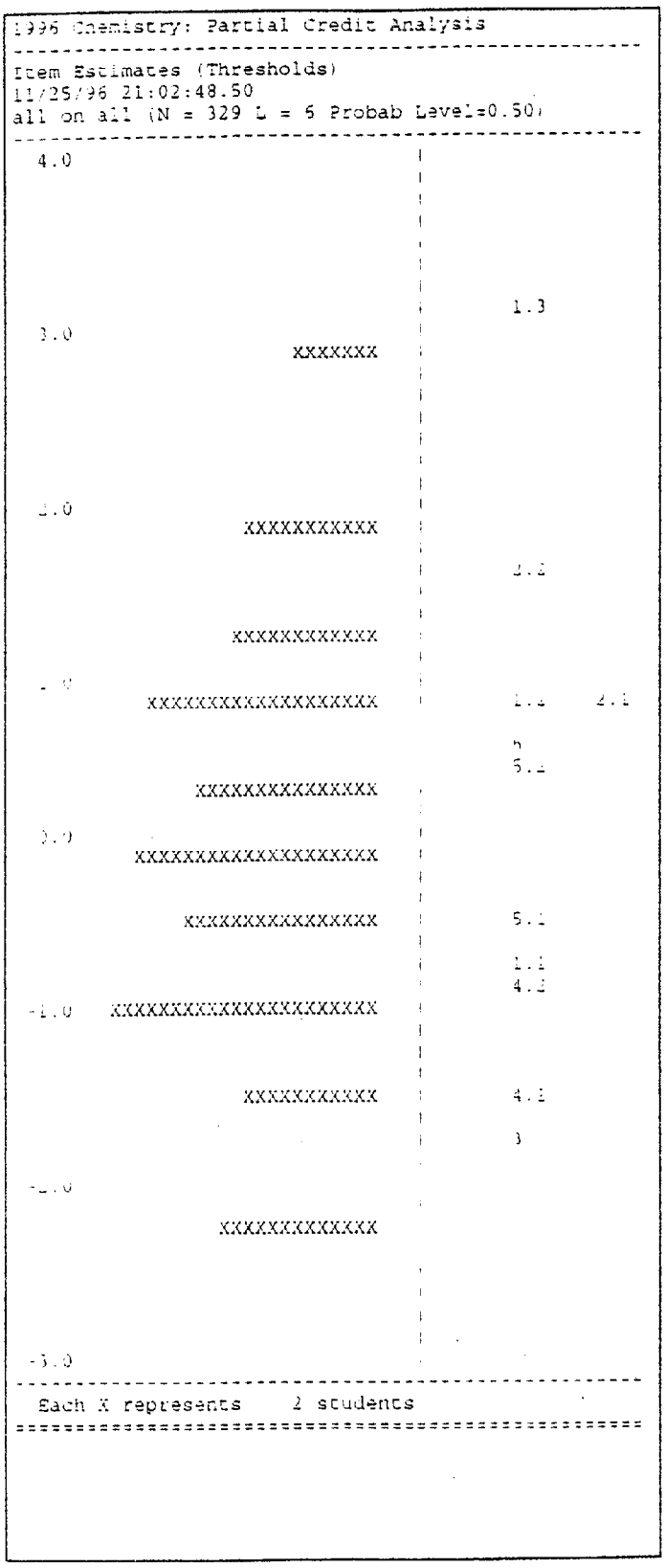


Figure 6 Person-item plots for mathematics and physics: 1996



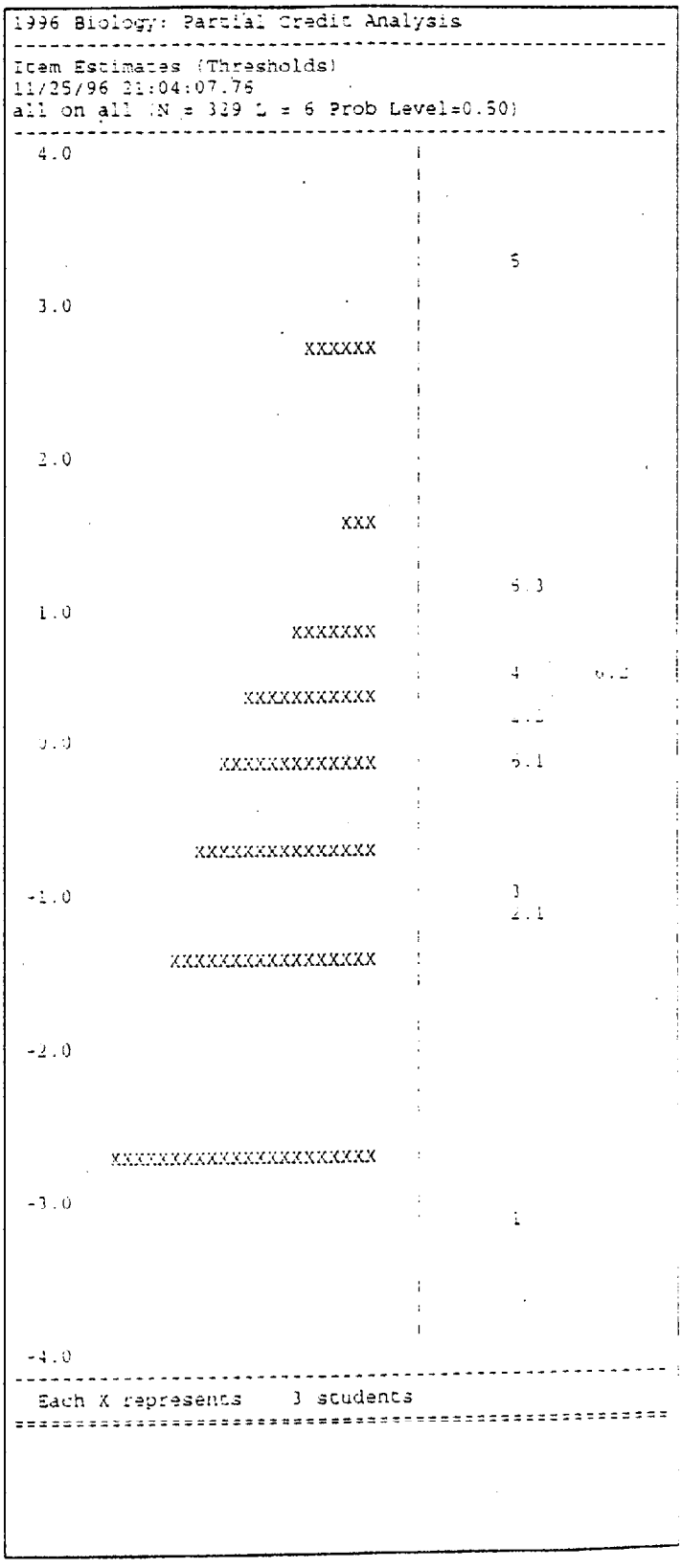


Figure 7 Person-item plots for chemistry and biology: 1996

10. 各ドナーの活動にかかる資料

a. PASEC (Report de Mission (30 November-11 December 1998))
b. World Bank (Project Appraisal Document on a Proposed Credit in the Amount of US $5 million Equivalent to the Royal Kingdom of Cambodia for Education Quality Improvement Program)
c. DfID

PASEC

Programme d'appui au secteur de l'éducation primaire au
Cambodge

Rapport de Mission
(30 novembre - 11 décembre 1998)

Analyse des besoins en formation des formateurs chargés de la formation initiale des enseignants des classes de 6 ème, 7 ème, 8 ème 9 ème années de l'enseignement de base.

André HUSSENET
Inspecteur Général de l'Education Nationale
France

Février 1999

SOMMAIRE

1TERMES DE RÉFÉRENCE

EXPERTISE-CONSULTATION EN APPUI TECHNIQUE AU PASEC EN VUE D'ANALYSER LES BESOINS EN FORMATION DES FORMATEURS CHARGÉS DE LA FORMATION INITIALE DES ENSEIGNANTS DES CLASSES DE 6è, 7è, 8è, 9è ANNÉES DE L'ENSEIGNEMENT DE BASE
****

1.1 Cadre général et justification du service

1.1.1 Eléments de contextes du sytstème éducatif cambodgien

Le système éducatif cambodgien est en phase de reconstruction après avoir été sérieusement ébranlé par les événements qui ont marqué le Cambodge ces deux dernières décennies.

Dans ce contexte de réhabilitation, après la tenue en décembre 1994 d'une Table Ronde sur l'éducation et l'établissement d'un "Plan d'investissement 1995-2000" pour le redressement de l'éducation de base au Cambodge, différents bailleurs de fonds et des ONG apportent leur soutien et leur contribution au développement et à la mise en œuvre de la nouvelle politique éducative. L'Union Européenne, pour sa part, à travers le "Programme d'Appui au secteur de l'enseignement primaire au Cambodge (PASEC)" octroie une aide importante à la remise sur pied de l'enseignement primaire en agissant concomitamment sur les différents facteurs et paramètres porteurs de qualité de l'enseignement, hormis les infrastructures scolaires : formation initiale et continue des maîtres, formation des formateurs, élaboration des curricula, production de matériel didactique, relation école-communauté scolaire, planification de l'éducation, gestion des personnels...
La langue khmère est, au sein du système éducatif cambodgien, la langue officielle d'enseignement et le support véhiculaire de mise en œuvre des aides extérieures.

1.1.2. CADRE GENERAL DE LA CONSULTATION

La finalité du PASEC est d'améliorer les performances de l'enseignement primaire cambodgien en poursuivant quatre types d'objectifs :

a. L'amélioration de la qualité des enseignants à travers la formation initiale et la formation continue.

b. L'amélioration des conditions de travail des enseignants.

c. L'amélioration des conditions de vie des enseignants

d. Une meilleure planification et gestion de l'enseignement primaire.

Les activités mises en oeuvre et les intrants injectés par le PASEC pour atteindre les objectifs visés tournent, dis l'origine, autour de quatre axes principaux d'activité : la formation des enseignants du primaire, les matériels pédagogiques, l'animation communautaire et la gestion du sous-système d'éducation de base.

De nombreuses opérations ont été lancées par le PASEC depuis mars 1995 à partir de ces pôles d'intervention, avec couverture géographique nationale (23 provinces, 47 000 maîtres, 5 000 écoles primaires, 17 Ecoles Provinciales de Pédagogie) et un souci de complémentarité avec les aides apportées à l'enseignement primaire par d'autres bailleurs que l'Union Européenne (Unicef, Banque Asiatique de Développement, Coopération bilatérale française et anglo-saxonne, U.S Aid, UNESCO).

Les opérations relatives à la formation initiale ont regroupé :

- l'appui technique à la formation initiale des maîtres

- l'amélioration des conditions de vie, d'hébergement et de travail des élèves- maîtres en formation

- l'amélioration des conditions de fonctionnement des Ecoles Provinciales de Pédagogie.

1.2. Finalite et objet de l'appui technique recherche

L'appui technique recherché s'inscrit dans le cadre général des objectifs et réhabilitations visés par le PASEC tels que définis dans la convention de financement n° ALA/94/14" et dans la programmation des actions retenues par le "Plan global de travail PASEC" pour exécuter les différentes composantes du projet.

1.2.1 Par rapport à ces objectifs et à cette programmation - dont ne perdra pas de vue qu'ils visent, en transversalité, le renforcement de l'institution Education Nationale et la revalorisation de la fonction enseignante - un soutien particulier a été apporté à la formation initiale en vue de créer dans les 17 Ecoles Provinciales de Pédagogie des conditions de vie, de travail et de fonctionnement nécessaires à une amélioration qualitative de la formation.

1.2.2 Dans le cadre de la préparation d'une nouvelle aide Européenne éventuelle en Education, il s'agit, au stade actuel des activités conduites par le PASEC, d'identifier les besoins en formation des enseignants des années 6.7.8.9 en tenant compte des objectifs de préprofessionnalisation de l'enseignement de Base envisagés par le MEJS en 1999, un audit portant sur deux aspects de la formation initiale des professeurs de 1er cycle

- les cursus de formation initiale des professeurs du 1er cycle
- les pratiques de formation dans les Ecoles Régionales de Pédagogie

permettra de dresser un état des lieux qualitatif et de formuler des propositions pour adapter la formation des enseignants du 1er cycle aux nouveaux objectifs de l'Enseignement de Base.

1.3. Modalite de mise en oeuvre de l'appui

L'appui technique souhaité sera apporté selon les modalités et dans les conditions suivantes

1.3.1. Recours à un expert en consultation

La réalisation des taches précédemment identifiées est confiée à une personne-ressources hors PASEC répondant au profil d'expert international, pédagogue et formateur ayant une solide expérience en matière d'analyse et d'évaluation de cursus de formation.

Priorité est donnée a un expert ayant une solide expérience des systèmes éducatifs des pays du tiers-monde, en particulier de l'Asie du sud-est. Des compétences en formation de formateurs, animation et dynamique de groupe ainsi que des capacités techniques dans le domaine de la conception, de la rédaction, de l'évaluation de curricula de formation sont également requises.

1.3.2. Agenda

L'expert identifié par la direction du PASEC est appelé à intervenir au Cambodge entre octobre et novembre 98 à hauteur d'un demi-homme/mois pour conduire une étude des besoins en formation des formateurs d'enseignants du ler cycle, en vue d'une préprofessionnalisation de l'enseignement de Base prévue par le MEJS à la rentrée 99.

1.3.3. Conditions générales de mise en oeuvre de l'appui

La mission au Cambodge du consultant choisi est effectuée sous la conduite du Directeur du Programme PASEC, en collaboration étroite avec les experts PASEC engagés dans la réalisation de cette action et en partenariat étroit avec la partie cambodgienne représentée par :
- Le Ministère de l'Education, les Secrétaires d'Etat et le cabinet ministériel.
- La Direction de la Formation et du recyclage.

Au cours de cette mission, le consultant est appelé, en tant que de besoin et dans les limites de sécurité, à se déplacer à l'intérieur du pays pour y prendre les différents contacts nécessaires à l'accomplissement des tâches qui lui sont confiées.

1.3.4. Rapports de mission

La mission au Cambodge donne lieu de la part de l'expert-consultant à l'établissement d'un rapport en langue française.

Au terme de ce séjour, les conclusions et les principaux acquis de la mission sont verbalement portés à la connaissance de la partie cambodgienne et de l'équipe d'assistance technique PASEC

Le rapport de mission definitif est produit et envoye par l'expert-consultant au Ministère de l'Education et au Directeur du PASEC, au plus tard trois semaines après l'exécution de cette mission au Cambodge

Ce rapport fait apparaître, outre les analyses de situation, le descriptif des activités entreprises et des resultats obtenus par l'expert, le planning de la mission ainsi que les recommandations d'usage

2 AVERTISSEMENT SUR LE LIEN ENTRE LE RAPPORT ETABLI PAR MONSIEUR FAYAUD ET LE PRESENT TRAVAIL.

Le présent rapport de mission ne peut-être dissocié du rapport établi dans le cadre de l'action A 53 par Monsieur Patrick FAYAUD relatif à l'identification des besoins en formation des enseignants des années 7, 8, et 9 de l'école obligatoire cambodgienne.

L'étude précise, rigoureuse et armée de Monsieur FAYAUD, assistant technique, a été conduite conformément aux termes de référence, quand bien même elle n'avait pas bénéficié au moment de son lancement, de la direction technique de l'expert. Averti de programme et de la méthode nous avons pu en approuver les termes depuis Paris. Nous avons également été en mesure de proposer quelques directions de travail pour le dépouillement des questionnaires ou l'exploitation des entretiens.
En tout état de cause, les analyse et proposition qui suivent n'auraient pas été possibles sans ce travail d'étude ; les investigations que nous avons pu conduire, toujours en présence et avec l'aide intelligente et efficace de Monsieur FAYAUD, n'auraient elles-mêmes pas été réalisables.

3 OBSERVATIONS LIMINAIRES SUR QUELQUES ELEMENTS CARACTERISTIQUES DU SYSTEME EDUCATIF DU ROYAUME DU CAMBODGE.

3.1 La partition de l'école de base en primaire et premier cycle.

L'organisation du système éducatif cambodgien conserve des similitudes fortes avec le système français. Cela permet une compréhension plus aisée et plus rapide de son fonctionnement pour un expert français. L'enseignement de base est étalé sur 9 années mais partagé en deux segments : de 6 ans pour le primaire et de 3 ans pour le premier cycle au lieu, respectivement, de 5 ans et 4 ans en France.

Cette partition cambodgienne comparée à la française évoque immanquablement des débats. jamais complètement clos, sur l'école fondamentale française de 6 à 16 ans, sur la qualification des maîtres, sur leur polyvalence en primaire et en collège, sur leur nombre devant les élèves d'une même classe, sur l'articulation entre la dernière classe du primaire et la première classe du collège.

Evidemment des problèmes de même nature se posent ici :
- la 6ème classe apparaît bien comme une année charnière qui doit préparer l'accès au premier cycle, et contenir une esquisse de préprofessionnalisation;
- la formation des maîtres, les uns dans les 17 écoles provinciales de pédagogie, les autres, ceux du premier cycle, dans les 6 écoles régionales, mérite sans doute un nouvel examen à la lumière des objectifs fixés à l'école et au premier cycle, mais aussi des moyens intellectuels et financiers dont de Cambodge dispose aujourd'hui et compte bénéficier demain.

3.2 L'hémorragie scolaire.

Parmi les problèmes cruciaux auxquels l'Ecole cambodgienne est confrontée il y a celui de ce que nous appellerons « l'hémorragie scolaire »
La fuite des élèves, au fur et à mesure du développement de la scolarité, est une catastrophe qui obère l'avenir d'une société démocratique soucieuse à la fois d'égalité entre les individus et de progrès économique. Les statistiques produites par le Ministère de l'éducation, de la jeunesse et des sports du Royaume du Cambodge font apparaître, en arrondissant au millier supérieur, l'immatriculation de 667000 élèves dans la première classe, 114 000 seulement dans la sixième classe, 78000 dans la neuvième classe.

Ainsi l'effectif des élèves de la dernière année du primaire ne représente que 17 % de l'effectif de la première année et l'effectif de la dernière année de l'école de base (9ème classe) ne représente que 11,5 % de l'effectif de l'année 1.
Même si l'on tient compte du taux de natalité élevé et de l'accroissement de la population scolarisable, ces chiffres sont inquiétants. De surcroît le sort des filles est encore plus alarmant que celui des garçons. Elles représentent 44 % de la population scolaire dans la première classe, 40 % dans la sixième classe, 33 % dans la neuvième. L'évaporation des filles, plus rapide encore que celle des garçons, méritera des mesures adaptées.

3.3 Le redoublement et l'encadrement scolaire.

Un autre problème exige un examen très attentif, celui de l'efficacité de l'école. L'impact économique de cette efficacité est évidement énorme. En demeurant à un niveau d'analyse très rudimentaire, on peut attirer l'attention sur deux séries de chiffres : les taux de redoublement et d'encadrement scolaire.

Sur l'ensemble du primaire la charge des élèves redoublant représente un peu plus du quart de l'effectif total et atteint 44 % pour l'année 1 de la scolarité. Le coût psychologique et économique d'une telle attitude pédagogique est énorme il constitue à la fois un gros handicap budgétaire et un mauvais traitement des élèves.

Le taux d'encadrement dans le primaire est théoriquement de 1 maître pour 46 élèves. Si l'on ajoute les non-enseignants on constate que le Cambodge met à disposition 1 adulte pour 41 élèves. Cependant les statistiques disponibles font apparaître que 6500 maîtres, rémunérés comme tels, n'enseignent pas en fait. Ainsi le nombre d'élèves par maître qui enseigne effectivement passe à 55. Le Pays dispose là d'une marge de manoeuvre pour améliorer l'utilisation des ressources humaines en vue d'une amélioration de la qualité de l'Ecole.

Aucune planification scolaire, aucune politique éducative ne peuvent être conçues et mises en oeuvre en ignorant les quelques grands chiffres qui viennent d'être rappelés.

Toute réflexion sur la formation des enseignants de l'école de base (primaire et 1er cycle) doit aussi reposer sur :
- la prise en compte de l'organisation actuelle du système éducatif,
- la question de l'hémorragie scolaire,
- le constat d'une surcharge d'effectif, notamment dans les premières années, engendrée par un taux de redoublement absolument excessif et peu admissible pédagogiquement

4 OBSERVATIONS SUR LA FORMATION DES MAITRES DU PRIMAIRE ET DU PREMIER CYCLE.

4.1 Le pari d'un recrutement à un niveau aussi élevé que possible et d'une formation longue.

Actuellement les enseignants cambodgiens sont formés dans trois institutions différentes, pour exercer en principe dans trois secteurs différents. Les 17 Ecoles provinciales de pédagogie forment les enseignants du primaire, les 6 écoles régionales de pédagogie forment les professeurs du premier cycle, tandis que la faculté de pédagogie a en charge la formation des professeurs de second cycle (ce n'est plus vrai depuis quelques années dans la mesure où il n'y pas adéquation entre les effectifs d'enseignants en formation et les postes à pourvoir, c'est ainsi que des professeurs sortant de la faculté de pédagogie sont affectés en premier cycle ou dans des Ecoles de pédagogie, régionales ou provinciales).

La politique nationale suivie a consisté, depuis que la situation le permet, à exiger, à chaque nouveau recrutement, un niveau scolaire de plus en plus élevé. On est ainsi passé d'un recrutement au niveau de l'école de base à un niveau de 12 années de scolarité et plus. Deux années de formation « professionnelle » s'ajoutent à la formation purement académique.

En fait dans les E.P.P. comme dans les E.R.P. la formation professionnelle comprend une part non négligeable de formation académique ou disciplinaire. Sans doute estime-t-on que, malgré l'élévation assez considérable du niveau de recrutement, la maîtrise des disciplines reste insuffisante. C'est le discours que tiennent certains professeurs des écoles pédagogiques, beaucoup de directeurs de ces écoles et nombre de directeurs provinciaux.

Deux observations dérangeantes mais porteuses de progrès éventuels doivent être formulées sur ce pari de l'élévation du niveau de recrutement et sur la durée de la formation professionnelle.

Premièrement les enquêtes françaises et internationales concernant l'influence du niveau scolaire ou universitaire des enseignants sur le niveau des élèves ne montrent pas une liaison forte. Depuis quelques années, le niveau universitaire des instituteurs a beaucoup augmenté en France. Il est passé du baccalauréat à la licence (au minimum) en 20 ans. Hélas cet accroissement très considérable du niveau de diplôme des maîtres n'a pas entraîné une élévation corrélative du niveau des élèves. Bien entendu il ne s'agit pas de mépriser la nécessaire maîtrise des disciplines que l'on doit enseigner mais d'insister sur le fait que cette maîtrise n'est jamais absolue et qu'il existe un ajustement nécessaire entre l'état de développement d'un Pays et de son école, les ressources dont il dispose et l'investissement qu'il convient de consentir pour recruter et former des maîtres. A l'évidence, toutes les études le démontrent, la course aux diplômes n'est rapidement plus rentable.

Deuxièmement la qualité d'une formation professionnelle ne s'évalue pas à la quantité des cours reçus par les bénéficiaires de la formation, mais selon des critères d'efficacité professionnelle immédiate, d'adaptabilité à l'emploi et de perfectionnement possible en cours de carrière.

Conservant la logique comparatiste Cambodge-France nous jugeons utile de mentionner qu'au moment de « l'explosion » scolaire française le Pays a recruté des maîtres d'une part par la

voie des écoles normales (1an de formation professionnelle après le baccalauréat) et d'autre part par la voie du « remplacement » (c'est à dire la mise au travail immédiate de jeunes bacheliers ou de jeunes étudiants). Les corps d'inspection ont eu beaucoup de mal, quand ils entraient dans les classes, à distinguer les maîtres formés des autres, et cette distinction devenait strictement impossible après quelques années d'exercice.

Comme précédemment, il ne s'agit pas de nier la nécessité d'une formation professionnelle, enseigner est un métier et ce métier s'apprend, mais de mettre l'accent sur la souplesse dont dispose le décideur pour organiser la formation et surtout d'affirmer que la quantité ne saurait suppléer la qualité : celle du contenu des formations, celle de la conception des formations et de l'organisation dans le temps, celle des formateurs eux-mêmes. Nous reviendrons sur ces considérations dans le chapitre consacré aux propositions tout en laissant entendre, à ce stade de la réflexion que des progrès sont nécessaires dans les écoles de pédagogie du Cambodge et qu'ils n'entraînent pas nécessairement de surcoûts.

4.2 Des handicaps lourds.

A beaucoup de points de vue la formation des enseignants, notamment du 1er cycle, pose des problèmes graves. Ces problèmes sont, pour l'essentiel, bien connus des autorités. Nous choisirons d'en aborder quelques-uns soit parce que leur traitement nous paraît particulièrement urgent ou, pour exprimer plus justement le vrai, parce que leur non traitement nous semble destructeur, soit parce qu'ils ne nous paraissent pas appréciés à leur juste degré de gravité et d'urgence.

4.2.1 Les améliorations notables dans les écoles provinciales rendent encore plus insupportable la situation des Ecoles régionales.

Conformément aux priorités retenus, le PASEC a mis l'accent sur l'amélioration des conditions de travail, de vie des maîtres et des élèves des écoles provinciales. L'intensité de l'effort consenti et la méthode retenue ont permis des améliorations très sensibles, presque surprenantes et qui frappent l'observateur même pressé. La visite, à quelques heures de distance, de l'E.P.P et de l'E.R.P. de la même ville laisse à l'observateur le sentiment qu'il ne vit pas dans la même époque tant le contraste est fort dans la qualité de vie des uns et des autres, dans le sentiment de dignité des élèves, dans l'apparente mobilisation de l'encadrement. Les uns osent faire des projets, parlent de demain, les autres, dans les E.R.P., sont dans une timide résignation.

L'étude de la répartition des emplois à l'intérieur des E.P.P. comparée à celle qui demeure dans les E.R.P., notamment la proportion des non enseignants, montre l'énorme effort accompli dans les écoles provinciales, effort qui reste à faire dans les E.R.P. où le nombre de ceux qui ne sont occupés à rien, à rien d'utile en tout cas, n'est dépassé que dans l'école de formation professionnelle et industrielle de Russei Kéo qui constitue le parangon du laisser aller et de l'abandon de tout repère, et de toute norme.

L'apparition de la notion de projet et de gestion contractuelle dans les E.P.P. est particulièrement intéressante, elle porte déjà ses fruits et promet des améliorations qui ne sont pas aujourd'hui, envisageables dans les E.R.P.Un transfert méthodologique est à organiser sans délais.

4.2.2 Des conditions matérielles particulièrement difficiles aux conséquences néfastes.

Nous ne voulons pas, ici, reprendre les descriptions et analyses précises, le recueil des avis concordants de tous les secteurs, réalisés par Monsieur Patrick FAYAUD, nous renvoyons le lecteur à son rapport, mais nous tenons à insister sur l'effet déplorable et sans doute durable des conditions de vie auxquelles les élèves des E.R.P. sont soumis.

Les conditions de vie, supportables sans réels dommages durant les périodes de conflits, de guerre civiles, de cataclysmes deviennent destructrices si elles perdurent trop longuement dans les temps qui suivent, c'est ce à quoi nous assistons.

Les élèves professeurs, quoique propres sur eux ne voient plus la crasse dans laquelle ils vivent, les ordures ménagères qui les entourent, ne conçoivent plus la nécessité de s'organiser pour faire face à l'essentiel tant la misère est grande et le manque universel : eau, lumière, espace pour cuisiner et manger, endroit pour l'hygiène la plus élémentaire, pour ne pas parler de livres dans une langue accessible, de documents, de matériels pédagogiques.

Puisque ces élèves maîtres ne voient plus, ils ne pourront pas transmettre à leurs propres élèves. Tout n'est pas question d'argent, un sursaut nous paraît nécessaire, il doit être décidé. La pauvreté ne doit pas laisser ces jeunes futurs maîtres abîmer l'image qu'ils ont d'eux-mêmes et de leur fonction car ils ne se sentiront plus dignes d'être des éducateurs.

Des remarques de même nature peuvent être faites sur les conditions de travail des professeurs qui acceptent d'exercer leur magistère dans des conditions intellectuelles et matérielles qui ne conviennent pas. La propreté d'une classe n'est pas directement dépendante de l'aspect rudimentaire du mobilier disponible, eux non plus ne voient plus.

4.2.3 Une conception de l'enseignement et de la formation dont il faut analyser les effets

Chacun sait que le curriculum de formation encore en vigueur est obsolète, qu'il doit être repensé, qu'il est un catalogue de thèmes et de notions plutôt qu'un référentiel de formation qui précise les compétences attendues, les qualifications exigées. C'est pourtant ce curriculum qui fait référence et à partir duquel tout s'organise : l'emploi du temps annuel, le déroulement des séquences journalières.

C'est dangereux dans la mesure où chacun se contraint à une obéissance formelle et ne donne plus forcément sens à ce qu'il fait, qu'il soit maître ou élève maître.

Par exemple le professeur chargé des cours de bienséance, d'instruction civique de santé et secourisme, que nous avons dérangé pendant son cours, discourait doctement sur l'âge idéal du mariage pour les hommes et les femmes sans jamais faire référence à la distance entre ce qu'il disait dans son cours et ce qui se passait dans la réalité. Le formalisme de son cours au demeurant structuré et précis, était la démonstration d'une installation dans le respect apparent de la norme imposée et de l'abandon de l'exercice de l'intelligence des élèves qui est le but de l'ecole.

Autant le respect de la règle, le respect manifeste que tout élève porte à son maître (nous l'avons personnellement observé dans les classes différentes en primaire, au collège, en E.P.P. en E.R.P.) nous paraît constitutif de la culture cambodgienne et profondément heureux, autant il importe, puisque ce respect existe, de ne pas laisser les élèves et encore moins les élèves maîtres dans une stricte soumission. Il faut au contraire les inciter par tous les moyens à penser, à réagir, à agir, à inventer, à prendre le risque d'émettre les hypothèses et de trouver les moyens de les vérifier. La relation d'autorité entre celui qui sait et celui qui apprend doit favoriser l'exercice de l'esprit critique, l'accès au plaisir de comprendre et de réaliser et non enfermer l'élève dans une attitude de stricte obéissance : formation s'oppose à conformation.

Le déroulement même de la scolarité dans une Ecole Régionale, la part dominante et première dans le déroulement de la scolarité donnée à la formation théorique, la part faible et tardive donnée à l'exercice du métier de professeur dans une vraie classe, la préférence donnée au théorique à l'abstrait, au formel, à l'artifice (cours donné devant des camarades et non des élèves), la défiance par rapport au réel, au pratique, au concret, à l'expérience, nous semblent à

remettre en cause véritablement. Il nous semble qu'il s'agit moins d'une question technique, pédagogique qu'un enjeu politique. La société cambodgienne ne peut pas faire face au développement économique qui l'attend sans donner à ses enfants et d'abord à ses maîtres le goût de l'initiative, la soif de comprendre et de faire, la jubilation de construire et d'inventer.

4.2.4 Des formateurs qui manquent de stabilité et de professionnalité.

Point n'est besoin d'études sociologiques savantes pour apercevoir que la gestion du personnel enseignant fonctionne selon une logique économique (d'économie de subsistance) et non selon une logique intellectuelle ou simplement d'efficacité du système de formation. Insuffisamment rémunérés pour simplement subvenir aux besoins de leur famille les enseignants privilégient les postes qui permettent d'obtenir des compléments de rémunération et d'abord par des activités d'enseignement. C'est dans les lycées que ce complément est le plus aisé à obtenir (cours particuliers, indemnités d'examen), puis dans les collèges, puis dans les écoles.

C'est dans les écoles pédagogiques que les compléments sont naturellement les plus improbables. En conséquence ce sont les maîtres les moins expérimentés, les moins brillants qui sont finalement contraints d'occuper les postes offerts dans les écoles pédagogiques.

De plus dès qu'ils acquièrent un peu d'expérience et que les possibilités de faire un autre choix, un vrai choix, apparaissent, les professeurs quittent l'école pédagogique, si bien que le système est auto entretenu : un nouveau maître inexpérimenté remplace un maître qui commence à maîtriser son métier de formateur et qui a éventuellement bénéficié d'une formation. Ce cercle vicieux doit être brisé car des maîtres peu assurés ont naturellement tendance à infantiliser leurs élèves, il est en effet plus difficile de concevoir et de pratiquer une pédagogie pour adultes que d'enfermer les élèves dans une relation autoritaire. C'est évidemment cette dernière politique que nous avons généralement observée dans les classes rapidement visitées.

4.2.5 Des politiques éducatives qui risquent de se réduire quelquefois à des mots d'ordre ou à des slogans.

L'urgence et les difficultés, qui sont majeures, font que le système tout entier tend à préférer les recettes aux recherches : c'est normal et sans doute largement bénéfique. Efficacité immédiate, simplicité, rusticité même des procédures et des instruments mis à disposition des maîtres ne doivent cependant pas conduire au simplisme ou à l'adhésion à des « idées » à la mode.

Autant la volonté de centrer la pédagogie sur l'élève, formule anglo-saxonne qui envahit le monde, est respectable , autant elle perd son efficacité et son sens si elle devient une phrase incantatoire et si les pratiques pédagogiques, inchangées dans les faits, se parent de mots nouveaux pour éviter toute évolution.

On trouve un phénomène équivalent dans la présentation, à plusieurs niveaux de la hiérarchie des six activités qui doivent être mise en oeuvre dans les programme de formation des maîtres : activités d'enseignement et apprentissage, activités de formation morale et conscience professionnelle, activités de travail productif, activités de recherche pédagogique, activités artistiques et sportives, activités d'entraînement pédagogique. Si ces six activités de formation paraissent effectivement répondre précisément et justement aux besoins des futures maîtres, il est important de ne pas laisser s'installer un écart trop grand entre les discours et la réalité.

Les ateliers, aperçus lors de nos visites ou l'absence d'atelier ou de laboratoire, la rareté des installations sportives, l'absence de relations entre Ecoles régionales et collèges d'application, entre collègues formateurs et collègues enseignant dans les établissements montrent qu'il y a actuellement loin de la coupe au lèvres.

4.2.6 Une dispersion des initiatives

Deux dangers menacent le monde, nous dit Paul Valéry, l'ordre et le désordre. Nous avons tendance à croire que, dans le Cambodge de fin 1998, l'excès d'ordre pédagogique ne menace personne. Quand bien même nous ne pourrions prétendre avoir aperçu, en si peu de temps, la richesse des initiatives dans le domaine de l'éducation, de la formation et de l'enseignement, il nous apparaît que le chef d'orchestre est très timide et que la cohérence des entreprises demeure à construire.
Par exemple nous n'avons pas vu de liens intellectuels, politiques, techniques et administratifs entre l'entreprise vigoureuse de rénovation de la formation des maîtres du premier degré, la conception, la réalisation et la diffusion effective de nouveaux manuels, la mise en place des clusters schools, la formation continue des maîtres.
Sans doute l'efficacité des efforts réalisés par des organismes, des organisation très différents gagnerait-elle en puissance si un souci de mise en relation et un effort de cohérence et convergence des initiatives étaient réalisés.

5 DES PROPOSITIONS QUI EXIGENT APPROFONDISSEMENT TECHNIQUE ET APPRECIATION POLITIQUE.

5.1 Introduction

Il importe de rappeler que les préconisations qui suivent ne résultent pas seulement :
- d'une analyse de la situation actuelle, d'un repérage aussi objectif que possible des dysfonctionnements apparents du système de formation des enseignants que nous avons notés nous-mêmes ou qui ont été dénoncés par les différents responsables au niveau du ministère, des provinces, des écoles de pédagogie ou par les étudiants,
- d'une appréciation portée sur les possibilités actuelles d'amélioration nécessaire du fonctionnement des écoles et de la qualité des formations offertes.
- Les préconisations reflètent également une vision, forcément personnelle et donc contestable, de la place de l'Ecole dans la société, du rôle de l'enseignement dans la reconstruction du Pays, des qualités qu'il convient préalablement de développer chez les élèves, futurs acteurs économiques et futurs citoyens. Elles expriment aussi la conviction qu'il existe une forte liaison entre les méthodes pédagogiques privilégiées dans la formation des maîtres, et les attitudes que les jeunes professeurs adopteront face aux élèves qui leurs seront confiés. Nos propositions reposent aussi sur l'idée que les maîtres ne prépareront pas des générations d'élèves dynamiques, entreprenants, inventifs, responsables, s'ils ne sont pas actifs et responsables durant leur formation. Les stagiaires des écoles de pédagogie ne doivent pas, en conséquence, être les lycéens prolongés et obéissants qu'ils sont actuellement, mais les adultes déterminés et loyaux que le système éducatif et le Pays attendent.

5.2 Changer la conception, l'organisation et la durée de la formation.

5.2.1 Changer la conception.

Pour l'heure la formation des professeurs du premier cycle s'adresse, de fait, à des lycéens prolongés et traités comme tels, l'enseignement qu'ils reçoivent est pour l'essentiel, théorique, abstrait, formel et distribué par des professeurs peu informés des questions d'apprentissage, d'acquisition de connaissances chez les pré-adolescents et les adolescents et qui n'ont souvent pas affronté eux-mêmes les difficultés de cet enseignement. Dans ces conditions la confrontation des élèves maîtres avec la réalité de la classe est retardée au profit d'une formation académique et d'exercices artificiels qui laissent aux professeurs une supériorité et une autorité intactes, mais sans efficience car les professeurs enferment ainsi les futurs maîtres dans un statut d'élèves passifs et remettent à plus tard une formation professionnelle qui se fera « sur le tas ».

Il n'y a sans doute pas d'autre issue que d'effectuer un changement radical, brutal, déstabilisant mais annonciateur d'une forte mobilisation des ressources humaines disponibles (il y en a, nous avons pu assister à des cours de premier cycle d'une excellente qualité) et d'une détermination à progresser rapidement

Ce changement consiste à concevoir la formation dans les E.R.P comme une formation professionnelle d'adultes. Les élèves maîtres doivent donc être accueillis et traités comme des adultes qui viennent apprendre un métier. Cela signifie que :

- dès leur arrivée ils sont envoyés dans les classes de collège où, après une observation de quelques jours, il assurent eux-mêmes un enseignement, en présence du maître titulaire, de quelques heures chaque jour.
- après un mois d'immersion dans la réalité, il reviennent à l'école de pédagogie porteurs de demandes, de besoins, d'interrogations, d'inquiétudes sans doute. C'est à partir de ces besoins que s'organise le travail à l'école pédagogique. Il s'agit donc pour les professeurs d'être à côté de l'élève maître pour résoudre des problèmes concrets, réels, et non face aux élèves pour dire des théories du haut de sa chaire ;
- la formation professionnelle consiste à fabriquer en commun, avec les professeurs des séquences d'apprentissage, des outils pédagogiques qui, après validation, feront partie de l'équipement de base du jeune maître dans sa classe ;
- la réflexion et les apports théoriques ne sont pas absents mais qu'ils tiennent une plus juste place et qu'ils constituent une réponse à des interrogations ;
- les élèves maîtres prennent en charge une part de la gestion de la vie de leur école (hygiène, propreté, activité de production agricole ou artisanale, amélioration du cadre de vie, action sur le milieu local,....). ainsi ils exigeront que leurs propres élèves adoptent le même comportement quand ils exerceront pleinement leur métier ;
- le programme de formation soit plus un cadre de référence, une liste d'objectifs précis et restreints, une présentation des compétences professionnelles à acquérir, qu'un catalogue de thèmes à traiter.
- la réalité et la pratique soient au coeur de la formation.

5.2.2 Changer l'organisation.

C'est donc par une alternance entre l'exercice concret et réel sur le terrain et la mise en commun des interrogations et des solutions trouvées lors des regroupements à l'école pédagogique que la formation se construit, que le métier s'apprend. C'est par une sollicitation de la compétence des professeurs en exercice dans le premier cycle que la formation des élèves maîtres s'enrichit, c'est par le travail en commun des professeurs de l'école pédagogique, des professeurs de terrain que la progression de la formation des élèves maîtres s'élabore, c'est par une série d'allers et retours du terrain à l'école pédagogique que les élèves maîtres construisent leur formation, acquièrent des méthodes, des pratiques, des connaissances, l'habitude de travailler en équipe, d'affronter le réel dans sa dureté, de mobiliser l'énergie des autres pour progresser.

La nouvelle organisation de la formation professionnelle et en alternance exige une réelle coopération entre les professeurs de l'école pédagogique et les professeurs du terrain, permet un véritable animation pédagogique et autorise une certaine forme d'individualisation de la formation qui est nécessaire puisque tous les élèves maîtres n'ont pas les mêmes besoins

Le présence des élèves maîtres dans les classes peut (et devrait permettre de) libérer un peu les maîtres titulaires soit pour fabriquer des outils pédagogiques soit pour qu'ils améliorent eux aussi leurs compétences professionnelles y compris par un perfectionnement de la discipline qu'ils enseignent.

5.2.3 Changer la durée.

Fixer la durée de la formation à 2 ans, la réduire à une année, cela relève en partie de l'arbitraire. Il nous paraît éminemment plus intéressant et fécond de raisonner à partir de la notion d'accompagnement du jeune professeur dans sa prise de fonction durant les cinq premières années d'exercice.Cette manière d'appréhender la question a plusieurs vertus :
- éviter de croire que le métier d'enseignant s'apprend en quelques mois, une fois pour toutes,
- adapter la durée de la formation initiale aux moyens humains et financiers dont on dispose,
- étaler la formation dans le temps et tenir ainsi compte des phénomènes de maturation, si importants dans l'éducation et l'apprentissage,
- installer l'idée de la nécessité absolue d'une formation continue pour tous : ceux qui entrent dans le métier, ceux qui y sont déjà.

Pourquoi, par exemple, ne pas réduire la formation initiale à 1an et ne pas étaler le bénéfice de la deuxième année sur les quatre ou cinq premières années d'exercice ?
Ou bien, autre possibilité, pourquoi ne pas réduire la formation initiale à une année et utiliser les moyens humains et financiers de la seconde année pour offrir une formation continue à tous les professeurs du 1er cycle, les jeunes et ceux qui ont été recrutés dans des périodes encore plus difficiles ?

Beaucoup de combinaisons sont possibles, et il serait aisément imaginable d'expérimenter des formules différentes en divers points de territoire, toutes les provinces n'étant pas dans des situations semblables.

5.3 Repenser l'organisation et le fonctionnement des écoles de formation.

Quelles que soient les décisions qui seront prises sur la conception, la durée et l'organisation des formations il est possible, sinon indispensable, de prendre des mesures concernant l'amélioration des conditions matérielles et de vie des élèves et des enseignants.

5.3.1 Primum vivere, deinde philosophari.

Ce précepte des anciens s'applique parfaitement à la situation actuelle des écoles régionales : il faut, c'est une priorité absolue, améliorer les conditions de vie matérielles des élèves. Il faut de l'eau, des puits, de l'électricité, un endroit pour préparer son repas et le prendre et, bien entendu, une aide pour obtenir de la nourriture. Il serait opportun d'associer les élèves eux-mêmes à la réhabilitation de leur lieu de vie en incluant cette activité dans le cadre d'une éducation manuelle et d'une formation technologique.
Dresser un état des lieux, formaliser un projet dans ses aspects techniques, financiers, programmatiques, et participer, pour tout ou partie, à son exécution, peuvent constituer des activités de formation extrêmement intéressantes notamment parce qu'elles peuvent constituer une expérience reproductible dans les établissements où les professeurs seront ultérieurement affectés.

Une seconde priorité consiste à offrir aux élèves des moyens de travailler : bibliothèque, centre de documentation, ateliers de menuiserie, de travail du fer, de couture, de jardinage, de cuisine.....

5.3.2 Améliorer la gestion et le management des équipes, l'autonomie de établissements et redéfinir leur rôle.

A l'instar du travail réalisé dans les E.P.P. il est indispensable :
- d'instaurer des règles de gestion qui permettent la transparence des procédures, la mise en place d'une politique contractuelle qui engage toutes les parties et qui permet la conception et la réalisation de projets susceptibles de mobiliser toute la communauté.

- de mieux répartir les emplois, de telle sorte que chacun ait une tâche à réaliser et que les activités liées à la formation soient effectivement privilégiées.

Une formation professionnelle de qualité exige des formateurs compétents, efficaces, disponibles, capables de concevoir des plans de formation adaptés aux besoins des stagiaires, aux ressources et aux débouchés locaux. Il convient donc d'offrir aux formateurs des écoles régionales des conditions de rémunération, d'indemnisation, de promotion qui attirent les meilleurs professeurs. Une fois recrutés il faudra les stabiliser dans l'emploi et leur offrir les moyens de se former ou de continuer à se perfectionner ou à se spécialiser.
Pour éviter la sclérose deux dispositions peuvent-être aisément étudiées :
- offrir aux professeurs la possibilité d'enseigner pour partie de leur temps dans un collège ; à terme cette possibilité pourrait devenir une obligation ;
-offrir aux meilleurs professeurs des collèges non seulement la responsabilité de recevoir des stagiaires mais également d'intervenir à l'école régionale en qualité de formateur, de professeur associé.....

Pour que des projets naissent, pour que les équipes se constituent et se dynamisent il faut laisser aux établissements une plus grande marge d'autonomie, aux directeurs une plus grande responsabilité. Il paraît par exemple nécessaire que chaque école bénéficie d'une dotation budgétaire et des capacités de gérer un budget.

Compte tenu des moyens actuellement disponibles, de l'organisation générale du système il paraît nécessaire de donner aux écoles de pédagogie la mission de créer de véritables centres de ressources, capables de repérer ce qui se fait de bien dans la région et de mettre à la disposition des maîtres : outils, matériels, procédures. Les écoles de pédagogie doivent devenir des maisons des enseignants, des centres de documentation, de formation initiale et continue, des instruments au service de la détection et de la mobilisation des compétences.

La juxtaposition de 17 écoles provinciales et de 6 écoles régionales peut apparaître comme un luxe inutile, une complication sans intérêt, le reflet d'une volonté ancienne de distingués fortement, dans l'école de base, le primaire et le premier cycle. Nous suggérons fortement d'unifier le système de formation des maîtres de l'école de base. Cette décision permettrait de faciliter :
- l'exercice du rôle de maison des enseignants, de centre de ressources qu'il convient de donner aux écoles de pédagogie,
- la construction d'une culture commune à tous les maîtres de l'école de base,
- la réalisation des objectifs de l'école de base comme l'introduction d'un enseignement plus pratique, plus tourné vers la découverte du réel, plus soucieux de l'insertion dans le monde du travail.

5.4 Quelques pistes pour la préprofessionnalisation.

5.4.1 Généralités sur l'existant et sur les ressources disponibles.

La notion de préprofessionnalisation demeure vague : la définition oscille , selon les responsables, entre un simple prolongement des enseignements disciplinaires vers les applications pratiques de telle partie d'un cours dans la vie concrète ou dans l'exercice d'une activité professionnelle, et l'apprentissage des rudiments de la mécanique, de l'électricité, de la cuisine, de l'agriculture, de la bureautique..., susceptible de faciliter l'insertion des jeunes dans le monde du travail.
Beaucoup de pistes peuvent-être empruntées pour peu qu'on prenne le temps d'expérimenter, qu'on ait le souci de s'adapter aux conditions locales et de mobiliser les moyens et les compétences existantes, y compris et peut-être surtout dans l'artisanat et les entreprises privées.
Le projet REPLIC est un exemple d'utilisation intelligente des ressources et des savoir-faire au service de la formation des jeunes dont le bagage scolaire est faible. Il est possible de s'inspirer de ce modèle dans le cadre d'une préprofessionnalisation en collège au sens d'acquisition de gestes professionnels de techniques élémentaires et de sensibilisation à l'exercice d'une activité professionnelle.
Le travail effectué au centre de formation professionnelle de l'Amitié Japono-Cambodgienne constitue une expérience apparemment réussie et replicable :
- de mise en contact des élèves, à partir du niveau 7, avec les métiers et les systèmes de production,
- d'aide à l'orientation professionnelle,
- puis de formation professionnelle véritable
- et de réelle préparation à la vie active.

D'autres ressources existent et il convient d'en dresser un inventaire exhaustif. Parmi celles qui sont évidentes bien que non exploitées on peut citer :
-le professeurs des écoles professionnelles qui occupent actuellement d'autres fonctions dans l'éducation notamment des fonctions purement administratives,
- les professeurs des écoles professionnelles en sous-emploi flagrant ou dont les connaissances n'ont pas été renouvelées au rythme du progrès technique ;
- des professeurs de l'Institut de Technologie du Cambodge que le directeur est prêt à mettre à disposition soit à temps plein, soit pour participer à la conception de projets ;
- les professionnels et les cadres des entreprises devraient pouvoir être mobilisés pour la mise en oeuvre d'un projet d'ampleur nationale, au service de l'emploi et du développement économique du Pays.

5.4.2 De l'enseignement des sciences à l'école primaire à l'introduction d'une préprofessionnalisation dans le 1er cycle.

Force est cependant de constater que le système éducatif et la société toute entière sont plus attirés par les études générales et les activités gratifiantes auxquelles elles permettent de rêver. Il suffit d'observer comment les métiers de l'enseignement, malgré le peu de revenus qu'ils procurent aujourd'hui, continuent d'attirer la jeunesse, pour mesurer les difficultés à surmonter.

Par souci de cohérence et pour prendre en considération la réalité économique, sociale ou culturelle, nous suggérons d'étudier la faisabilité des propositions qui suivent.

5.4.2.1. Il n'est pas raisonnable d'envisager une véritable sensibilisation aux professions ni une préparation, même rudimentaire mais efficace, à leur exercice sans intervenir dès le primaire pour que les élèves apprennent à être actifs et acquièrent le goût de manipuler, de découvrir, d'observer le monde et d'agir sur lui. Aussi nous paraît-il important et peut-être fondamental que l'on expérimente l'enseignement des sciences à l'école selon les principes et les modalités développés en France par le Prix Nobel Georges CHARPAK sous le titre : « La main à la pâte ».Cette méthode qui lie l'apprentissage de la lecture et de l'écriture et l'expérimentation à partir de matériels très élémentaires, développée d'abord dans les quartiers difficiles de Chicago, puis de Lyon, de la banlieue parisienne, mais aussi dans les zones privilégiées, nous paraît transposable au Cambodge et devrait faire partie de la formation de tous les maîtres des E.P.P. et de tous les professeurs de sciences des E.R.P.

Nous pouvons nous engager à proposer une liste de noms : académiciens des sciences, professeurs d'IUFM, Inspecteurs, professeurs et instituteurs, capables de répondre à une invitation pour exposer la méthode, former les enseignants et contribuer au lancement d'une opération « La main à la pâte » au Cambodge.

Sur le socle d'une formation de ce type à l'école primaire qui développe un intérêt pour l'observation du réel, le goût d'apprendre par la manipulation on peut greffer une préprofessionnalisation efficace.

5.4.2.2 L'évolution récente en France de l'éducation manuelle et technique vers l'enseignement de la technologie au collège peut servir de base, (en retirant, au moins dans l'immédiat, l'ensemble des technologies sophistiquées où l'informatique est dominante) à la mise en oeuvre d'une préprofessionnalisation adaptée à l'état actuel du développement de l'économie et de la technique au Cambodge.

Nous pouvons également nous engager à proposer des noms de spécialistes capables de former sur place des professeurs cambodgiens et de lancer des expériences en prenant appui sur les E.R.P.

5.4.2..3 Autant la rédaction de nouveaux manuels a permis de faire progresser rapidement l'enseignement de base et de relancer l'éducation au Cambodge, autant il nous paraît dangereux de lancer le projet de préprofessionnalisation par la diffusion d'un manuel, Ce serait à notre avis un dramatique contresens. S'il faut un livre il doit être destiné aux maîtres et en aucun cas aux élèves.

5.4.2.4 Comme tout n'est pas possible tout de suite il faut, à notre sens, privilégier l'introduction de la préprofessionnalisation dans les écoles de pédagogie.C'est aux maîtres et peut-être à tous les futurs maîtres de l'école de base qu'il faut offrir une préprofessionnalisation dans un ou plusieurs métiers à partir de méthodes actives, impliquant un réel investissement des élèves maîtres, qui doivent aussi apprendre à réparer, à fabriquer, à utiliser les ressources locales, à commercialiser.

L'enseignement ne supporte pas le faire semblant, la tricherie ; pour que les élèves apprennent il faut que les maîtres sachent et à tout le moins qu'ils tiennent un discours vrai sur les professions ; une expérience vécue leur permettra d'être crédibles

6 CONCLUSION

Dans un contexte de pauvreté on rencontre, au Cambodge, une grande diversité de situations en matière d'éducation et d'enseignement et on découvre des compétences pédagogiques de très bon niveau qui ne sont pas toujours bien utilisées. Il importe que les corps d'inspection en voie de constitution s'attachent à découvrir les talents car la reconstruction du système éducatif exige aussi la mobilisation des meilleurs.

Nous avons choisi de ne pas reprendre, dans ce rapport, l'excellent travail de Monsieur Patrick FAYAUD, mais nous rappelons qu'il est une source essentielle de notre réflexion. Il s'avère que le fait que nous n'ayons pas d'emblée travaillé ensemble n'a pas constitué une gêne. Nous souhaitons également rappeler que la posture d'expert n'interdit pas les choix et ne protège pas de la subjectivité. Notre choix a été d'approcher le problème éducatif de manière systémique, de ne pas nous dérober devant la complexité et de ne pas refuser, sous le prétexte de sérieux méthodologique ou de rigueur conceptuelle, d'exprimer des idées simples.

7 ANNEXES

7.1 Journal de mission.

30 Novembre : Matin
arrivée à Phnom Penh

Après-midi
Rencontre avec :
- Madame HUOR SEREI Deputy Director General
- Monsieur Loïc Le BOUHRIS Directeur du programme d'appui au Secteur de l'Education Primaire du Cambodge
- Monsieur Gérard RENOU, de la cellule d'appui au développement du Cambodge

Rencontre avec Son Excellence BUN SOK Sous Secrétaire d'Etat au ministère de l'Education de la Jeunesse et des sports.

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1er décembre : Voyage à Kompong Cham
Matin
Visite de la Direction provinciale de l'Education

après-midi
Visite de l'Ecole provinciale et de l'Ecole Régionale de pédagogie

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2 décembre Travail avec Monsieur Patrick FAYAUD sur le bilan de son travail, sur l'organisation précise de la mission et du travail en commun, sur l'état du travail d'expertise déjà effectué.

****

3 décembre Matin
- Entretien avec Monsieur Gilles FONTAINE sur l'état de la réflexion concernant l'enseignement de la technologie.
- Entretien avec Monsieur Rolland RAYNAUD assistant technique du PASEC.

Après-midi
- Entretien avec Monsieur NEANG MUTH inspecteur général et Monsieur KEO SAPHAN Inspecteur de l'administration et des finances.
- Entretien avec Monsieur SUNG VANN THAN Directeur de la maison d'édition et de distribution et visite des installations et équipements
- Entretien avec Monsieur LEANG NGOUN LY Directeur de l'enseignement secondaire général.

Dîner de travail.

****

4 décembre

Matin

Entretien avec Monsieur NATH BUN ROEUN Directeur de la formation et du recyclage (des enseignants).

Entretien avec Son Excellence Pich Sophorn, Directeur général de l'enseignement supérieur technique et professionnel.

Déjeuner de travail avec Monsieur Rolland Raynaud sur la formation des maîtres.

Après-midi

Visite des Ecoles provinciales et régionales de pédagogie de KANDAL

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5 et 6 décembre Départ pour Siem Reap et visite de Angkor avec un guide.

****

7 décembre

Matin

- Rencontre avec son Excellence BUN SOK à Siem Reap.
- Visite du chantier Ecole de Siem Reap.
- Entretien avec Monsieur MARTIAL Directeur du chantier.
- Entretien et déjeuner de travail avec Monsieur TOR KIM SEAN Directeur provincial de Siem Reap et Directeur National du projet REPLIC.

Après-midi

- Visite du Chantier Ecole de Pourk et de la « filière » soie.
- Retour à Phnom Penh.

****

8 décembre

Matin

- Départ pour Takéo.
- Entretien avec Monsieur NUTH KHON adjoint au Directeur Régional
- Entretien avec Monsieur KONG PEON Directeur de l'Ecole régionale de pédagogie de Takéo.
- Déjeuner de travail avec l'équipe de Monsieur Patrick FAYAUD.

Après-midi

- Visite du lycée Collège de Takéo.
- Audition de deux cours : un de mathématiques en 7ème classe, et un de géographie en 7ème classe.

Soir

Retour à Phnom Penh.

****

9 décembre

Matin

- Entretien avec Monsieur Fernand TEXIER Directeur de l'Institut technologique du Cambodge (ITC).
- Entretien avec Monsieur RENOU.
- Audience de deux heures chez Monsieur le Ministre TOLLAH et Monsieur le Secrétaire d'Etat POK THAN.

Après-midi

- Visite de l'Ecole de formation professionnelle et industrielle de Russeï Kéo.
- Audience de deux heures chez Monsieur l'Ambassadeur de France.

Dîner de travail.

****

10 décembre

Journée des Droits de l'Homme (Jour férié)

Matin

- Visite du Musée Archéologique de Phnom Penh sous la direction de Monsieur Bernard Porte et de Monsieur le Conservateur.

Après-midi

Réunion de travail avec Monsieur Le BOURHIS chef du projet PASEC. Bilan de la mission et exposé des propositions essentielles.

Soir

Dîner de travail avec Monsieur Le BOURHIS et des assistants du PASEC.

****

11 décembre

Départ pour Paris.

7.2 Liste des documents étudiés.

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1 Cambodia ; Statistiques de la C.I.A. http://www.odci.gov/cia/publications/factbook/cb.html

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3 Présentation du Cambodge, site internet du poste d'expansion économique de l'Ambassage de France à Phnom Penh.

4 Le Cambodge s'enfonce dans la crise Le Monde diplomatique ; mai 1997

5 Cambodia Human Development Report ; 1997

6 First Five Year ; socioeconomic Development Plan 1996 - 2000 ; The Royal Gouvernment of Cambodia ; January 1997.

7 Cambodge : progrès, freins et espérances ; texte de la conférence donnée par le Docteur Raoul-Marc JENNAR le 3 décembre 1998.

8 Cambodia Socioeconomic Survey 1997 Chapter 3 Literacy and Education.

DONNEES SUR L'EDUCATION AU CAMBODGE

9 Aperçu du secteur de l'éducation au Cambodge en 1997-1998 ; Gouvernement Royal du Cambodge, Commission des Communautés Européennes. Ministère de l'Education, de la Jeunesse et des Sports, Gérard RENOU Expert CIEP/UE

10 1997 - 1998 Education Indicators Supported by UNESCO UNDP and UNICEF/Sida

11 Education Statistics and Indicators 1997/1998 ; Emis center. Departement of Planning ; Phnom Penh ; May 1998.

12 Education Statistics, Teacher Training, Technical and Vocational, Non-Formal, Higher Education and other Departements 1997 - 1998

13 Organigramme du Ministre de l'Education de la Jeunesse et des Sports Septembre 98.

14 Traduction française de l'ancien curriculum de formation.

15 PASEC, Etude des contenus des curricula, programmes et manuels scolaires de mathématiques en usage dans les classes 7, 8 et 9. Josette LECOQ , IPR.IA de mathématiques, Inspectrice d'académie; 1998.

16 Plan directeur de la formation et du recyclage des enseignants de l'enseignement préscolaire, primaire, secondaire du premier et second cycle.

17 L'institut de technologie du Cambodge, un entretien avec F. TEXIER, directeur de l'ITC; Cambodge nouveau ; 1 - 16 décembre 1998.

18 Etude d'identification, de recensement et d'évaluation des Ecoles et Centres de Formation du Royaume du Cambodge ; UNOPS, Secrétariat d'Etat à la fonction publique Joëlle le Gay ; Rapport définitif février 1997.

19 Problématique et politique de la formation professionnelle et technique au Cambodge; Son Excellence BUN SOK, Sous-Sécrétaire d'Etat à l'Education, à la Jeunesse et aux Sports du Cambodge ; mai 1995.

DONNEES SUR LE PROGRAMME D'APPUI AU SECTEUR EDUCATION DU CAMBODGE

20 PASEC, Etude des attentes des différents marchés en vue d'organiser la préprofessionnalisation ; Sandrine BURY Assistante technique, Alain-Pierre CONDETTE. expert consultant ; 6 juillet 1998.

21 Rapport de mission Cambodge et Philippines Yvonne Mensch ; 10 juin - 19 juin 1998

22 Compte rendu des séances de travail sur la préprofessionnalisation, menées par Monsieur Joseph POTH, expert de l'UNESCO du 20 mai au 25 mai 1998.

23 PASEC, Programme Européen de Réhabilitation et de développement du Cambodge. Rapport d'Evaluation Section III.

24 Programme d'Appui au secteur de l'Education Primaire au Cambodge. Plan annuel de travail, phase du 1er octobre 1997 au 31 décembre 1998.

25 Programme d'Appui au secteur de l'Education Primaire au Cambodge. PASEC II [illegible] 2000, Document de Projet ; juillet 1998.

26 PASEC, Evaluation à mi-parcours, Rapport technique juillet 96, Association SETA

27 PASEC, Evaluation à mi parcours, Rapport final juillet 96, Association SETA.

AUTRES PROJETS

28 Avant projet de Programme de Renforcement de l'Education de Base au Cambodge (PREBAC). Vers la professionnalisation, pour le développement socio-économique et l'insertion sociale des jeunes ; document provisoire pour étude ; 25 février 1997.

29 Programme rural d'éducation professionnelle et logique d'insertion en milieu rural au Cambodge (REPLIC) ; 9 février 1998.

Rapport de Mission
(A 53)

Identification des Besoins en Formation des Enseignants des Années 6,7,8 & 9.

Patrick Fayaud
Assistant Technique
Chargé de Mission

Remerciements

Merci à tous les personnels du Ministère de l'Éducation, de la Jeunesse et des Sports, qui nous ont toujours accueillis chaleureusement et avec une grande disponibilité, nous permettant de conduire cette étude dans les meilleures conditions.

Merci à Messieurs Touk Mony, Chan Solin & Mao Viesna, membres de l'équipe formée pour pour cette recherche, et qui l'ont enrichie de leurs idées et parfaite connaissance des structures du MEJS. Ils ont travaillé sans compter pour réussir ce travail.

Merci aux personnels PASEC qui ont contribué à ce travail, parfois dans l'urgence, avec disponibilité.

Merci enfin à M. Hussenet, expert PASEC, pour ses conseils et le recul qu'il a apporté à notre travail.

Patrick Fayaud
Assistant Technique

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Rapport de visite du centre de formation professionnel
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Récapitulatif des questionnaires aux formateurs de Takeo
Récapitulatif des questionnaires aux formateurs de Phnom Penh
Récapitulatif des questionnaires aux formateurs de Battambang
Récapitulatif des questionnaires aux formateurs de Kompong Cham
Récapitulatif des questionnaires aux formateurs de Kandal
Récapitulatif des questionnaires aux formateurs de Prey Veng

Questionnaire aux formateurs des CRP (exemplaire en Anglais)
Questionnaire aux formateurs des CRP (exemplaire en Khmer)
Questionnaire aux
- directeur du département de la formation
- directeurs des DPE et personnels DPE
- directeurs des CRP et personnels administratifs

Grille d'entretien avec les élèves
Grille d'étude des CRP
Calendrier de l'étude

Organigramme du Département de la Formation du MEJS (Francais)
Organigramme du Département de la Formation du MEJS (Khmer)

4

TERMES DE RÉFÉRENCE

"La mission de l'assistant technique est d'identifier les besoins en formation des enseignants des années 6, 7, 8, 9, en tenant compte des objectifs de préprofessionnalisation de l'enseignement de base envisagés par le MEJS en 1999, un audit portant sur deux aspects de la formation initiale des professeurs du 1er cycle:

- les cursus de formation initiale
- les pratiques de formation dans les écoles régionales de pédagogie

permettra de dresser un état des lieux qualitatif et de formuler des propositions pour adapter la formation des enseignants du 1er cycle aux nouveaux objectifs de l'enseignement de base.

À l'issue de la mission, le rapport qui sera établi devra comporter outre le bilan décrit plus haut:

- des propositions en matière d'articulation institutionnelle et technique entre la formation théorique et les classes d'application des établissement de formation initiale.
- des propositions concernant les activités de formation à l'usage des formateurs, ainsi que des propositions en matière d'opérateurs et de calendrier d'exécution.

Il travaillera en collaboration avec l'expert recruté par le PASEC pour les mêmes objectifs et en suivant ses directions.

Les services requis de la deuxième partie par la première partie s'inscrivent dans le cadre des actions programmées dans le plan annuel de travail PASEC 1997-98 comme activités d'accompagnement du programme."

Il est à noter cependant, que contrairement aux engagements pris par la deuxième partie, l'assistant technique n'a pas travaillé sous la direction d'un expert pendant les deux premiers mois de sa mission, le premier contact avec ce dernier n'ayant eu lieu que le 1er décembre 1998.

CONTEXTE:

1. La préparation d'une éventuelle aide européenne au Ministère de l'Éducation, de la Jeunesse et des Sports.
2. objectifs du MEJS: pré-professionnalisation de l'éducation de base pour 1999.

D'autre part:

L'objectif du MEJS est de réformer radicalement le système de formation des enseignants à court ou moyen terme, et de se préparer à former des professionnels qualifiés pour le XXIem siecle. Les problèmes les plus urgents, identifiés par le MEJS dans le document "Teaching Services Development. 1997-2002. Strategic Plan", sont les suivants:

- Une faiblesse institutionnelle reflétée par la sous-utilisation des ressources et des locaux
- Des programmes ne correspondant pas aux besoins des maîtres dans leur classe
- La responsabilité très limitée des EPP & ERP dans le developpement des programmes
- La qualité médiocre des pratiques de formation
- L'inappropriation du service offert par rapport aux besoins exprimés

En conséquence, le MEJS annonce que ses priorités seront les suivantes:

1. Le transfert de la responsabilité des programmes et de la responsabilité institutionnelle vers les EPP/ERP
2. La réforme des programmes et des manuels pour tous les EPP/ERP
3. Transformer l'EPP/ERP en un centre de référence pédagogique dans la province/région
4. La rénovation des batiments et équipements pour répondre aux exigeances des nouveaux programmes
5. L'amélioration du niveau des personnels des EPP/ERP
6. La reformulation du rôle du centre de formation des maîtresses-maternelles
7. Le renforcement du rôle du Département de la Formation dans la planification, le suivi et l'évaluation
8. La revitalisation de la Faculté de Pédagogie dans son rôle de developpement des "services de l'éducation"

PLAN DE TRAVAIL:

Les étapes suivantes furent suivies pour la conduite de l'étude:

- Définition des objectifs spécifiques de l'étude
- Élaboration des méthodes et outils de recherche
- Tests des outils à l'Ecole Régionale de Pédagogie de Kandal
- Analyse des résultats des tests et révision
- Étude dans les six ERP et dans une petite sélection d'EPP
- Analyse et interprétation des résultats
- Rapport et recommandations

OBJECTIFS:

- réaliser un audit de la formation initiale des enseignants des niveaux 6,7,8 & 9.
- formuler des propositions pour améliorer la qualité de la formation initiale dans le cadre des nouveaux objectifs de l'enseignement de base, et dans le cadre du plan d'action du MEJS (Teaching Services Development 1997-2002; Strategic Plan. The MOEYS working group for the formulation of a strategic plan for teaching services development. May 13, 1997.) en tenant compte des 8 priorités définies par le Département de la Formation pour améliorer la qualité de la formation initiale, à savoir:

    1. le developpement du curriculum de formation initiale
    2. l'amélioration de la compétence des formateurs
    3. l'amélioration des conditions de vie et de travail des formateurs
    4. l'amélioration des conditions de vie et de travail des stagiaires
    5. l'attribution d'un budget de fonctionnement aux centres de formation
    6. une meilleure liaison théorie-pratique
    7. un recrutement approprié
    8. une amélioration des infrastructures

Pour ce faire, il convenait:

1. d'étudier la structure, l'organisation et le fonctionnement du Département de la formation
2. de faire l'état des lieux des infrastructures des CRP

3. d'étudier les liens institutionnels entre les Directions Provinciales de L'Education et les CRP.
4. d'étudier l' organisation et l'efficacité de la direction et du management des EPP et ERP
5. d'évaluer les compétences pédagogiques des formateurs des CRP
6. d'observer et analyser les pratiques de formation dans les CRP & EPP
7. d'analyser les relations institutionnelles et techniques entre ERP-EPP et les classes d'application
8. d'analyser le curriculum de formation
9. de faire un bilan de l'avancement des travaux du MEJS sur la pré-professionnalisation des programmes

Généralités:

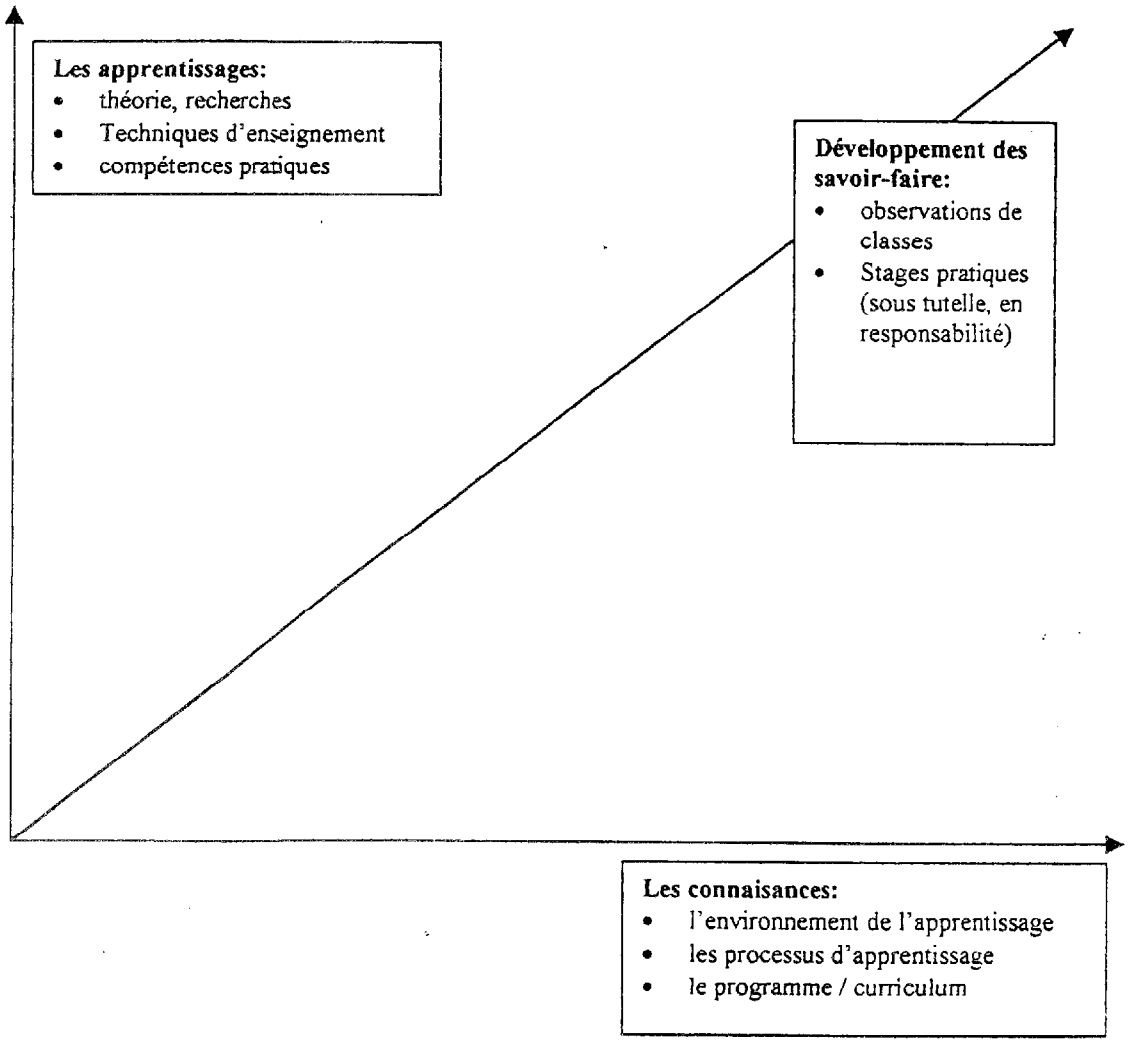
Avec le groupe de travail, nous avons cherché à définir les objectifs généraux que devrait se fixer la formation initiale des enseignants de l'éducation de base, et ce afin d'évaluer l'efficacité du système au regard de ces objectifs idéaux . (Pour ce faire, nous nous sommes surtout basés sur les notes du docteur J.Ratnaike (UNESCO) dans ses recommandations au MEJS en 1992.)

Pour construire une formation professionnelle, il convient d'abord d'identifier:

(a) ce que l'enseignant devrait faire pour faciliter l'apprentissage de l'enfant
(b) ce que l'enseignant doit faire lors de sa formation , pour être performant au regard de (a)

Il faut dans tous les cas s'orienter vers un type de formation pratique, qui permettra à l'élève-professeur d'acquérir les savoir-faire spécifiques nécessaires à une bonne maîtrise de ses tâches. La pratique professionnelle doit être au centre de la formation.
Quant à l'ensemble des apprentissages théoriques, il devra se focaliser sur l'enfant-apprenant (en particulier: l'environnement de l'apprentissage de l'enfant, les processus d'apprentissage et le curriculum).
Au delà de ces acquisitions essentielles de savoir-faire, l'élève-professeur devra être capable de s'auto-former, et pour celà, il faudra également développer chez lui les aptitudes à la recherche et à l'étude de documents (apprendre à apprendre). En effet, il faut envisager que le professeur, après avoir acquis ces compétences de base lors de sa formation initiale, ait des opportunités de compléter ses connaissances par la formation continue. Enfin, pour être préparé à la conduite de la classe, certaines techniques (conduite de classe, classe multi-niveau, classe à effectif important, techniques d'évaluation, etc.) et certaines compétences (création d'outils pédagogiques, maintenance du matériel, etc.) sont indispensables.

La structure du curriculum de formation pourrait être résumée comme suit:



C'est donc à la lumière de cette structure théorique, et à partir de ce nous avons considéré comme étant "ce que l'enseignant devrait faire pour faciliter l'apprentissage de l'enfant", que nous avons élaboré un questionnaire destiné aux formateurs qui devait nous permettre de connaître mieux:

- leurs cursus
- leurs connaissances
- leurs propositions pour une amélioration du système de formation initiale

D'autres questionnaires furent élaborés pour les stagiaires et les autres acteurs de la formation (direction provinciale, direction des CRP, inspecteurs, etc.)

INTRODUCTION

La formation des professeurs de collège s'effectue dans les six (6) Centres Régionaux de Pédagogie (CRP) suivants:

1- **Phnom Penh**	pour les provinces de:	Municipalité de Phnom Penh Stung Treng Mundolkiri Ratanakiri Koh Kong Prey Vihear
2- **Takeo**	pour les provinces de:	Takeo Kampot Kompong Som
3- Battambang	pour les provinces de:	Battambang Pursat Banteay Meanchey Siem Reap Pailin
4- Kompong Cham	pour les provinces de:	Kompong Cham Kompong Thom Kratie
5- Prey Veng	pour les provinces de	Prey Veng Svay Rieng
6- **Kandal**	pour les provinces de:	Kandal Kompong Speu Kompong Chnang

Il existe également un centre régional à Stung Treng, mais ce dernier ne forme pas de professeurs de collège mais les instituteurs pour les provinces de Stung Treng, Ratanakiri, Mundolkiri et Prey Vihear (habituellement appelées: "provinces éloignées").
Il est à noter que ces dernières années (de 1991 à 1998), ces CRP n'ont pas formé de nouveaux professeurs, mais ont re-formé les professeurs des collèges (recyclage) pour les

professeurs qui n'avaient pas le niveau d'éducation désormais requis pour enseigner en collège. Les stagiaires en deuxième année en 1998-99 sont la première promotion formée dans les CRP depuis 1991.

Les différent cursus de formation qui ont précédé sont les suivants:

- de 1983 à 1990 8+3
- de 1989 à 1992 11+3
- de 1991 à 1998 recyclage des 8+3 (+1 année)
- de 1997 à actuellement 11+3+2 et 12+3+2

L'objectif de ces années de recyclage qui ont commencé en 1991 était principalement de compléter une éducation générale considérée comme insuffisante (il y manquait 3 ans). Cela peut expliquer en partie pourquoi les CRP continuent de consacrer la majeure partie de leur enseignement aux contenus plutôt qu'à la pédagogie, comme on le verra plus loin.

Les Centres Régionaux de Pédagogie
ÉTAT DES LIEUX

INFRASTRUCTURES

- Dans les CRP, elles sont en général en mauvais état (à l'exception du CRP de Kandal qui a bénéficié d'une importante aide d'une ONG italienne: Projecto Continenti). La majorité des bâtiments ne sont pas électrifiés et ne disposent pas de l'eau courante.
- Comme indiqué plus loin (chap. *conditions de travail)* il n'y a en général pas de laboratoires pour les sciences expérimentales..
- Les dortoirs sont en général insuffisants et/ou insuffisamment équipés.
- Les sanitaires sont en très mauvais état, le problème majeur étant l'approvisionnement en eau insuffisant (et parfois l'absence d'entretien régulier).
- Il n'y a en général pas de cuisine où les élèves puissent préparer leurs repas
- Il ya peu ou pas d'équipement sportif. Il est en général limité à un terrain de volley ball

MANAGEMENT

- La structure du ministère laisse peu de place à l'initiative: les directeurs ont un sentiment d'impuissance: ils n'ont pas de budget et aucune liberté quant aux pratiques de formation. Il en résulte, à quelques exceptions près, une attitude attentiste où les solutions aux problèmes sont attendues de l'extérieur et les initiatives prises par la hiérarchie.
- Les directeurs n'ont pas les compétences requises pour exercer leur fonction d'animateur pédagogique. L'introduction de nouvelles conceptions de l'éducation semble pour le moment être plus déstabilisante pour eux que facteur de changements positifs.
- Une administration pléthorique, parfois en nombre supérieur à celui des enseignants. Ces personnels administratifs sont également d'anciens enseignants et ont visiblement peu à faire.
- La gestion des ressources humaines est souvent peu cohérente et rationnelle. Alors que les formateurs des CRP devraient être systématiquement sollicités dans les actions de formation continue (ex: orientation sur les nouveaux manuels), ce n'est pas toujours le cas.
- Les CRP dépendent directement de la DPE pour les questions administratives et financières, et directement du Département de la formation pour les problèmes techniques/ pédagogiques. Cela pose de nombreux problèmes aux directeurs qui ont du mal à concilier les impératifs des uns et des autres, et à mettre l'administration au service de la qualité de la formation.

- Chaque CRP sert plusieurs provinces. Les directeurs de CRP ont du mal à communiquer avec les directeurs des autres provinces (problèmes hiérarchiques, statutaires, ...)
- La qualité de la formation dans un CRP dépend en grande partie de la qualité de sa direction.
- Le recrutement des formateurs des CRP ne correspond pas toujours aux besoins réels des CRP. Les directeurs n'ont pas toujours leur mot à dire pour ces nominations, notamment quant à la qualification des personnels recrutés. Ils ne peuvent en tout cas pas suivre les recommandations du ministère quant aux critères de recrutement des formateurs.
- L'absence de budget limite les possibilités de la direction d'initier des actions pour améliorer la qualité de l'enseignement.

CONDITIONS DE VIE ET DE TRAVAIL DES FORMATEURS:

- Bien sûr, la principale préoccupation des professeurs de CRP est leur niveau de rémunération. Ils affirment que la conduite d'une autre activité professionnelle leur laisse peu de temps pour préparer leurs cours. Dans nos questionnaires, le problème du niveau de vie des formateurs est en général exprimé comme étant le principal obstacle à une formation de qualité.
- La plupart des formateurs sont de jeunes diplômés dont c'est le premier poste. En effet, les enseignants quittent dès que possible le CRP pour un poste en collège ou lycée où se trouve la clientèle des cours privés (les élèves) dont ils ont besoin pour compléter leur salaire, de même que l'opportunité de revenus supplémentaires (préparation et correction d'examens). Le poste formateur au CRP est en général le dernier choix des enseignants: c'est pourquoi la majorité des formateurs de CRP n'a aucune expérience d'enseignement en classe de collège ou d'école primaire.
- Les professeurs travaillent sans documentation: les seuls documents disponibles étant leurs notes de l'université. Les bibliothèques sont vides de tout document pédagogique, et ne contiennent en général que des séries d'anciens et de nouveaux manuels scolaires; parfois s'y trouvent également quelques ouvrages en Anglais (dons de Asia Foundation) et en Francais (dons du SIPAR ou France Liberté) qui ne sont pratiquement pas consultés par les professeurs et les élèves dont la connaissance des langues étrangères est souvent sommaire. Ces bibliothèques sont en général peu ou pas utilisées par les professeurs. Les élèvent y travaillent parfois car il peuvent y consulter les manuels scolaires qu'en général ils ne possèdent pas personnellement. Cet état de fait empêche les élèves de faire tout type de travail de recherche, et les professeurs d'accéder à des documents de référence pour préparer leurs cours. Certains professeurs de Kandal ignorent même où se trouve la bibliothèque. Il n'existe en général pas de matériel de reproduction (ronéo ou photocopieuse).
- Il n'y a souvent pas de laboratoires pour les cours de chimie, de biologie et de physique dans les CRP. Quand ces derniers existent, ils ne sont en général pas équipés (mobilier adapté, électricité, eau courante, etc.)et ne sont donc pas utilisés. Les élèves et les professeurs de sciences expérimentales se plaignent de ne pouvoir réaliser d'expériences. Les professeurs-formateurs n'ont d'ailleurs en général eux-

même jamais pratiqué d'expériences ou travaillé en laboratoire, et n'ont de leur matière qu'une connaissance théorique. La méthodologie expérimentale est donc absente des compétences à acquérir. Or, le type de raisonnement qu'elle nécessite est essentiel dans l'approche de nombreux problèmes de la vie réelle et professionnelle. Quand bien même les laboratoires seraient opérationnels, l'absence de préparateurs/laborantins est ressentie par les professeurs comme un problème majeur.

CONDITIONS DE VIE ET DE TRAVAIL DES ÉLÈVES des ERP

- Les conditions de vie sont en général précaires pour les internes: dortoirs surpeuplés, sanitaires insalubres, approvisionnement en eau irrégulier, pas d'eau potable, pas de cuisine, etc.
- Les bourses des élèves (9000 riels, soit un peu moins de 3 USS) n'avaient pas été versées depuis 8 mois dans certains CRP en novembre.
- En général, les élèves ne disposent pas d'un lieu où étudier; quant aux dortoirs, il n'y a en général pas la place d'y mettre des tables ou des bureaux.

COMPÉTENCE DES FORMATEURS

- D'après les directeurs et les élèves, le niveau de connaissance des formateurs dans leur matière est souvent très moyen, en tout cas insuffisant pour une formation de qualité des futurs professeurs.
- Dans les CRP, la pédagogie est souvent absente de l'enseignement: le professeur de mathématiques enseigne les mathématiques, et non sa didactique. Idem pour le professeur de chimie, de Khmer, de physique, etc. Seul le professeur de "psycho-pédagogie" aborde les problèmes pédagogiques, mais souvent en suivant un programme obsolète et peu en phase avec les intentions affichées du MEJS de s'orienter vers une pédagogie centrée sur l'élève. De plus, quand les professeurs se hasardent dans des activités "d'entraînement pédagogique", (nous en avons observé quelques unes), elles auraient plutôt tendance à renforcer de mauvaises habitudes et à privilégier des schémas peu performants (on se limite en général à s'assurer que les stagiaires ont respecté le plan de leçon type)
- Lors des entretiens que nous avons eus avec de nombreux formateurs, nous avons constaté que rares étaient ceux qui avaient une idée des objectifs généraux de la formation initiale des professeurs
- Les résultats de notre questionnaire montrent que les formateurs ont en général une assez bonne compréhension du rôle de l'enseignant et des fondamentaux de la pédagogie (voir résultats des questionnaires formateurs). Cependant, les observations que nous avons pu faire montrent que la relation entre théorie et pratique est plutôt ténue, en effet il est rare que les formateurs soient capables d'adapter ces connaissances générales aux spécificités de leur matière.
- Les formateurs pratiquent un type d'enseignement magistral, très peu centré sur les élèves. Ils tendent à reproduire le seul type d'enseignement qu'ils connaissent: le

cours magistral où les élèves sont les récipiendaires d'un savoir souvent approximatif et inadapté à leurs besoins.

- Les besoins en formation exprimés par les formateurs dans nos questionnaires étaient les suivants:
  1. utilisation des nouveaux manuels
  2. nouvelles méthodologies (student centered)
  3. les compétences à acquérir par les élèves
  4. expérience en laboratoire / comment utiliser des matériaux simples pour faire des expériences simples
  5. comment produire des matériels pédagogiques
  6. le travail autour des classes de démonstration
  7. contenus/ connaissances académiques (en math, chimie & physique)
  8. séminaire sur le nouveau curriculum
  9. formation de formateurs
  10. langues étrangères pour pouvoir consulter les livres de la bibliothèque
  11. informatique
  12. visite dans les pays voisins

LIAISON THÉORIE-PRATIQUE

- Dans nos questionnaires, nombreux sont les professeurs qui expriment le besoin d'une formation plus "pratique" à deux niveaux: 1) que les élèves puissent pratiquer des expériences dans les matières scientifiques et 2) qu'il y ait plus de stages pratiques dans les collèges.
- Dans les questionnaires, seuls 24% des professeurs affirment pratiquer des observations de classe. Dans la majorité des cas, il ne s'agit pas de situations réelles mais de jeux de rôles (voir plus bas)
- Il n'existe pas de relation institutionnelle entre ERP et le collège d'application. Ce dernier n'a encore aucun statut spécifique, et les rapports entre ERP et collège d'application sont quasiment inexistants.
- Les professeurs des "collèges d'application" n'ont aucune formation ou compétence spécifique.
- Lors de leur première année de formation, les élèves n'ont aucun contact avec des classes de collège (ni observation, ni pratique). Ce n'est qu'au deuxième trimestre de la deuxième année qu'ils auront leur premier et unique stage dans un collège (6 semaines ou se succèdent observations de classes et stage pratique.) Pendant ce stage, le stagiaire est évalué par ses formateurs et le professeur de la classe.
- Ce qui est appelé "entrainement pédagogique" consiste en un jeu de rôle où un stagiaire a celui du professeur et les autres celui des élèves. La valeur formatrice de ce type d'exercice semble assez limitée: cependant elle génère parfois d'intéressants exercices d'analyse avec les élèves. Cependant, peu de jeunes formateurs le pratiquent.

DÉVELOPPEMENT DU CURRICULUM & MATÉRIELS DIDACTIQUES

- Il est intéressant de noter que parmi les formateurs ayant répondu à notre questionnaire, plus de 53% pensent que la formation est adaptée aux besoins des élèves, alors que la grande majorité des élèves interrogés pensent le contraire. Cependant, 39% des formateurs pensent que la formation n'est pas adaptée et suggèrent des réformes qui semblent répondre aux besoins identifiés ci-après.
- Le programme de formation initiale est en fait un sommaire de sujets à aborder plutôt qu'un réel curriculum au sens contemporain du terme.
- Les stagiaires sont considérés comme des élèves et non comme de jeunes professeurs, adultes en formation. La formation est très "scolaire"; les stagiaires n'ont aucune initiative et ne sont jamais amenés à réfléchir sur leur formation.
- D'autre part, ce curriculum de formation initiale repose sur des concepts peu clairs. Il est très fragmenté et ne représente pas un ensemble homogène et cohérent. Ces curricula sont développés par matière par des individus au niveau du ministère: la concertation avec les centres de formation est très limitée. Celà génère une attitude passive des récipiendaires, qui réduit à néant le rôle expérimental et innovant que devraient jouer les ERP. Les formateurs suivent à la lettre le curriculum national de formation. Ils ne prennent en général aucune initiative à cet égard, et affirment ne pas en avoir la liberté.
- Certains formateurs prennent cependant l'initiative de ne pas enseigner certains sujets qu'ils ont eux-mêmes du mal à appréhender (notamment en mathématiques, physique et psycho-pédagogie). Un professeur de psychologie nous a avoué ne pas comprendre certains chapitres du programme.
- Les programmes sont en général jugés par les professeurs comme trop lourds.
- L'objectif du curriculum est plutôt de consolider les connaissances générales des étudiants que de former des enseignants.
- Les formateurs réclament systématiquement du matériel didactique, sans pouvoir toujours être beaucoup plus précis. Le matériel didactique est souvent considéré comme une entité intrinsèque, qu'on ne relie pas forcément à des pratiques pédagogiques. L'utilisation des ressources locales est encore peu pratiquée.
- Les formateurs ne prennent jamais l'initiative ou la liberté d'enrichir le programme ou de l'adapter aux besoins spécifiques des élèves.

BUDGET DE FONCTIONNEMENT

- Il n'y en a pas dans les ERP
- Dans les EPP, il ne reste que le budget de fonctionnement alloué par le PASEC. L'année dernière, les EPP ont bénéficié d'un budget spécial, alloué par le deuxième premier ministre (communément appelé "budget Hun Sen"), et qui était en général utilisé pour l'organisation de cantines. Ce budget n'existe plus.

	eleves annee1	Filles	eleves annee 2	Filles	TOTAL
Phnom Penh	135	63	97	37	232
Battambang	235	?	189	63	424
Kompong Cham	165	88	166	48	331
Takeo	109	67	67	14	176
Prey Veng	151	?	87	28	238
Kandal	161	?	80	?	241
Total	956	218	686	190	1642

	Forma-teurs	Personnel administratif	ouvriers	total personnel	eleves	% pers. Admin./ total pers.	% prof / total personnel	ratio élève / 1 formateur	ratio élève / 1personnel
Battambang	26	24	4	54	424	44.44	48.14	16.3	7.8
Kandal	43	5	7	55	241	9.09	78.18	5.6	4.3
Kompong Cham	23	24	15	62	331	38.7	37.09	14.39	5.3
Phnom Penh	31	24	15	70	232	34.28	44.28	7.48	3.3
Prey Veng	12	16	8	36	238	44.44	33.33	19.83	6.6
Takeo	22	30	3	55	176	54.54	40	8	3
Total	157	123	52	332	1642	47.28	47.28	10.45	4.9

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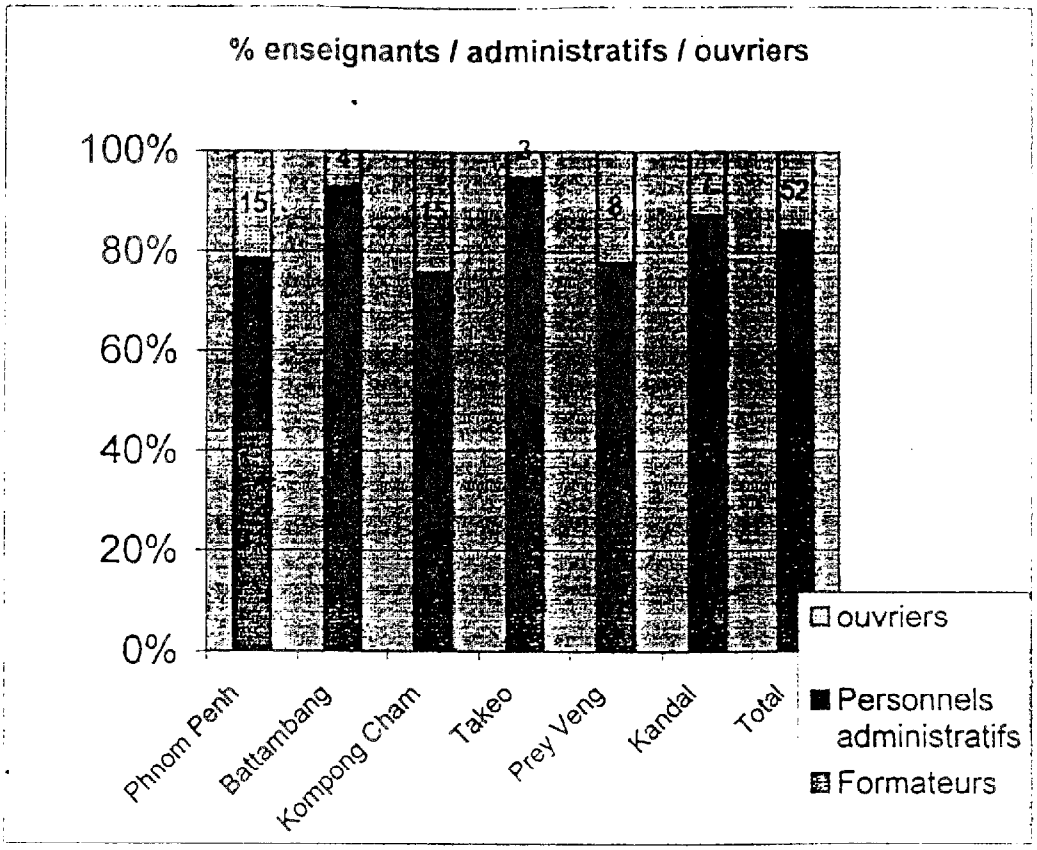
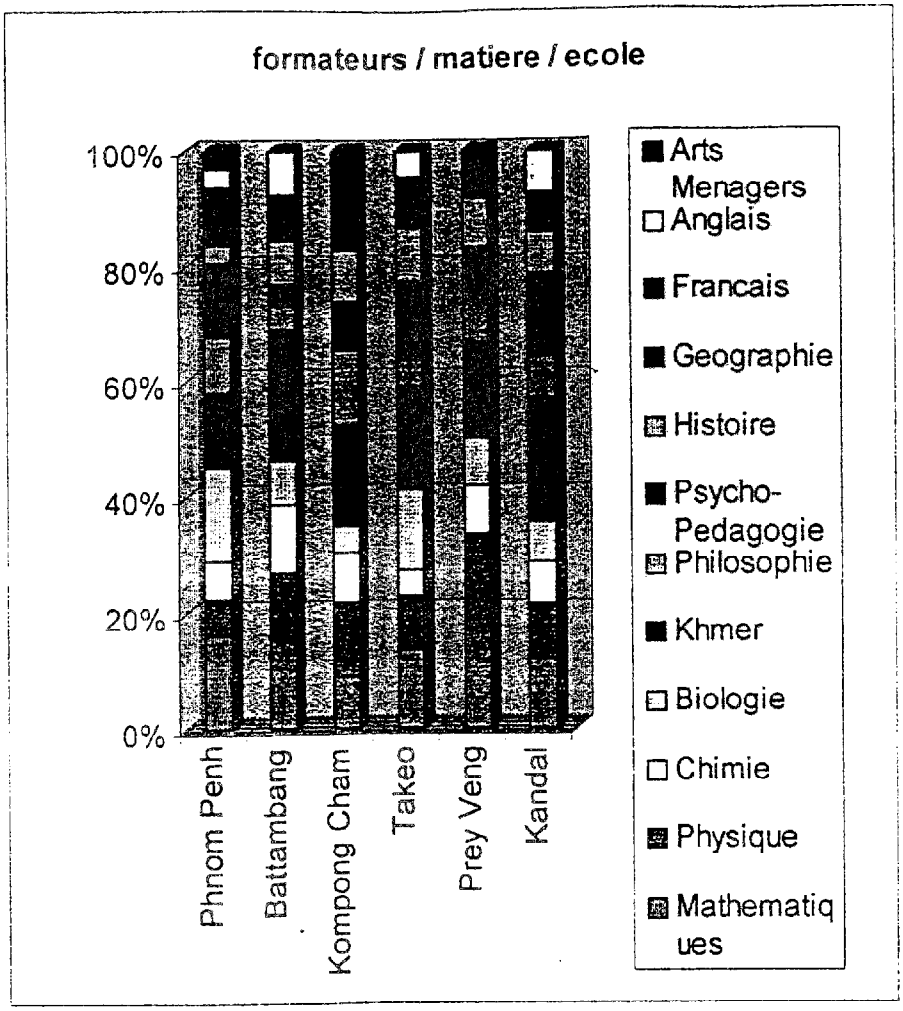

% enseignants / administratifs / ouvriers
100%
80%
60%
40%
20%
0%
15
8
52
Phnom Penh
Battambang
Kompong Cham
Takeo
Prey Veng
Kandal
Total
ouvriers
Personnels administratifs
Formateurs

18



	Mathemati	Physique	Chimie	Biologie	Khmer	Philosophi	Psycho-	Histoire	Geographi	Francais	Anglais	Arts	Sport	Autres/div	Total formateurs
Phnom Penh	5	2	2	5	4	3	4	1	2	1	1	1	0	0	31
Battambang	4	3	3	2	6	1	1	2	1	1	2	0	0	0	26
Kompong Cham	2	3	2	1	4	3	2	2	2	2	0	0	0	0	23
Takeo	3	2	1	3	4	1	3	2	2	0	1	0	0	0	22
Prey Veng	2	2	1	1	2	1	1	1	1	0	0	0	0	0	12
Kandal	5	4	3	3	9	3	6	3	2	1	3	0	0	0	43
Total	21	16	12	15	29	12	17	11	10	5	7	1	0	0	157

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PROPOSITIONS D'ACTIONS

Les priorités:

1. Il est inutile d'investir dans la formation tant que le problème de la stabilité du personnel enseignant (formateurs) des EPP & ERP n'est pas résolu de façon durable

2. La rénovation des locaux devrait être une des composantes du budget de fonctionnement, car elle donnerait au directeur des responsabilités et les moyens d'agir sur son environnement. Ce devrait être précédé d'une formation spécifique à la gestion de ces budgets (écrire un projet, un budget,travailler en comité de gestion, gestion & comptabilité, appels d'offre, etc.)
   La participation des élèves est nécessaire car elle prépare les élèves à la maintenance des locaux + préparation à la préprofessionalisation

Domaine de l'action	Problème identifié	Remédiation PASEC
Infrastructures	Batiments en mauvais état	Rénovation des dortoirs (batiments, mobiliers)
	Approvisionnement en eau irrégulier ou/et insuffisant	Rénovation ou installation d'un réseau d'eau qui permette au minimum d'approvisionner les sanitaires. (réservoir, pompe, tuyauterie, ...)
	Sanitaires en mauvais état	L'approvisionnement en eau devrait résoudre en grande partie le problème
	Pas d'électricité	Installation électrique pour les dortoirs, salles d'études, bibliothèques.
	Pas de laboratoires	
	Peu d'installations sportives	
Management	Peu de responsabilités laissées aux directeurs dans les choix pédagogiques	- Impliquer les directeurs dans la rédaction des programmes de formation - Formation continue des directeurs à l'animation pédagogique de leur établissement
	Les directeurs n'ont pas les moyens financiers d'influer sur la qualité de la formation	Budget de fonctionnement comme dans les ERP. Pour plus d'efficacité et pour minimiser les coûts, il faudrait fusionner (à moyen terme) EPP et CRP.

	Personnel administratif trop nombreux	reclassement de ces personnels dans les nouvelles activités: pré-professionnalisation, orientation scolaire, ...
Condition de vie & de travail des formateurs	rémunération insuffisante	- avec le département de la formation, instaurer des priorités pour l'accès aux corrections d'examens et toutes autres activités rémunératrices pour les formateurs de CRP (heures supplémentaires en collège, prime pédagogique. (il s'agit de rendre ces postes attractifs) - aligner les aides PASEC (suppléments de salaires, riz, ?) sur ce qui est pratiqué dans les EPP.
	manque de documentation dans les bibliothèques	- faire l'inventaire de toute la documentation pédagogique écrite en Khmer existante, de quelque origine qu'elle soit (MEJS, PASEC, UNICEF, UNESCO, CAPE, ONG, etc.), la reproduire et la diffuser dans les CRP (et EPP) - Inciter à la création et à l'échange de documents pédagogiques entre les CRP (leur donner les moyens de reproduction et de diffusion des fiches pédagogiques, travaux de recherche, etc.) - Identifier les textes fondateurs de la psychologie et de la pédagogie moderne, ainsi que les documents existants dans les pays voisins (livres, VDO,etc.) et mettre en place un programme de traduction et de diffusion. - Formation des bibliothécaires
	pas de laboratoires ni de matériel de laboratoires	- formation des professeurs de sciences expérimentales à l'utilisation de matériaux locaux, à la pratique d'expériences simples avec du matériel disponible dans leur environnement - formation pédagogique des professeurs de sciences expérimentales: les méthodes expérimentales, les liens entre théorie et pratique, etc.
Condition de vie & de travail stagiaires	infrastructures (dortoirs, toilettes) délabrées.	rénovation des locaux (voir § infrastructures)
	Pas de lieu d'étude	rénovation des bibliothèques (locaux, mobiliers, ...)
	Bourses insuffisantes	alignement de l'aide PASEC sur celle aux EPP (bourses, riz ou autre)

Compétence des formateurs	Les formateurs ne pratiquent pas une pédagogie active	Organisation de stages "formation de formateurs", dans les CRP, avec mise en situation et activités pratiques (formation "hands-on" ou "la main à la pâte"). Suivi & évaluation de l'impact des stages sur le terrain. Pour ce faire, utiliser les ressources humaines existant dans les EPP (Maitres-Formateurs PASEC, Lecturer CAPE, personnels formés par Red Barna, etc.)
	Les compétences des formateurs dans leur discipline sont insuffisantes	plusieurs solutions: - la formation à distance - la coordination du recyclage avec la Fondation France-Liberté - recyclage par matière, par les responsables du Département de la Formation
Théorie/Pratique	pas de collèges d'application	Encourager le ministère à sélectionner un ou plusieurs collèges d'application rattachés aux CRP, et institutionnaliser les relations entre les établissements.
	pas de professeurs formés à leur rôle de formateur dans les collèges.	Identification des meilleurs professeurs et formation commune "formation de formateurs" avec les professeurs de CRP. Ces professeurs de collège seront amenés également à intervenir dans les CRP auprès des élèves pour les activités pédagogiques.
	Pas de stages pratiques la première année.	Encourager le Département de la formation à prévoir des stages pratiques (observations, semi-responsabilité) dès la première année.
	Entrainement pédagogique: activité sans grand intérêt.	Remplacer cette activité par des activités dans les classes de collège, en collaboration avec les professeurs formateurs
Curriculum & Matériels Didactiques	Curriculum de formation qui n'est qu'un sommaire de sujets à aborder pour chaque matière.	Organiser un séminaire de réflexion sur les objectifs de la formation initiale & les compétences à acquérir par les stagiaires au cours de cette formation. Puis lancer le chantier de l'élaboration d'un réel curriculum de formation qui s'appuie sur la conception contemporaine du curriculum (travail de plusieurs années !).
	Programmes ne répondant pas aux besoins des élèves	idem

	Curriculum peu cohérent, fractionné.	Encourager les formateurs (et les rédacteurs de curriculum) à travailler en équipes: mettre en place des modules interdisciplinaires de formation
	manque de matériel didactique	Dans le cadre des activités pédagogiques, encourager la création de matériels avec des moyens locaux, en fournissant le minimum d'outils nécessaires à leur création. La création de ces aides pédagogiques devra être liée à des activités pédagogiques précises, répondre à des besoins précis et privilégier les initiatives locales. Ces activités doivent faire partie intégrante de la formation. Des échanges d'expériences entre CRP seront également encouragés. (Surtout ne pas distribuer des matériels "ready made", les mêmes pour tous les CRP)
Budget de Fonctionnement	Pas de budget de fonctionnement dans les CRP	- formation des directions et personnels administratifs concernés des CRP à la préparation de budgets, leur gestion, et la comptabilité. - Attribution de budgets de fonctionnement dans les CRP, mais qui soient plus larges puisqu'ils incluraient les budgets de rénovation. - Au préalable, discuter avec le ministère le problème de la pérennité de ces budgets: ils devraient être décroissants pour le PASEC tandis que le MEJS prendra le relais progressivement (programme sur 2 ans)
Généralités	Mauvaise gestion des ressources humaines	- Préparer la fusion des CRP avec les EPP. - Élaborer un système d'évaluation des enseignants en relation avec un plan de carrière

CRP, infrastructures & équipement

ERP	Kompong Cham	Prey Veng	Battambang	Takeo	Kandal	Phnom Penh
N.Batiments	17	12	5	10	17	10
Bat. nouveaux	0	7	5	2		3 bat. de 2 étages
Bat. anciens	6 bat. restaurés en 85	5 bat. seuls 3 sont utilisés. Les autres le seront si sureffectif	5	8, dont 3 sont à rénover (plancher, murs, toits)		6 bat. en bois
N. salles de cl.	18	12	32	17	24	24 en service
État des locaux:	Dans l'ensemble en mauvais état	Médiocre, même les nouveaux batiments	Moyen, les toits sont à réparer	Correct,(à part pour trois d'entre eux)	Bon état	Bon dans les nouveaux batiments Moyen dans les anciens
Etat des dortoirs:	mauvais état, limite insalubre	Moyen	Assez bon état mais surpeuplés	Moyen		à la limite de la salubrité
Réfectoire/ cantine		Il existe une salle	une salle + une cuisine			
Etat des sanitaires/ toilettes	ne sont pas utilisés faute d'eau.	Non En mauvais état, pas d'eau.	Moyen, manque d'eau	Moyen, il y en a 2 sur 3 inutilisables	Bon état	Moyen. Pas d'eau dans beaucoup d'entre eux
Eau	pas d'eau	Il y a trois puits ouverts. Pas de réseau, ni de réservoir	Système en mauvais état. Manque d'eau en saison chaude. Il faudrait un chateau d'eau.	irrégulière. Pas de budget pour payer les factures.	Oui, système neuf avec chateau d'eau et panneaux solaires	une petite pompe approvisionn e certain batiments. Il y a un chateau d'eau inutilisé: pas de pompe
Electricité	oui, mais très irrégulièrem ent et puissance insuffisante	uniquement la nuit dans les dortoirs et les batiments administratif s	oui, de 18h30 à 22h, le reste du temps on coupe (pas de budget)	Certains batiments sont électrifiés. Réseau à refaire. Irrégulière	oui, panneaux solaires	oui, payée par la DPE. Mais réseau à refaire
Téléphone	non	non	non	non	oui, mais coupé	non

ERP	Kompong Cham	Prey Veng	Battambang	Takeo	Kandal	Phnom Penh
Bibliothèque	visiblement jamais utilisée. Pas de mobilier, très peu de livres.	oui, mais plutôt rustique: pas de mobilier (ou inadapté) pas de rayonnage, un gros stock d'anciens et nouveaux manuels + quelques livres étrangers	En assez bon état. Utilisé. de nombreux manuels scolaires (anciens et nouveaux) et livres francais & anglais TV & Video	une bibliothèque neuve utilisée conjointement avec l'EPP (construite par UE)	Une salle peu utilisée. Surtout des livres en Francais & Anglais	En bon état beaucoup d livres étrangers. Manque de mobiliers (rayonnage
Labo Physique	Salle normale avec une paillasse. Pas d'eau, peu d'équipement	Salle de classe normale. Pas de carrelage, paillasses, d'évier etc.	Salle de classe normale pas d'eau pas d'electricite Materiel abondant (nouveau ADB)	Salle normale avec une paillasse. Pas d'eau, peu d'équipement	Salles en bon état	Labo avec paillasse carrelée (mais les carreaux se décolent déjà).
Labo Chimie	idem	Salle de classe normale.	idem	idem	idem	Robinets d'eau mais pas connec
Labo Biologie	idem	Salle de classe normale.	idem	idem	idem	au réseau. En bon eta Petits travaux necessaires
Atelier	non	Atelier de couture 8 machines	non	néant	couture avec x machines	1 atelier de couture 8 machine
Installations sportives	1 terrain de volley	1 terrain football 1 terrain volley	1 terrain Volley 1 terrain de basket en mauvais état	1 terrain football 2 terrains Volley	1 terrain de volley	2 terrains basket (panneaux réparer) 2 volleys (2 terrains tennis (à rénover)

Enquête auprès des
Formateurs des CRP
SYNTHÈSE

LIMITES de L'ENQUÊTE

Cette enquête n'a pas de prétention scientifique: son objet était de nous donner des indications sur les connaissances de base des formateurs, la perception de leur propre rôle et de connaître les problèmes qu'ils rencontrent dans leur travail ainsi que les solutions qu'ils envisagent pour résoudre ces problèmes.

D'autre part, de nombreux formateurs n'étaient pas habitués à remplir des questionnaires, et souvent les réponses manquaient de cohérence (ex: on répond **non** à une question, mais on répond également à la suivante qui commence par "**si oui, ...**", les réponses ne sont pas toujours les réponses aux questions posées, etc.), ceci malgré une orientation préalable (le questionnaire était entièrement lu avec les enquêteurs avant de le remplir)
Bien sûr, de nombreux formateurs ont répondu aux questions en exprimant les réponses qu'ils pensaient que nous attendions, plutôt que leur réelle pratique de classe. Mais, en conjuguant cette enquête avec des observations de classes, nous pouvons évaluer le fossé qui sépare les intentions et les idées de la mise en application.

Ce questionnaire n'a donc pas été le seul élément d'evaluation: il y a eu également de nombreux entretiens, notamment avec:

- les directeurs des Directions Provinciales de l'Éducation, leurs adjoints, et les chefs de bureau.
- les directeurs de CRP, leurs adjoints et les chefs de bureau
- les inspecteurs
- les formateurs
- les élèves

Enfin, de nombreuses classes de CRP furent observées au cours de nos visite, ainsi que des classes de collège.

LES CONNAISSANCES

Dans l'ensemble, les formateurs ont une bonne compréhension des principes de bases qui fondent une pédagogie active et centrée sur l'élève (où et comment les enfants apprennent-ils, l'importance de connaître les différentes phases de développement des enfants et des adolescents pour adapter son enseignement, rôle du professeur comme facilitateur des apprentissages, etc.) En effet, à chaque question, au moins 80% des formateurs ont apporté des réponses justes ou justes mais incomplètes.

TECHNIQUES D'ENSEIGNEMENTS

Les résultats sont plus mitigés: si les formateurs semblent comprendre le besoin d'encourager leurs élèves à faire des travaux de recherche, à résoudre des problèmes, à prendre des décisions, à les faire manipuler et expérimenter, etc., ils sont rarement capables de donner des exemples concrets d'activités de ce genre dans leur classe.

PROBLÈMES IDENTIFIÉS & BESOINS EXPRIMÉS par les FORMATEURS

Les problèmes
ils sont de deux ordres: (1) la pédagogie (méthodes centrées sur l'enfant -non pas les généralités, mais les applications pratiques- & la formation à l'utilisation des nouveaux manuels) et (2) l'aspect pratique de la formation (entrainement pédagogique, stages pratiques) que les formateurs disent avoir du mal à gérer.
Les besoins
Salaires, amélioration des conditions de vie, budget de fonctionnement.
Une formation plus pratique
recyclage (formation de formateurs)

CONCLUSION

Confirmant nos doutes, les formateurs sont jeunes et peu expérimentés. Il conviendra donc, avant de se lancer dans quelque activité de recyclage, de stabiliser ce corps d'enseignants.
Si l'on envisage un recyclage des formateurs, il faut à tout prix que ce soit un type de formation en situation, avec suivi et évaluation des activités dans les classes. En effet, les formateurs semblent avoir les connaissances théoriques suffisantes pour construire un enseignement cohérent, mais nos observations de classes ne corroborent pas le résultat plutôt positif de l'enquête. (Par exemple, si la majorité des professeurs privilégie un système d'évaluation formative dans nos questionnaires, il a été impossible d'en voir les traces dans les classes, et la plupart des leçons auxquelles nous avons assisté étaient plutôt "centrées sur l'enseignant".) Les élèves continuent donc à apprendre de manière très passive, et on peut préjuger de leur attitude quand ils enseigneront, qui tendra probablement à reproduire le type d'éducation qu'ils ont toujours vécu. De plus, ces méthodes sont en contradiction avec celles recommandées pour une exploitation optimale des nouveaux manuels scolaires.

Enfin il s'agira de structurer l'équipe pédagogique autour de projets pédagogiques formateurs et motivants.

Questionnaire aux
Professeurs / formateurs
Résultats des 6 ERP

Nombre de professeurs/formateurs ayant répondu au questionnaire: 151

Généralités:

Moyenne horaire des formateurs: 11 heures / semaine
Maximum: 26 heures pour un prof de physique
Minimum: 3 heures

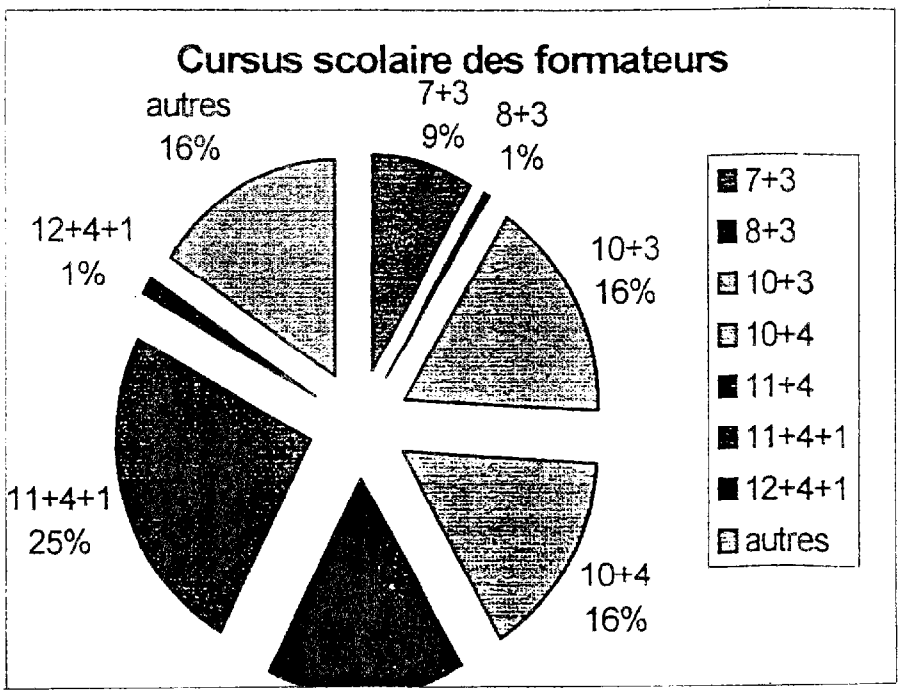
L'**age moyen des formateurs** est de **33 ans**

Il y a **32% de femmes** parmi les formateurs

Cursus scolaire & universitaire des formateurs:

(ex: 7+3= 7 années d'éducation de base + 3 années de formation professionnelle
11+4+1= 11 années éducation primaire & secondaire + 4 années Université de Phnom Penh + 1 année faculté de Pédagogie)

7+3	8+3	10+3	10+4	11+4	11+4+1	12+4+1	Autre/ pas de réponses
12	1	23	22	23	35	2	22



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recyclage:

Types de recyclages auxquels ont participé les formateurs depuis leur entrée au CRP:

Objectif	date	organisée par:	# de formateurs concernés
Programme & méthodologie	1992 à 1996	France Liberté	48 (31.8%)
Orientation nouveaux manuels	1998	UNICEF/MEJS	74 (49%)
Anglais	1993	Camset	2
Francais	1996	Service culturel de l'amb. de France ou Aupelf	4
Méthodologie centrée sur l'élève	1998	MEJS/ADB	10

36.1% des formateurs interrogés ont été instituteur ou professeur de collège avant de devenir formateur, en moyenne pendant **4 années**

21.2% des formateurs affirment avoir eu une formation spécifique de formateur

Les formations citées en général sont:
1. la formation à la faculté de pédagogie
2. la formation à l'Université de Phnom Penh

Or ces formations ne sont pas des formations de formateurs.

L'**ancienneté** moyenne dans les établissements est de **6.5** années.

CONNAISSANCES DES FORMATEURS

A la question: **où les enfants apprennent-ils?**
A l'école, mais également dans leur environnement familial et social

- 48% donnent une réponse jugée satisfaisante
- 32.6% donnent une réponse jugée incomplète
- 18 % donnent une réponse jugée incorrecte
- 0.6% ne donnent pas de réponse

A la question: **comment les enfants apprennent ils ?**
En faisant, en pratiquant, en expérimentant, en se trompant, parfois en imitant, etc.

- 38% donnent une réponse jugée satisfaisante
- 43% donnent une réponse jugée incomplète
- 16% donnent une réponse jugée incorrecte
- 3% ne donnent pas de réponse

A la question: **pourquoi les enseignants doivent connaître les différentes phases du développement de l'enfant et de l'adolescent ?**
Pour pouvoir adapter leur enseignement au niveau de développement et aux capacités d'abstraction de l'enfant en fonction de son age.

- 45.1% donnent une réponse jugée satisfaisante
- 36.4% donnent une réponse jugée incomplète
- 11% donnent une réponse jugée incorrecte
- 7.5% ne donnent pas de réponse

A la question : **pourquoi le MEJS demande aux professeurs d'utiliser de nouvelles méthodologies?**
(car les méthodes dites actives, ou centrées sur l'élève sont plus efficaces: l'élève comprend mieux, plus vite, et se souvient mieux; il développe des aptitudes utiles dans la vie quotidienne (coopération, raisonnement, résolution de problèmes, etc.)

- 44.3% donnent une réponse jugée satisfaisante
- 41.5% donnent une réponse jugée incomplète
- 7.1% donnent une réponse jugée incorrecte
- 7% ne donnent pas de réponse

A la question: **pourquoi pensez vous que les professeurs doivent se reformer régulièrement?**
Pour se former à de nouvelles techniques d'enseignement, pour être informé des nouveautés relative à sa discipline (notamment dans les sciences)

- 36.4% donnent une réponse jugée satisfaisante
- 50.5% donnent une réponse jugée incomplète
- 5.1% donnent une réponse jugée incorrecte
- 7.9% ne donnent pas de réponse

A la question: **Pensez vous que le programme de formation du MEJS soit adapté aux besoins des élèves professeurs?**

- 53.4% pensent que oui
- 38.8% pensent que non

- **7.8%** ne répondent pas à la question

Les propositions de **réformes**:
- Que le curriculum soit développé au niveau de l'ERP
- Que la formation laisse plus de place à la pratique de classe / organiser des stages pratiques dès la première année.
- Introduire des activités de recherches pour les élèves
- Plus de temps pour la formation aux techniques d'enseignement centrées sur l'élève
- Ajouter l'écologie/ l'éducation à l'environnement au programme de biologie
- Alléger le programme
- Ajouter des heures de travaux pratiques / avoir du temps pour les expériences en laboratoire
- Ajouter la technologie
- Adapter la formation aux nouveaux manuels
- Supprimer ce qui est de l'ordre de la consolidation des connaissances, et consacrer la formation uniquement à la méthodologie. Les connaissances disciplinaires doivent être acquises avant l'entrée dans le CRP

A la question: **Quels sont les rôles du professeur?**
1. **57.2%** donnent 2 réponses donnant au professeur un rôle de facilitateur des apprentissages
2. **35.1%** donnent une réponse de type (1) et une réponse de type (3)
3. **4.8%** donnent 2 réponses donnant au professeur un rôle de dispenseur du savoir
4. **2.8%** ne donnent pas de réponse

communication professeur / élèves

12.6% des professeurs ont choisi une majorité de proposition reflétant un enseignement centré sur l'enseignant (teacher centered)
81.4% des professeurs ont choisi une majorité de proposition reflétant un enseignement centré sur l'élève (student centered)

Organisation des activités d'apprentissage

Dans ma classe, les élèves apprennent:

	jamais	parfois	souvent	toujours
1. individuellement	31	53	12	10
2. par paires	15	62	22	4
3. en petits groupes (3 to 6)	6	14	59	32
4. toute la classe	1	36	33	51
5. dans la salle de classe	1	12	33	73
6. en dehors de la classe	27	36	10	30
7. en dehors de l'école	43	46	22	4
8. dehors, dans la communauté	50	40	8	2
9. avec des intervenants exterieurs	52	33	7	3
10. avec des intervenants d'autres classes	28	51	16	5

STRATÉGIES ET TECHNIQUES D'ENSEIGNEMENT

Définition des objectifs:
34.4% choisissent 2 exemples appropriés
49.6% choisissent 1 seul exemple approprié
8.9% choisissent 2 mauvais exemples
7.1% ne répondent pas à la question

78.7% choisissent les définitions correctes pour les **méthodes inductives & méthodes déductives**
14.6% donnent une réponse fausse
6.7% ne répondent pas à la question

71.7% affirment privilégier la méthode inductive dans leur enseignement
19.8% affirment privilégier la méthode déductive dans leur enseignement
8.5% ne répondent pas à la question

45.6% affirment utiliser régulièrement des **matériels de manipulation** dans leur classe
42.3% affirment ne jamais en utiliser
13.9% ne répondent pas à la question

54.4% affirment utiliser d'autres types de **matériel pédagogique** 66% de ceux-ci donnent des exemples
35.2% affirment ne jamais utiliser d'aide ou de matériel pédagogique
10.3% ne répondent pas à la question

4- Je **questionne** les élèves pour
Les résultats de cette question ont peu d'intérêt, presque tous les répondants ayant répondu "souvent" à chaque proposition.

	jamais	parfois	souvent
1. pour les inciter à communiquer entre eux			
2. pour mettre l'accent sur les points importants			
3. pour que les élèves participent activement à leur apprentissage			
4. pour sussiter l'intérêt et la curiosité			
5. pour diagnostiquer les difficultés d'apprentissage des él			
6. pour réviser les points importants de la leçon			
7. pour stimuler la reflexion			
8. pour controler les connaissances des élèves			
9. pour encourager les élèves à donner leur opinion			

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Quand un élève pose une question:
35.4% des formateurs affirment qu'en général ils répondent à la question eux-mêmes.
59.8% des formateurs affirment qu'en général ils demandent à un autre élève de répondre.
74.7% des formateurs affirment qu'en général ils aident l'élève à trouver lui-même la bonne réponse.
(de nombreux formateurs ont donné deux réponses: ce sont en général ceux qui privilégient les réponses (2) et (3). D'où on peut en conclure qu'environ le tiers des formateurs répondent eux-mêmes à la question, tandis que les autres privilégient les réponses des élèves.)

*22 % des formateurs ne donnent jamais de **travail de recherche** à leurs élèves*

78 % des formateurs donnent parfois aux stagiaires des travaux de recherche

34% de ces derniers sont capables de donner un exemple. Dans la majorité des cas, ces exemples se limitent à des travaux de recherche à la bibliothèque: les élèves-professeurs préparent les lecons de "l'entraînement pédagogiques" avec les manuels du maître et des élèves disponibles dans la bibliothèque (il y a rarement d'autres ressources). Il ne s'agit donc pas à proprement parler d'un travail de recherche.

23.4% des formateurs affirment avoir déjà travaillé sur un **projet pédagogique** commun avec les autres professeurs et les élèves.
15% de ces derniers peuvent donner un exemple
76.6% des formateurs affirment n'avoir jamais travaillé sur un projet pédagogique commun avec les autres professeurs et les élèves.

16.3% des formateurs ne répondent pas à la question "mettez vous vos étudiants **en situation de résoudre des problèmes?**"
18.6% des formateurs affirment ne jamais mettre leurs étudiants en situation de résoudre un problème.
43.2% des formateurs affirment mettre parfois leurs étudiants en situation de résoudre des problèmes
21,8% des formateurs affirment mettre souvent leurs étudiants en situation de resoudre des problèmes

34% des formateurs sont capables d'ordonner logiquement les différentes étapes de résolution d'un problème.

Feedback aux élèves:

Ici encore, les résultats ont peu d'intérêt, presque tous les formateurs ayant répondu "souvent" à toutes les propositions.

	jamais	parfois	souvent
Résultats des examens , tests			
Commentaires, appréciation sur les devoirs, exercices			
Remarques, appréciation sur les résultats scolaires en général			
Commentaires, appréciation sur les apprentissages			
Correction des erreurs des élèves			
Encouragements			

49% des formateurs affirment mettre les enfants dans des **situations** où les élèves sont amenés à **prendre des décisions**.
45% des formateurs affirment ne pas développer particulièrement cette compétence
16% ne répondent pas à la question
8% sont capables d'ordonner logiquement les séquences proposées (prise de décision)

Les formateurs affirment **programmer et planifier leur enseignement** sur la base d'une :

- programmation annuelle: **82,6%**
- programmation trimestrielle **53,2%**
- programmation mensuelle **60,8%**
- programmation hebdomadaire **47,8%**
- programmation quotidienne **43,5%**
- plan de lecon **74 %**

18.7% des formateurs donnent 4/4 réponses correspondant à un systeme d'évaluation formative.
40.6% des formateurs donnent 3/4 réponses correspondant à un systeme d'évaluation formative.
26% des formateurs donnent 2/4 réponses correspondant à un système d'évaluation formative.
4.3% des formateurs donnent 1/4 réponses correspondant à un système d'évaluation formative.
5.6% des formateurs ne donnent que des réponses correspondant à un système d'évaluation sommative.
4.7% ne répondent pas à la question

Utilisez-vous parfois des évènements ou des éléments de votre **environnement** pour en discuter ou les étudier avec vos élèves?

- 53.5% répondent oui
- 36.7% répondent non
- 9.8% ne répondent pas

43% des formateurs qui ont répondu oui sont capables de donner des exemples

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PRATIQUES DE FORMATION

66.1% des formateurs n'emmènent jamais leurs stagiaires observer **des classes de démonstration**
23.6% des formateurs emmènent leurs stagiaires observer des classes de démonstration

Parmi ces derniers: - **44.5%** observent l'enseignant de la classe
- **31%** observent un des stagiaires
- **24.5%** observent le formateur

10.3% n'ont pas répondu à la question
Il est à noter qu'il semble que de nombreux formateurs aient confondu classes de démonstration (l'observation d'une classe réelle in-situ) avec l'activité appelé "entrainement pédagogique" où des élèves professeurs (ou le formateur lui-même) font une lecon à leurs camarades de classe qui jouent le rôle des élèves.

71.5% des formateurs qui vont en classe de démonstration donnent **des grilles** ou des consignes spécifiques pour **l'observation**
28.5% des formateurs ne donnent aucune consigne ou indication

76.4% des formateurs vont évaluer les stagiaires pendant le stage pratique
23.6% des formateurs ne vont pas évaluer les stagiaires pendant le stage pratique

Chez les formateurs qui vont évaluer les élèves, on évalue en priorité:

1. le plan de la lecon
2. la méthodologie
3. si la lecon est au programme
4. les contenus de la lecon

"Feedback" sur la lecon

31.5% font un rapport écrit pour l'élève
64.4% ont un entretien avec le stagiaire
36.5% notent la prestation du stagiaire

52.6% pensent qu'il faut mettre en relief les points faibles de la lecon
32.4% pensent qu'il faut mettre en relief les points forts de la lecon
67% pensent qu'il faut mettre l'accent sur les conseils au stagiaire pour s'améliorer

PROBLÈMES ET BESOINS TELS QU'IDENTIFIÉS ET RESSENTIS PAR LES FORMATEURS

Besoins en formation ressentis par les formateurs:

14.6% estiment que leur formation sur les nouveaux manuels a été suffisante
31% estiment que leur formation sur les nouveaux manuels a été insuffisante, et désirent une formation supplémentaire
55.4% ne répondent pas à la question
Parmi ces derniers, on compte les formateurs qui n'ont pas participé à cette formation, soit parceque leur matière n'a pas été prise en compte (psycho-pédagogie par exemple), ou parcequ'ils sont nouveaux dans l'établissement.

Les besoins en formation exprimés (par ordre d'importance):

1. utilisation des nouveaux manuels
2. nouvelles méthodologies (student centered)
3. les compétences à acquérir par les élèves
4. expérience en laboratoire / comment utiliser des matériaux simples pour faire des expériences simples
5. comment produire des matériels pédagogiques
6. le travail autour des classes de démonstration
7. contenus/ connaissances académiques (en math, chimie & physique)
8. séminaire sur le nouveau curriculum
9. formation de formateurs
10. langues étrangères pour pouvoir consulter les livres de la bibliothèque
11. informatique
12. visite dans les pays voisins

Recommandations pour l'amélioration de la formation:

- Il faut plus de documentation à la disposition des formateurs et des stagiaires
- Il faut augmenter les salaires (conditions de vie des formateurs)
- améliorer les conditions de vie des élèves
- il faut un budget de fonctionnement pour les CRP
- il faut stabiliser les formateurs (turn-over trop important)
- il faut une formation plus théorique et moins pratique
- plus de formation continue pour les formateurs
- il faut recruter des élèves d'un meilleur niveau
- il faut un nouveau curriculum
- Il faut du matériel pour les expériences
- Former mieux les formateurs à l'utilisation des nouveaux manuels et aux nouvelles méthodologies et techniques pédagogiques

Principales difficultés rencontrées par les formateurs:

- le manque de communication entre les formateurs
- Le manque de matériel pour préparer les lecons et le manque de matériel dans les laboratoires
- les connaissances des élèves ne sont pas homogènes
- Le salaire
- problèmes pour appliquer les nouvelles méthodes
- Le nouveau curriculum n'a pas encore été donné
- Pas de lieu (aire de jeu, stade, ...) pour le sport

L'équipe éducative:

51.1% des formateurs affirment se réunir régulièrement avec leurs collègues
23.7% des formateurs affirment ne pas se réunir avec leurs collègues
25.2% ne répondent pas à la question

Dans ces réunions, les thèmes de travail sont les suivants:

- Le programme et sa mise en oeuvre
- La pédagogie (méthodes pédagogiques)
- L'élaboration du plan de travail pour le mois suivant
- Discussions sur les méthodes pédagogiques et les difficultés rencontrées
- préparation des lecons
- correction des erreurs dans les nouveaux manuels
- Écrire le rapport, rapport d'activités
- la discipline dans le centre

La supervision des CRP:

La Direction Provinciale de l'Éducation a la responsabilité de la gestion administrative des Centres Régionaux de Pédagogie. Elle en recrute également les personnels. Par contre, elle n'a aucune responsabilité quant aux contenus des programmes et la qualité de la formation, qui dépendent entièrement du Département de la formation. Cette ambiguité est ressentie comme un problème par la plupart des directeurs de la DPE.
D'autre part, la coordination avec les autres provinces de la région est parfois problématique, car les directeurs n'ont aucune sorte d'autorité sur les autres directeurs provinciaux. Les relations institutionnelles ne sont pas claires.

Principaux problèmes des CRP:

- Des formateurs trop jeunes et inexpérimentés, problème du roulement (turn-over) trop rapide des personnels qui préfèrent enseigner au lycée pour gagner plus. Ces formateurs sont souvent des stagiaires tout juste sortis de la faculté de pédagogie (non-titulaires) Un directeur nous a parlé d'un corps enseignant "en transit"
- Le niveau de vie des formateurs et des élèves
- Manque de matériel et de documents
- Une formation trop théorique
- Le manque de compétence des formateurs
- Des formateurs qui utilisent des méthodes trop magistrales que les élèves ont tendance à reproduire en classe
- Le manque de conscience professionnelle des formateurs
- Il n'y a pas de collèges d'application
- On n'accorde pas assez d'importance aux arts et au sport

Recommandation pour améliorer la qualité de la formation:

- Il faut un plan national de formation continue pour les formateurs de CRP.
- Il faut notamment former plus en profondeur les formateurs sur les nouvelles méthodes pédagogiques
- Ils faut donner aux formateurs des occasions d'avoir des revenus supplémentaires, par exemple:
  - des heures supplémentaires en collège ou lycée
  - la participation aux examens (surveillance, correction, ...)
  - des travaux d'inspection dans les collèges (ce qui permettrait également de leur donner une meilleure connaissance du terrain)
  - cours du soir (recyclage, formation continue des fonctionnaires)
- Il faut associer formation continue et formation initiale: le CRP doit être responsable des 2 composantes.
- Il faut associer les meilleurs professeurs des collèges dans les equipes chargées de la formation initiale et leur donner un statut équivalent aux maîtres-formateurs du primaire. Cela renforcerait le lien entre CRP et collèges, et permettrait la continuité entre les deux.

La pré-professionnalisation:

L'expérience thailandaise, où chaque collège a un atelier avec des objectifs de pré-professionnalisation, a été souvent citée.
L'expérience vietnamienne a également été citée: elle semble être similaire à l'expérience thailandaise (mais plus orientée vers l'agriculture).
Les directeurs pensent qu'effectivement les collèges ne préparent pas du tout les élèves à l'entrée dans des écoles professionnelles / techniques, et que ce devrait être un de ses rôles.
Certains directeurs pensent que la première étape de la pré-professionnalisation devrait être de donner les moyens aux professeurs de pratiquer des expériences dans leur classe (biologie, physique, chimie) afin que les élèves acquièrent certaines aptitudes et compétences en termes de savoir-faire.
Enfin, nous avons découvert une expérience de pré-professionnalisation à Phnom penh qui fait l'objet d'un chapitre particulier.

ENTRETIEN AVEC LES DIRECTEURS DE CRP
SYNTHÈSE

La gestion des CRP:

Pour toutes les questions administratives, le CRP rend compte à la direction provinciale (personnels, finance & administration) La DPE a même la responsabilité des nominations, mutations, etc.
Pour les questions techniques et pédagogiques, les CRP dépendent directement du Département de la Formation, d'où ils recoivent les programmes et les instructions.
De l'avis de la plupart des directeurs, c'est un problème, car il est difficile de mettre en place une formation de qualité quand les responsabilités sont dissociées de la sorte.
De plus, ils se plaignent souvent de n'être que peu consultés pour certaines décisions (par exemple: recrutement, programmes,...)

Le travail des enseignants est supervisé par les directeurs adjoints qui inspectent et évaluent les formateurs en cours. Ils sont également responsables de l'évaluation des stagiaires pour leur titularisation (les stagiaires enseignent dans les CRP !)

La qualité de la formation:

Le programme de formation
Les directeurs se plaignent en général de programmes inadaptés et trop lourds. Ils attendent beaucoup du nouveau curriculum en cours de rédaction, et espèrent qu'il sera plus adapté aux nouveaux manuels.

formation des formateurs
Il n'existe pas de plan de formation continue des formateurs des CRP. Les principales formations ayant eu lieu récemment sont celles de France-Liberté (surtout une remise à niveau dans les contenus) et l'Orientation pour les Nouveaux Manuels.
C'est souvent les anciens professeurs, les plus expérimentés, qui conseillent leurs jeunes collègues pendant les réunions techniques.
Les formateurs ont très rarement bénéficié d'une formation spécifique à leur rôle de formateur.
Les directeurs ne sont pas d'accord sur la qualité de leurs formateurs: si tous s'accordent à dire que les plus jeunes ont des connaissances académiques faibles, certains pensent que leurs connaissances pedagogiques sont plutôt faibles, tandis que d'autres pensent que si les connaissances sont acquises, c'est la mise en pratique qui fait défaut pour de multiples raisons (manque de temps, de matériel, de documents, etc.)
Tous pensent que la formation à l'utilisation des nouveaux manuels devrait être appronfondie.

La qualité
La plupart des directeurs affirment que la formation ne répond pas aux besoins des stagiaires. Les formateurs sont trop jeunes et inexpérimentés et de plus n'ont pas les moyens de mettre en place un enseignement de qualité:

- leur salaire est insuffisant, ils travaillent donc ailleurs et donc,
- ils n'ont pas le temps de préparer leurs cours
- il n'y a pas les moyens matériels et financiers de travailler correctement
- il n'y a pas de budget de fonctionnement

La relation théorie-pratique:
Il n'y a pas de collèges d'application où les stagiaires peuvent aller pratiquer ou observer. Les directeurs en ressentent le besoin urgent. Sinon, disent-ils, il est impossible d'envoyer les élèves dans les classes. (même si cela se fait parfois) Ils ajoutent que dans ce cas, il faudra associer tous les professeurs-formateurs aux activités de recyclage des formateurs des CRP.
Certains directeurs pensent cependant que la formation telle qu'elle est articulée est assez pratique (entrainement pédagogique et stages pratiques)

Priorités pour améliorer la qualité de la formation:

- attirer les meilleurs professeurs et les garder en leur donnant l'accès à des activités rémunératrices (cours supplémentaires, examens, primes, ...) car si il existe déjà des recommandations du ministère sur les critères de sélection des formateurs, elles sont inapplicables.
- fournir de la documentation pédagogique aux bibliothèques
- une formation plus pratique, plus orientée sur la méthodologie de l'enseignement, et donc

- des collèges d'application institutionnalisés
- une formation continue des formateurs bien structurée
- plus de matériel
- des ateliers où les élèves puissent fabriquer du matériel didactique
- un budget de fonctionnement (dans tous les établissements, les élèves contribuent d'une manière ou d'une autre au budget)
- améliorer les conditions de vie des élèves

ENTRETIENS AVEC LES ÉLÈVES
SYNTHÈSE

Niveau de vie:
Les élèves se plaignent énormément de leurs conditions de vie:
- en général, il n'y a pas d'eau ni d'électricité et quand il y en a, ce sont souvent les élèves qui doivent payer les factures.
- les toilettes sont souvent inutilisables
- beaucoup de temps consacré au tâches quotidiennes (collecte de l'eau, cuisine, nettoyage, etc.)
- pas de cuisines
- pas assez de places dans les dortoirs pour accueillir tous les stagiaires des autres provinces
- sécurité: des dortoirs pas assez sûrs (portes et fenêtres qui ne ferment pas) obligent les jeunes filles à louer des chambres en ville.
- bourses très insuffisantes pour vivre

Conditions de travail:
Les élèves se plaignent du manque de matériel:
- souvent, ils n'ont même pas assez de manuels scolaires à leur disposition
- il n'y a pas ou peu de matériel en physique, biologie, etc. pour les expériences
- il n'y a pas de documents à la bibliothèque: parfois même pas un dictionnaire

La formation:
Elle n'est pas assez pratique. Parmi les élèves de 2ème année interrogés, aucun n'avait été dans une classe de collège depuis son entrée au CRP.
Certains professeurs ne sont pas assez compétents: ils manquent d'expérience. D'autre enseignent plusieurs matières sans en avoir la compétence.
Ils n'ont pas assez de connaissances des nouvelles pédagogies
Certains pensent avoir assez de connaissances pédagogiques: ces derniers, à la question: que signifie "méthodes centrée sur l'élève"? répondent: "c'est quand on met les élèves en groupes et qu'ils vont écrire le résultat des questions au tableau!" *(Ce qui montre tout de même les limites de la réflexion sur le sujet.NdR)*

L'amélioration de la formation:
Elle passe, d'après les élèves, par:

- des formateurs d'un meilleur niveau
- des bourses plus importantes
- des conditions de vie correctes pour les internes
- plus de matériel didactique (cartes, matériel pour expériences, etc.)
- une formation plus pratique
- plus de documents à la bibliothèque (dictionnaires, lexiques, documents pédagogiques, manuels scolaires & guides du professeur, etc.)

La Pré-Professionnalisation

Les termes de références de la mission stipulaient que notre recherche s'inscrivait dans le cadre de l'objectif de "pré-professionnalisation" de l'enseignement de base du MEJS. Nous avons donc essayé de définir la pré-professionnalisation et ses objectifs en lisant les rapports du PASEC qui s'y rapportent, les instructions ministérielles en la matière, et en rencontrant les personnes travaillant sur le sujet, en l'occurence Mme Yin Vantha, directrice de l'institut de recherche, et M. Poth, expert PASEC.

Diverses définitions et recommandations:

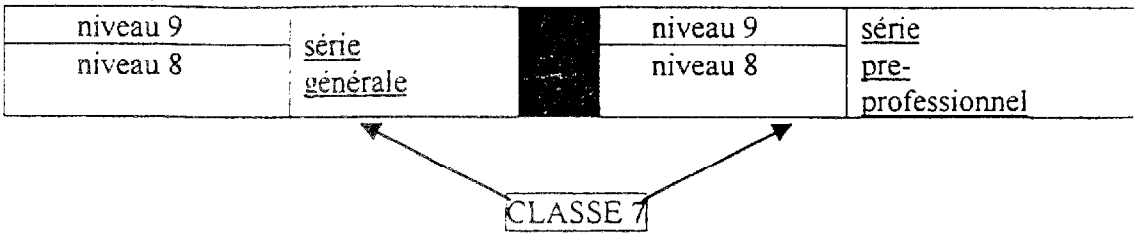
I. M. Poth définit la pré-professionnalisation comme l'ensemble des actions éducatives qui doivent préparer les élèves à la vie professionnelle active.

II. in Rapport de l'action A55 (PASEC)

Définition(page 1)

Une orientation de l'enseignement général sur la vie active, pour mieux préparer les jeunes à s'adapter aux exigences du monde professionnel en ouvrant l'enseignement de base sur le milieu et la vie.

Recommendations (page 14)



III- in Rapport de l'action A54 (PASEC)

Définition:

La familiarisation avec des concepts, des outils et des gestes basiques conduisant à rendre plus aisé l'apprentissage ultérieur d'un ensemble de métiers. Le terme comprend également la sensibilisation à une mentalité (éthique professionnelle) et la familiarisation avec des attitudes et comportements liés au bon exercice d'un métier.

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Recommandations

En page 31, il est préconisé l'introduction de 2 filières: une "normale", une pré-professionnelle. Un examen en fin de niveau 6 permettrait l'orientation des élèves dans un des 2 cursus. (!)
Plus loin, en page 32, "Il serait souhaitable de mettre en oeuvre:
- une réelle pédagogie d'appropriation des acquis de base (niveau 7) (?)
- une prédétermination professionnelle pour les niveaux 8 & 9" (?)

Page 33, on évoque de réels apprentissages professionnels pour l'année 9

IV- Dans le rapport de M Gilles Fontaine (consultant PASEC), la pré-professionnalisation est assimilée à l'introduction d'une option de technologie dans les programmes.

V- Dans le Strategic Plan for Teaching Services Development (MEJS) de mai 1997,

au chapitre 2.5
Préparation à l'entrée dans le monde du travail au niveau 9.
Le gouvernement est conscient que, en élargissant l'accès au secondaire, une population croissante rejoindra le monde du travail au niveau 9. Un programme "alternatif" au curriculum académique traditionnel sera developpé, alternative qui sera plus pratique, préparant les élèves au monde du travail, en leur donnant les outils pour "tracer leur propre route dans la vie". Un nouveau curriculum sera donc developpé pour cette filière majeure à court ou moyen terme, et les professeurs formés pour le rendre effectif.

au chapitre 3.2:
Renforcement institutionnel des EPP/ERP:
Strategic Training Alliance for Technical & Vocational Education & Training

Dans la perspective de la diversification des programmes, le gouvernement prévoit un rôle majeur des EPP/ERP pour pourvoir et accréditer des formateurs en Education Technique et Professionnelle, et ce en partenariat avec le secteur privé local et en collaboration avec le *National Training Board* . De plus, quand les matières techniques et professionnelles seront introduites dans l'éducation secondaire générale, ce concept de partenariat devra être étendu à la préparation des professeurs du secondaire pour les sujets requis (y-compris les formations sur le lieu de travail)
En relation avec l'introduction des programmes techniques et professionnels, il est prévu au sein des EPP/ERP, la mise en place d'activités de type "petites entreprises" génératrices de profits, en relation avec les formations offertes. Bien que l'objectif premier de ces activités soit la formation, les profits pourront bénéficier aux EPP/ERP

CONCLUSION

Par ailleurs, les autres interlocuteurs du ministère, quand ils connaissent l'objectif de préprofessionnalisation, en ont une idée très floue, et on englobe sous ce terme des choses diverses et variées. **Il semble donc urgent que le Ministère de l'Éducation définisse précisément ce qui est entendu par pré-professionnalisation de l'enseignement de base, les différentes options pour atteindre ces objectifs, et définisse un calendrier de mise en place.** Il semble en effet que des initiatives prises en ce domaine anticipent sur la définition des objectifs généraux de ce concept.

D'autre part, il faudrait commencer à amorcer une réflexion sur la pré-professionnalisation au niveau des CRP. Les rares pays ayant réussi ce type de réforme (comme la Thailande par exemple), sont ceux qui ont réussi à en faire comprendre les besoins et les objectifs par les enseignants, les élèves et les parents, avant de s'y engager. Il semble, d'après nos entretiens avec les enseignants des CRP, que ces derniers sont très loins de comprendre l'objet de cette réforme.

Enfin, nous avons découvert à la fin de notre mission que la pré-professionnalisation existe déjà dans certains établissement de Phnom Penh (voir rapport de visite en annexe), et il nous semble que la première chose à faire serait de tirer les lecons de cette expérience qui semble être une réussite, et qui répond tout à fait aux objectifs définis dans le strategic plan du MEJS cité plus haut: "... la mise en place d'activités de type "petites entreprises" génératrices de profits, en relation avec les formations offertes. Bien que l'objectif premier de ces activités soit la formation, les profits pourront bénéficier aux EPP/ERP."
L'expérience de Phnom Penh prouve que cela peut fonctionner, avec des investissements importants (matériels & en ressources humaines) et un suivi très serré pendant les premières années.

Ce qui pourrait être fait dans les CRP:

Introduction:

(i) Certaines compétences de base nécessaires à l'apprentissage d'un métier devraient être normalement développées dans le cadre scolaire classique:

- la lecture, l'écriture, l'arithmétique, l'expression orale, etc.
- la capacité à réfléchir de manière créative, à résoudre des problèmes, à prendre des décisions, à raisonner logiquement, etc.
- les qualités personnelles telles que le sens des responsabilités, l'intégrité, la morale, l'indépendance, la sociabilité, etc.

(ii) Par ailleurs, d'autres compétences plus personnelles sont aussi importantes pour préparer à l'apprentissage d'un métier:

- la gestion d'un budget
- la gestion de son temps
- l'entretien de son matériel, de ses outils
- les capacités relationnelles: travail en équipe, négocier, la notion de service, etc.
- l a capacité à traiter et à hiérarchiser les informations
- l'esprit d'entreprise
- etc.

(iii) Enfin, il faut que les élèves soient informés des possibilités de formation professionnelle et d'emploi de leur région/ province.

propositions d'activités pour répondre à l'objectif de pré-professionnalisation des programmes:

Le PASEC pourrait commencer par supporter:

1. Un séminaire national qui aurait pour objectif de définir la pré-professionnalisation et ses objectifs
2. Des séminaires dans les CRP pour sensibiliser les enseignants à ce concept. Au cours de ces séminaires, on pourrait également commencer à:
   - identifier les principales professions du marché du travail local
   - développer des listes de compétences pour les métiers les plus courants
   - définir des objectifs pour chaque liste de compétences
   - identifier ce qui existe déjà dans le curriculum qui réponde à ces objectifs
   - identifier les manques dans le curriculum
   - définir les types d'activités possibles en relation avec le curriculum et les compétences à développer
3. Un recyclage des formateurs pour qu'ils adaptent leur enseignement aux exigences formulées en (i) et (ii)
4. Une analyse et une évaluation de l'expérience de pré-professionnalisation à Phnom Penh afin d'envisager sa réplique dans le cadre des projets pilotes (collège d'application) Cependant, il conviendrait sans doute d'impliquer des partenaires qui travaillerait à plus long terme que le PASEC pour cette mise en place, car ce type d'entreprise demande un suivi long, au delà du terme du programme.
5. Une formation de certains des personnels administratifs des CRP ou des collèges d'application à la fonction de conseiller en orientation auprès des élèves. (projet pilote). Cette formation serait en alternance, ce qui permettrait à ces personnels de commencer leur activité dès la première année.
6. Enfin il conviendra d'encourager les échanges entre les CRP pour créer une émulation entre les établissements.

Document of
The World Bank

Report No.

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF US$5 MILLION EQUIVALENT

TO THE

ROYAL KINGDOM OF CAMBODIA

FOR

EDUCATION QUALITY IMPROVEMENT PROGRAM

MARCH 17, 1999

EASHD
Southeast Asia and Mongolia Country Unit
East Asia and Pacific Regional Office

CURRENCY EQUIVALENTS

(Exchange Rate Effective)

Currency Unit = LC
LC = US$
US$5 = LC

FISCAL YEAR

ABBREVIATIONS AND ACRONYMS

Vice President: Jean-Michel Severino
Country Manager/Director: Ngozi Okonjo-Iweala
Sector Manager/Director: Alan Ruby
Team Leader: Christopher Thomas

Royal Kingdom of Cambodia
Education Quality Improvement Program

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Map

Royal Kingdom of Cambodia
Education Quality Improvement Program

Project Appraisal Document

East Asia and Pacific Regional Office
Southeast Asia and Mongolia Country Unit

Date: February 18, 1999
Country Manager/Director: Ngozi Okonjo-Iweala
Project ID: KH-PE-
Lending Instrument: Learning and Innovation Loan (LIL)
Team Leader: Christopher Thomas
Sector Manager/Director: Alan Ruby
Sector: Human Development
Theme(s): Education
Poverty Targeted Intervention: [ ] Yes [x] No

Project Financing Data

[ ] Loan [x] Credit [ ] Grant [ ] Guarantee [ ] Other [Specify]

For Loans/Credits/Others:

Amount (US$m): $5.0
Proposed terms: [x] To be defined [ ] Multicurrency [ ] Single currency
[ ] Standard [ ] Fixed [ ] LIBOR-based
Variable
Grace period (years):
Years to maturity:
Commitment fee: %
Service charge: %
Front-end fee on Bank loan: 1.0%

Financing plan: [x] To be defined

Source	Local	Foreign	Total
Government			
IBRD			
IDA			
Other (specify)			
Total:	0	0	0

Borrower:
Guarantor:
Responsible agency:

Estimated disbursements (Bank FY/US$M):

FY					
Annual					
Cumulative					

Project implementation period:
Expected effectiveness date: **Expected closing date:**

OCS LIL PAD Form: January 5, 1998

Implementing agency: Ministry of Education, Youth and Sports
Contact person: Ou Eng
Address: Project Preparation Unit, 169 Norodom Blvd., Phonm Penh, Cambodia
Tel: (855 12) 804-183 **Fax:** (855 23) 210-349 **E-mail:** ppu@forum.org.kh

A: Project Development Objective

1. Project development objective: (see Annex 1)

The objective of the project is to develop a demonstration model, shown to be effective for extension to other provinces, of a participatory approach to school quality improvement and performance based resource management.

2. Key performance indicators: (see Annex 1)

By the end of the project:

- Schools participating in the program should increasingly demonstrate characteristics of effective schools (see Annex XX), and ultimately improvements in student enrollment, attendance, student flows, and achievement.

- Government should draw lessons from practice for policies to improve teacher motivation, lower the cost of education, reduce repetition and dropout, and increase the time available for learning.

B: Strategic Context

1. Sector-related Country Assistance Strategy (CAS) goal supported by the project: (see Annex 1)

Document number: 16255-KH Date of latest CAS discussion: 28 January 1997

The project supports the CAS objective to strengthen the human resource base by improving the quality of education. This is the first Bank project in the education sector in Cambodia, and we hope to use it to:

a) demonstrate how to build an effective school system to lay the basis for a sustained, holistic renewal
b) engage in parallel dialogue about policy development with government and donors
c) build capacity at the central ministry and provincial levels and evaluate the school based initiatives

In the longer term, we hope to:

d) expand the project in basic education across a number of provinces, engaging an increasing number of other donors
e) move up to secondary, repeating steps a-d
f) move down to kindergarten and pre-school

2. Main sector issues and Government strategy:

The absolute devastation of the education system in the 1970s resulted in lasting problems of capacity, organization, and finance for Cambodia's educational institutions. The issues span all sub-sectors - from primary education to higher education – and are well documented in the Asia Development Bank's 1996 Education Sector Strategy[1], the report of the National Higher Education Task Force[2], and the report on the evaluation of UNICEF/Sida support for Basic Education in Cambodia.[3]

Challenges within the primary education system are illustrative of the whole:

Teachers and teaching working conditions. Teacher skills are weak, with 91% of teachers educated only to the at the level of lower secondary school or less. There are 47 pupils per teacher and 60 pupils per classroom. Teacher salaries are far below a living wage, forcing teachers to spend time working outside

[1] Asian Development Bank. Cambodia: Education Sector Strategy. Manila: Asian Development Bank, 1996.
[2] National Higher Education Task Force. National Action Plan, 15 April 1997.
[3] Wheeler, Christopher and Oleg Popov. Synthesis Report on the Joint Evaluation of UNICEF/Sida Support for Basic Education in Cambodia. July 30, 1998.

the school to supplement their income, rather than devoting time to school activities or professional development.

Repetition and dropout. Repetition and dropout are so high that it currently takes 19 student years to produce a primary school graduate. Repetition rates generally decline through out the primary cycle (from 41% in grade 1 to 8% in grade 5), while dropout rates increase (from 12% to 21% in the same grades).

Textbooks and materials. While significant progress has been made in developing and printing textbooks and teachers guides, large numbers of schools still face shortages (only 58% of schools have grade 1 teachers guides and 34% of schools have grade 2 teachers guides). Schools and teachers have no official budget for materials.

Time for learning. It is estimated that under the best of circumstances Cambodian children receive only between 450 and 650 hours of instruction per year, well below the international norm of 900 hours.

Costs and financing. It is common practice for schools to seek contributions from students and communities in order to cope with the shortage of funds for development, materials, and salaries. However, the lack of a clear and transparent framework for collecting, accounting for, and spending local resources works to the disadvantage of the poorest members of the community and raises questions about the efficiency of resource management.

Management and administration. Management and administration remain very highly centralized despite considerable progress over the last decade in building capacity at the sub-national level. Weak linkages and rigidities in the system make it very difficult for capable local educators to pursue creative solutions to problems of timetabling, curriculum, teaching strategies, training, and materials.

Donor coordination. There are many donors to education, however the sum total of the programs does not add up to a comprehensive framework for development of the sector, or even a complete framework of support for effective schools at the primary level. Contributions are overwhelmingly focused on inputs (buildings and administration) and much less on issues related to school climate or teaching and learning processes (see Annex XX).

The Government's global strategy, as reflected in its submission to the February 1999 Consultative Group meeting, is to: (i) *strengthen the resource base* for education by increasing the share of government expenditure on education, encouraging private contributions, and attracting more donor aid; (ii) *build capacity and enhance quality* by spending on teacher training, curriculum development, strengthening of planning and management skills, institutional restructuring and development of cluster schools and resource centers. At the primary school level the MoEYS has listed 10 priorities, including among others, improving the living conditions of teachers, promoting student centered learning, expanding the school day to 6 hours, and forging closer links between the curriculum and community development needs.

3. Learning and development issues to be addressed by the project:

The Government's 10 priorities for primary education represent a step in the right direction, but in themselves fall short of what international research suggests what might be needed to make schools effective[1] (see Annex XX). The challenge during the course of this project will be to expand the Government's vision of effective schools by drawing on the best domestic practice and international knowledge. A second challenge is to develop an effective implementation strategy. Most of the government proposals are for large centrally managed schemes. We would argue that a more participatory strategy – one that seeks out partners at the school, community and local adminstrative levels – would be an more effective in achieving change at the school level than the more centralized strategies currently being practiced. In this sense, the model of development proposed with this LIL is a major innovation in the way affairs are currently managed in the MoEYS.

[1] For a synthesis of effective schools research see: Heneveld, Ward and Helen Craig. Schools Count. Washington: World Bank, 1996.

4. Learning and innovation expectations:

[ ] Economic [ ] Financial [ ] Technical [x] Institutional
[ ] Social [ ] Environmental [x] Participation [ ] Other

The model of a participatory approach to school quality improvement and performance based resource management that the LIL aims to develop should introduce the MoEYS to a more adaptive and less mechanistic approach to management. One can compare and contrast these two management styles in terms of how they deal with leadership and authority, communications, monitoring and evaluation, and staffing.[5] By modeling some of the major elements of an adaptive approach in the LIL we hope to create an opportunity for the MoEYS to experiment with a new, more participatory approach to management and to improve the effectiveness of its operations.

[5] See: Rondinelli, Denis, John Middleton and Adriaan Verspoor. Planning Education Reforms in Developing Countries: The Contingency Approach. Duke Press Policy Studies: Durham and London, 1990.

Mechanistic and Adaptive Management Compared		
	Mechanistic Management	**Adaptive Management**
Leadership and Authority		
Authority	Centralized	Deconcentrated or decentralized
Basis of authority	Position, information	Status, technical knowledge
Use of formal rules	Very high	Moderate or low
Leadership style	Command	Collegial, participatory
Communications		
Flow of communications	Top-down	Top-down and interactive, with external input
Managerial priority	Very low	Moderate-high
Content	Directives and inquiries	Professional guidance, inquiries, evaluation
Purpose	Control	Assessment, learning, adjustment, redirection
Style	Formal and consultative	Formal, informal, and interactive
Orientation toward environment	Closed	Open, client orientated
Coordination		
Form of coordination	Command	Negotiated authority, plan, facilitation, mutual adjustment
Instruments of exchange	Allocated budget	Negotiated budget, goal attainment, information, prestige
Need for commitment	Very low	High
Use of persuasion	Very low	High
Use of incentives	Very low	High
Importance of "boundary spanners"	Very low	High
Monitoring, Control, and Evaluation		
Purpose of monitoring	Control	Improve performance
Control	Ex-ante	Mixed ex-ante and ex-post
Focus	Work, outputs	Targets, performance
Use of top-down orders	Very high	Moderate-low
Use of job descriptions	Very detailed, emphasize activities	Moderately detailed, emphasize activities and objectives
Use of professional self-control	Very low	Moderately high
Use of persuasion and advice	Very low	Moderately high
Use of performance appraisals	Top-down, non-participatory	Selective participation, peer review, interactive
Staffing		
Basis of jobs	Functional specialization	Functional specialization, objectives
Use of professional development	Very low	Moderately high
Incentives	Limited, monetary	Monetary, professional
Employee motivation	Job security, loyalty to organization	Loyalty to organization, professional status, service to beneficiaries
Use of employee self control	Very low	Moderate
Performance measures	Conformance to rules	Rules and performance

C: Project Description Summary

1. Project components: (see Annex 2 for a detailed description and Annex 3 for a detailed cost breakdown)

Component	Sector	Indicative Costs (US$M)	% of Total	Bank-financing (US$M)	% of Bank-financing
Quality Improvement Grants Program: (i) staff and train provincial animator services to develop school clusters; (ii) grants to school clusters	EE				
Key Functions: strengthen key functions in the MoEYS: (i) to support better school and cluster level decision making; (ii) to support participatory decision making bodies at all levels of the education system; and (iii) to empower more flexible decision making	EE				
Policy Studies	EE				
Total		0	0	0	0
Total Project Costs					
Interest during construction					
Front-end fee					
Total Financing Required					

2. Institutional and implementation arrangements:

To be detailed at appraisal.

3. Monitoring and evaluation arrangements:

The learning objective of the loan, as stated above, is to develop a demonstration model for school quality improvement and performance based resource management. The intended goals are that:

- Schools participating in the program should increasingly demonstrate characteristics of effective schools, and ultimately improvements in student enrollment, attendance, student flows, and achievement.

- Government should draw lessons from practice for policies to improve teacher motivation, lower the cost of education, reduce repetition and dropout, and increase the time available for learning.

The three questions for evaluation that flow from these goals and objectives are:

Did the grants result in the desired outputs and outcomes at the school level? The project would will have a information system designed to answer this question, which draws information from proposals and animators reports and allows one to infer a relationship between inputs and outcomes (See Annex XX). This question will be the focus of on-going monitoring and evaluation during the project implementation period.

Were policies better informed as a result of learning from practice? Were animators able to capture lessons from practice and communicate these to policy makers? Did the government's "vision" of effective schools expand based on experience with the program? Did learning contribute to new policy directions?

Did the grants process function as intended and achieve the desired results? Specifically, did money follow ideas, did ideas lead to results, did putting resources in the hands of the school lead to better supply responses (e.g. increased "consumer" orientation of training institutions), did policy change based on practice? Did the process build capacity and generate enthusiasm at the school level?

The final two questions will be the subject of an evaluation at project mid-term and completion.

In addition, the project implementation unit will be responsible for reporting to the MoEYS leadership and the World Bank on issues related to the management and implementation progress of the project. Reports should be submitted quarterly.

D: Project Rationale:
(This section is not to be completed in a LIL PAD)

E: Summary Project Analysis: (detailed assessments for those analyses applicable to LIL are in the project file, see Annex 8)

1. Economic: (supported by Annex 4)

[ ] Cost-Benefit Analysis : NPV=US$ million; ERR= %
[ ] Cost Effectiveness Analysis
[x] Other (specify)

The learning objective of the loan – development of a demonstration model for school quality improvement and performance based resource management – is more amenable to institutional or qualitative evaluation than to economic analysis.

Cost-benefit analysis would require an evaluation according to the costs of the program and benefits in monetary terms. The benefits of this project – with the possible exception of improved student flows – are difficult to value in monetary terms. (Other benefits include improved enrollment, attendance, and achievement of students, improved policy, and as an externality, the improved capacity of school leaders to plan and organize their development.)

Cost-effectiveness analysis would require evaluation of alternatives according to their costs and effects with regard to producing some outcome or set of outcomes. In this case one could theoretically weigh the costs of this demonstration model against the costs of an alternative program with reference to a common set of outcomes (enrollment, attendance, student flow, and achievement). The problem in the case of Cambodia is the identification of a alternative program for which to do an analysis. The logical control group would be those schools in the test province which did not participate in the demonstration program and received only the regular government support. However, because all schools receive government funding and because the grants process is open and competitive, it is impossible to construct a random control group.

Cost-utility analysis has less stringent data requirements and can accommodate the large number of potential outcomes in this project. Assessments are much more subjective and may not be reproduced by different evaluators, but may nevertheless be instructive. If records are kept carefully during the LIL period, such an evaluation may be possible at the end of the project. See Annex 4 for the basic framework for a cost-utility analysis of this project.

Cost-Feasibility analysis would involve a much simpler estimation of costs of doing the project in relation to the budget available and would be important for determining the size and sustainability of the program. (It would not provide an evaluation of alternative programs). Thus, if the cost of the Quality Improvement Program – however beneficial it may prove to be – exceeds the budget available, there is no point in doing any further analysis. The Quality Improvement Program is currently made "affordable" for the Government as a result of World Bank financing. In the long term, increased spending on education for such programs would have to be financed from Government sources. The Government has pledged to significantly increase resources available for human development programs from less than 5% of the GDP as a "peace dividend" grows with the demobilization of military units and as revenue collection improves. How much and how fast the budget will increase is a matter of debate: the Government's track record of fulfilling similar pledges in the past is not good.

2. Financial: (for LIL, enter data if applicable or 'Not Applicable. See also Annex 5) NPV=US$ Million; FRR= %

Not Applicable

3. Technical:

The project's principle technical challenge is to align the vision of effective schools in Cambodia with the best of international and domestic practice. This "vision" is important because it helps to define the work of the animators and it helps to inform policy directions (See Annex 2: Detailed Project Description). As noted above (and in Annex XX), the Government's 10 priorities for primary education represent a step in the right direction, but in themselves fall short of what international research suggests what might be needed to make schools effective. The impressive performance of the pilot program for school quality improvement grants run under a PHRD grant makes the team confident that the participatory process and dialogue generated as a result of the project will considerably advance technical standards. Key to the learning process will be the use of technical assistance to inject new ideas into the system, careful monitoring and evaluation of grants by the animator service to determine what works to improve schools, and transmission and analysis of information by key committees such as the Provinicial Grants Management Committee, the National Committee for School Effectiveness, and the Technical Advisory Committee.

4. Institutional:

a. Executing agencies:
b. Project management:

To be completed at appraisal

5. Social:

There was considerable debate during identification about project targeting. The Government initially proposed a project which would direct resources toward areas which have to date received little else in the way of donor financing. It discussed with the identification team: (a) the alternative of directing resources, especially in the experimental LIL phase, to areas where some demonstrated level of capacity to implement the project exists and where the project could be regularly monitored; and (b) the need to focus the small amount of money on a few objectives in a relatively concentrated area.

The Government and the Bank agreed that under the initial IDA credit LIL project activities would be concentrated in just one to three provinces that have already, usually with donor support, developed school clusters. Subsequent loans would permit expansion to other provinces, building on the experience acquired in this first LIL. The program would thus expand out from an area near to Phnom Penh, from which:

- The program can be monitored closely as it develops and works out procedures
- TA can be easily provided for training, until such a time that core services develop to stage where supply is available in more remote provinces

The program would be expanded into provinces based on the following criteria:

- Accessibility for monitoring and provision of TA
- Availability of potential animators
- Security
- Capacity of clusters
- Management capacity
- Expressed interest in participating in the program
- Proximity (e.g. to allow efficient provision of animator and TA services and to allow clusters to learn from one another)

Within the selected provinces, project support would go to those school clusters that manage to put forward proposals determined to be feasible and to have a reasonable chance of success. This approach is likely to favor those schools and communities that have already some capacity for taking initiatives in the development of proposals, and thus may sharpen differences in capacity and resources with less experienced schools and communities. To lessen this effect, the project would, at the same time, strengthen the Ministry's provincial capacity to provide technical assistance to all school clusters in the participating provinces to help them to develop and execute school improvement initiatives. This would allow interested schools and communities that do not qualify for financial support in the first stage to be eligible in a subsequent stage. Components that strengthen central services would also benefit a wide range of schools.

6. Environmental assessment: Environmental Category [ ] A [ ] B [x] C

The project is not expected to have any significant effect on the environment.

7. Participatory approach:

a. Primary beneficiaries and other affected groups:

The primary beneficiaries of the projects will be students and their families, teachers, and school managers. The mechanisms for participation in this project involve these beneficiaries as collaborators in developing quality improvement grants.

b. Other key stakeholders:

Other key stakeholders include MoEYS staff at the national, provincial and district level, NGOs and donors. MoEYS staff collaborate in designing and assessing grants, while NGOs and other donors play a key consultative role through the Technical Advisory Committee and the National Committee on School Effectiveness.

F: Sustainability and Risks

1. Sustainability:

(This section is not to be completed in a LIL PAD)

2. Critical Risks: (reflecting assumptions in the fourth column of Annex 1)

Risk	Risk Rating	Risk Minimization Measure
From Outputs to Objective		
Assumes the availability of a pool of qualified people who can be trained to become effective animators in a relatively short period of time.	S	The search for qualified staff will be broad, including non-government employees if necessary.
Assumes remuneration at such a level that key staff are motivated to perform to the best of their abilities.	H	Following the practice of most development agencies, the project will pay supplements to key staff, according to regulations set forth by the Bank and the MoF.
Assumes availability of goods and services for schools to access or purchase (e.g. training, books, materials)	M	The provincial grants committee should adjust the number of proposals approved based on availability of goods and services and the ability of the province and private suppliers to organize delivery.
Assumes that constraints on improving quality at the school level can be overcome through a combination of participatory processes at the cluster level and guidance and funding from the MoEYS.	M	The Bank will engage in a parallel dialogue with Government on key constraints to improving quality at the national level.
The proposal assumes a willingness among key actors to support, what for the MoEYS, is a radically new change strategy, replacing a institutional culture which demands rigid conformity with one that tolerates and promotes diversity.	S	There has been frequent turnover of senior staff in the MoEYS. The project has tried to anchor operations at the provincial level where staff turnover is slower.
Assumes a willingness to systematically gather lessons from practice and to use findings to inform policy. There may be occasional conflicts with bureaucratic or political decision making processes.	N	Lessons should be presented in an easily accessible and readable format, and should be the subject of structured discussions between policy makers and project staff and between Bank staff and MoEYS staff during supervision.
Overall Risk Rating	M/S	

Risk Rating - H (High Risk), S (Substantial Risk), M (Modest Risk), N (Negligible or Low Risk)

3. Possible Controversial Aspects:

G: Main Loan Conditions

1. Effectiveness Conditions:

- The National Schools Effectiveness and Technical Advisory Committees are established.
- A financial management system acceptable to the Bank is established and functioning.
- An operational manual for the Quality Improvement Grants Program is approved by the Bank.

2. Other : (classify according to covenant types used in the Legal Agreements)

H: Readiness for Implementation

[ ] 1. a) The engineering design documents for the first year's activities are complete and ready for the start of project implementation.
[x] 1. b) Not applicable.

[ ] 2. The procurement documents for the first six month's activities are complete and ready for the start of project implementation; and a framework for agreement on standard bidding documents that will be used for ongoing procurement during the project has been established.
[ ] 3. The LIL's implementation plan has been appraised and found to be realistic and of satisfactory quality.
[ ] 4. The following items are lacking and are discussed under loan conditions (Section G):

I: Compliance with Bank Policies

[ ] 1. This project complies with all applicable Bank policies.
[ ] 2. The following exceptions to Bank policies are recommended for approval. The project complies with all other applicable Bank policies.

[signature]
Team Leader: Christopher Thomas

[signature]
Sector Manager/Director: Alan Ruby

[signature]
Country Manager/Director: Ngozi Okonjo-Iweala

Annex 1: Project Design Summary

Royal Kingdom of Cambodia: Education Quality Improvement Program

Hierarchy of Objectives	Key Performance Indicators	Monitoring and Evaluation	Critical Assumptions
Sector-related CAS Goal: Strengthen the human resource base by improving the quality of education. --- **Follow-on Development Objective:** Build a more adaptive management structure in the MoEYS in which the Ministry: (i) forges stronger partnerships at the local level to improve school operations; (ii) manages resources according to performance; (iii) increases flexibility in decision making by devolving authority to the provincial and school level; and; (iv) uses lessons from practice to improve policy.	**Sector Indicators:** Greater educational achievement of the school age population, evidenced by improved enrollment and flow statistics in basic education and improved achievement scores.	**Sector / Country Reports:** EMIS and examinations unit data.	**(from Goal to Bank Mission)** The Bank's mission is to reduce poverty. This project will contribute to this goal to the extent that: (i) improving the quality of education improves productivity; (ii) improving productivity results in higher earnings and ultimately to a reduction in poverty; (iii) improving the quality of education contributes to better health, reduced rates of population growth, and more even income distribution, and consequently to a reduction in poverty; (iv) investments in basic education have particularly high social returns.
Project Development Objective: Develop a demonstration model, shown to be effective for extension to other provinces, of a participatory approach to school quality improvement through performance based resource management.	**Outcome / Impact Indicators:** Schools participating in the program should increasingly demonstrate the characteristics of effective schools (See Table XX) Clusters should begin to realize improvements in student enrollment, attendance, student flows, and achievement. Government draws lessons from practice for policies to improve teacher motivation, lower the cost of education, reduce repetition and dropout, and increase the time available for learning.	**Project Reports:** Project monitoring reports of outputs and outcomes, making use of available EMIS and examinations data. Mid-term and completion evaluations, drawing on MoEYS policy documents.	**(from Objective to Goal)** The philosophy behind the project implies a cultural shift in the relationship between the MoEYS and school clusters. It encourages the MoEYS to be more "adaptive" and less "mechanistic" in its management style. It also encourages the MoEYS to support bottom-up, participatory program implementation as opposed to more top-down, command style program implementation.

Output from each component: The primary outputs of the LIL will be (i) an assessment of the viability of a participatory approach to school quality improvement and (ii) lessons from practice for key policy issues.	**Output Indicators:**	**Project Reports:** Project midterm and completion evaluations	**(from Outputs to Objective)**
Effective extension service	Skills and work habits: A group of resourceful and effective animators working to support quality improvement programs in the majority of clusters in participating provinces Processes: Animators learn from their work and use lessons to further develop their animation processes and to inform policy makers.	Evaluations of the skills of animators and the quality of their work by lead TA, MoEYS management and Technical Advisory Committee.	Assumes the availability of a pool of qualified people who can be trained to become effective animators in a relatively short period of time. Assumes remuneration at such a level that key staff are motivated to perform to the best of their abilities.
Schools have financial and human resources needed to implement quality improvement programs.	Outputs: School clusters participating in the program demonstrate more characteristics of effective schools (see Table XX, page XX). Capacity: By contrast with the baseline proposals prepared during the pilot program in 1998, grant proposals and performance show evidence of improved ability of cluster participants to define their own quality improvement priorities, design action plans to realize those priorities, and mobilize all available resources inside and outside of the province to achieve their development goals.	Project monitoring reports of outputs and outcomes, making use of available EMIS and examinations data. Evaluation of the quality of proposals by MoEYS personnel and external evaluators.	Assumes availability of goods and services for schools to access or purchase (e.g. training, books, materials) Assumes that constraints on improving quality at the school level can be overcome through a combination of participatory processes at the cluster level and guidance and funding from the MoEYS.

MoEYS services are geared toward supporting informed decision making and program implementation at the sub-national level.	Service improvement: EMIS data is available at the school cluster level and utilized for planning and evaluation purposes. Processes: (a) Establish model methods of policy formation and supervision that are more responsive to stakeholder experience, by strengthening participatory mechanisms at each level (national advisory board, national committee on school effectiveness, provincial grants committees, district committees, cluster committees, PTAs); (b) MoEYS regulations include provisions for increased devolution of authority for decsion making for school and classroom management. Qualitative change: Greater variance evident in school management practice, e.g. with regard to timetables, curricula, extra-curricular activities, reading and instructional materials, and school and classroom appearance.	EMIS reports. Project to mid-term evaluation to examine changes in the policy process and the extent to which field level participants feel and demonstrate a sense of empowerment to take responsibility for their own development.	The proposal assumes a willingness among key actors to support, what for the MoEYS, is a radically new change strategy, replacing a institutional culture which demands rigid conformity with one that tolerates and promotes diversity.
Policies show evidence of greater sensitivity to the realities of field performance and stakeholder vision.	More flexibility noted in national policies on such key issues as school hours, institutional management of fees, curriculum, and promotion policies.	Review of education policy and practice in mid-term and completion evaluations.	Assumes a willingness to systematically gather lessons from practice and to use findings to inform policy. There may be occasional conflicts with bureaucratic or political decision making processes.

Project Components/Sub-components:	Inputs: (budget for each component)	Project Reports:	(from Components to Outputs)
1. Quality improvement grants program a. Staff and train provinicial animator services b. Quality improvement grants for school clusters 2. Strengthen key functions of the MoEYS: a. Strengthen MoEYS services to support better school and cluster level decision making b. Support participatory decision making bodies at all levels of the education system c. Empower more flexible decision making 3. Policy/M&E studies		Quarterly project reports Disbursement reports	

Annex 2: Project Description

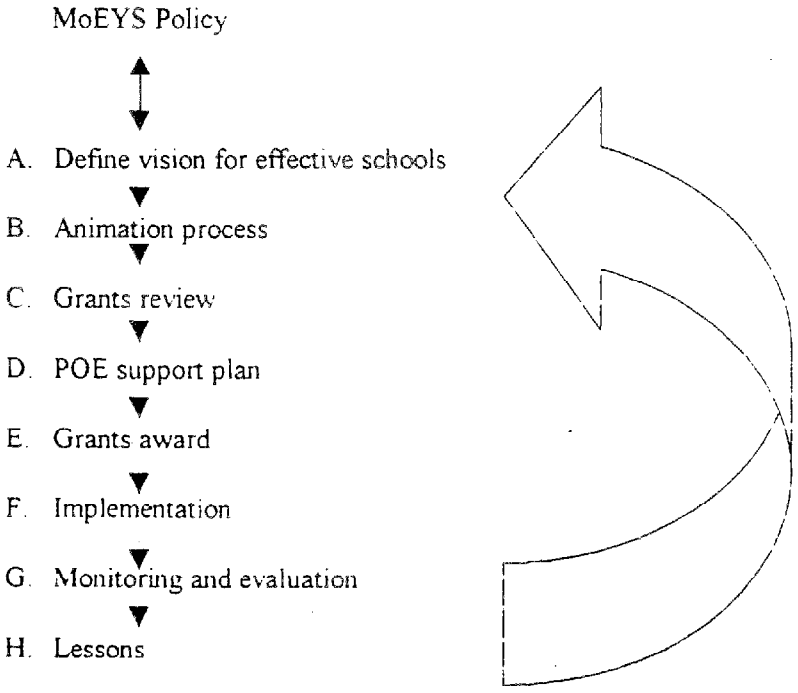
Royal Kingdom of Cambodia: Education Quality Improvement Program

By Component:

Project Component 1 - US$ million

The Quality Improvement Grants Component is the centerpiece of the LIL. The goal is to establish a process in which a MoEYS policy both supports and is enriched by practice at the school level. The grants process begins with development of a vision for effective schools, based on input form a variety of experts within the MoEYS, key stakeholders and practitioners. A set of animators with that vision in mind, then works with community and school cluster leaders to engage them in a discussion about effective schools, in identifying problems and solutions in their own schools, and on preparing proposals for improvement. Those proposals are reviewed by a grants committee to ensure that they are in line with national priorities and informed by best practice. The committee provides a preliminary list of approved proposals to the provinicial directors who then work out a program of support to schools and adjusts the number of proposals to be approved based on capacity constraints (e.g. for the number of teacher trainers available). Once final decisions are made, clusters are notified that their grants have been approved and funds are distributed in an open and transparent manner. Animators return to help clusters implement their programs and to assist in monitoring and evaluation. Their lessons from practice are systematically gathered and fed back into further development of the vision of effective schools and improvement of their animation process. Details on steps in the process may be found in Annex XX.

Grants Process



Project Component 2 - US$ million

Key Functions of the MoEYS – To be determined based on conclusions of studies being carried out under to the PHRD grant.

Project Component 3 - US$ million

Policy Studies – to be determined based on outcomes of PHRD studies

Annex 3: Estimated Project Costs

Royal Kingdom of Cambodia: Education Quality Improvement Program

Project Cost By Component	Local	Foreign	Total
		US $ million	
Total Baseline Cost			
Physical Contingencies			
Price Contingencies			
Total Project Costs			
Interest during construction			
Front-end fee			
Total Financing Required			

Project Cost by Category	Local	Foreign	Total
		US $ million	
Goods			
Works			
Services			
Training			
Other			
Total Project Costs			
Interest during construction			
Front-end fee			
Total Financing Required			

Annex 4: Cost-Utility Analysis Framework

Royal Kingdom of Cambodia: Education Quality Improvement Program

To conduct a cost-utility analysis of this project one would have to gather data during the implementation period on the probability of achieving the desired outcomes (e.g., raising enrollment, increasing attendance, reducing dropout, and increasing achievement) under both the Quality Improvement Program and the program of regular government support to schools. Enrollment and repetition data should be available from the EMIS system, attendance and achievement data from the school records. One would then make a qualitative judgement of the utility of each of those outcomes and assign a value to it. It would then be possible to calculate the "expected utility" of each program, divide that by the costs, and arrive at a figure for comparison. Two caveats should be noted. First, questions exist about the quality of the data, in particular the population estimates used to calculate enrollment rates, the accuracy of attendance records kept at the school level, and lack of standardized achievement tests. Second, the highly subjective nature of decisions regarding utility make cost-utility analyses difficult to replicate.

	Quality Improvement Program	Program of Regular Government Support to Schools
Probability of raising student enrollment by X%	A	A
Probability of raisng student attendance by X%	B	B
Probality of reducing repetition by X%	C	C
Probability of reducing dropout by X%	D	D
Utility of raising student enrollment by X%	E	E
Utility of raisng student attendance by X%	F	F
Utility of reducing repetition by X%	G	G
Utility of reducing dropout by X%	H	H
Expected Utility	(A*E)+(B*F)+(C*G)+(D*H)=I	(A*E)+(B*F)+(C*G)+(D*H)=I
Cost	J	J
Cost-Utility Ratio	J/I	J/I

Annex 5: Financial Summary

Royal Kingdom of Cambodia: Education Quality Improvement Program

Years Ending

	Implementation Period						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Total Financing Required							
Project Costs							
Investment Costs							
Recurrent Costs							
Total Project Costs							
Interest during construction							
Front-end Fee							
Total Financing							
Financing							
IBRD/IDA							
Government							
Central							
Provincial							
Co-financiers							
User							
Fees/Beneficiaries							
Others							
Others							
Others							
Others							
Others							
Total Project Financing	0	0	0	0	0	0	0

	Operational Period						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Total Financing Required							
Project Costs							
Investment Costs							
Recurrent Costs							
Total Project Costs							
Interest during construction							
Front-end Fee							
Total Financing							
Financing							
IBRD/IDA							
Government							
Central							
Provincial							

Co-financiers							
User							
Fees/Beneficiaries							
Others							
Others							
Others							
Others							
Others							
Total Project Financing	0	0	0	0	0	0	0

Main assumptions:

Project Financing Plan (1998 –1999) in US$ Millions

Annex 5: Financial Summary for Revenue Earning Project Entities

Not Applicable

Annex 6: Procurement and Disbursement Arrangements

Royal Kingdom of Cambodia: Education Quality Improvement Program

Procurement

Procurement methods (Table A)

Prior review thresholds (Table B)

Disbursement

Allocation of loan proceeds (Table C)

Use of statements of expenses (SOEs):

Special account:

Annex 6, Table A: Project Costs by Procurement Arrangements[6]
(in US$million equivalent)

Expenditure Category	Procurement Method				Total Cost (including Contingencies)
	ICB	NCB	Other	N.B.F	
1. Works	( )	( )	( )	( )	( )
2. Goods	( )	( )	( )	( )	( )
3. Services	( )	( )	( )	( )	( )
4. Miscellaneous	( )	( )	( )	( )	( )
5. Interest during construction	( )	( )	( )	( )	( )
6. Front-end Fee	( )	( )	( )	( )	( )
Total	( )	( )	( )	( )	( )

Note: N.B.F. = Not Bank-financed (includes elements procured under parallel cofinancing procedures, consultancies under trust funds, any reserved procurement, and any other miscellaneous items). The procurement arrangement for the items listed under "Other" and details of the items listed as "N.B.F." need to be explained in footnotes to the table or in the text.

Figures in parenthesis are the amounts to be financed by the Bank loan/IDA credit

[6] For details on presentation of Procurement Methods refer to OD11.02, "Procurement Arrangements for Investment Operations." Details on Consultant Services can be shown more easily in the Table A1 format (additional to Table A, where applicable).

Annex 6, Table A1: Consultant Selection Arrangements (optional)
(in US$million equivalent)

Consultant Services Expenditure Category	Selection Method							Total (incl contir e
	QCBS	QBS	SFB	LCS	CQ	Other	N.B.F.	
A. Firms	( )	( )	( )	( )	( )	( )	( )	0 (0
B. Individuals	( )	( )	( )	( )	( )	( )	( )	0 (0
Total	( )	( )	( )	( )	( )	( )	( )	(

Note: QCBS = Quality- and Cost-Based Selection
QBS = Quality-based Selection
SFB = Selection under a Fixed Budget
LCS = Least-Cost Selection
CQ = Selection Based on Consultants' Qualifications
Other = Selection of individual consultants (per Section V of Consultants Guidelines), Commercial Practices, etc.

N.B.F. = Not Bank-financed.
Figures in parenthesis are the amounts to be financed by the Bank loan.

Annex 6, Table B: Thresholds for Procurement Methods and Prior Review[7]

Expenditure Category	Contract Value (Threshold)	Procurement Method	Contracts Subject to Prior Review
	US $ thousands		US $ millions
1. Works			
2. Goods			
3. Services			
4. Miscellaneous			
Total value of contracts subject to prior review:			

Overall Procurement Risk Assessment:

High	☐
Average	☐
Low	☐

Frequency of procurement supervision missions proposed:
One every month(s) (includes special procurement supervision for post-review/audits)

[7] Thresholds generally differ by country and project. Consult OD 11.04 "Review of Procurement Documentation" and contact the Regional Procurement Adviser for guidance

Annex 6, Table C: Allocation of Loan Proceeds

Expenditure Category	Amount in US$million	Financing Percentage
Total Project Costs		
Interest during construction		
Front-end Fee		
Total		

Annex 7: Project Processing Budget and Schedule

Royal Kingdom of Cambodia: Education Quality Improvement Program

Project Schedule	Planned (At final PCD stage)	Actual
Time taken to prepare the project (months)		
First Bank mission (identification)	/ /19	/ /19
Appraisal mission departure	/ /19	/ /19
Negotiations	/ /19	/ /19
Planned Date of Effectiveness	/ /19	/ /19

Prepared by: [name of Government agency]

Preparation assistance: [PPF, trust funds, cofinanciers, etc.]

Bank staff who worked on the project included:

Name	Specialty

Annex 8: Documents in the Project File*

Royal Kingdom of Cambodia: Education Quality Improvement Program

A. Project Implementation Plan

B. Bank Staff Assessments

C. Other

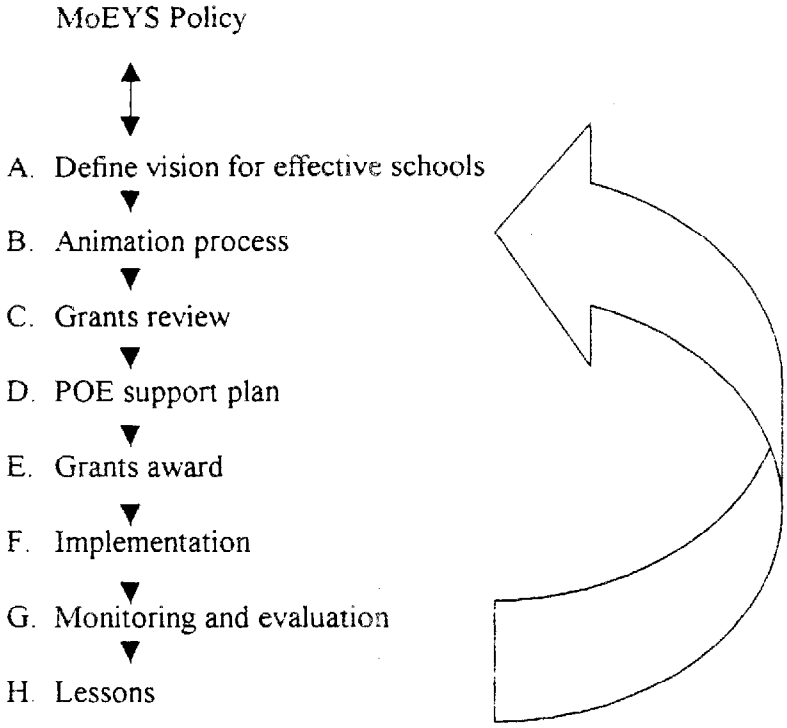
*Including electronic files.

Annex 9: Statement of Loans and Credits

Annex 10: Country at a Glance

Annex XX: Details of Quality Improvement Grants Process

Grants Process



A. Effective Schools Vision

1) Each year an National Committee on School Effectiveness gathers to discuss its vision for effective schools. (The Committee would ideally be a working group of the National Education Congress, and would prepare its work in advance of the annual September Congress.) It's vision informs the animators discussions with school clusters. They provide a mechanism to transmit the MoEYS's expert knowledge and development priorities to the school level.

2) Practical experience with implementing that vision is channeled back to the committee through reports of lessons learned by animators and POE officials.

3) The committee should consist of:

   a) Secretaries of State
   b) Heads of conncerned departments
   c) Representation from POEs participating in the project
   d) Representation from the animators
   e) Consultants involved in preparing the project (Vin, Eng, Fran, Richard)
   f) Representation from donors that support clusters (UNICEF, Red Barna, TOPS)
   g) Other respected educators and expert advisors, as appropriate, e.g. on EMIS, examinations, teacher training, a well respected cluster leader, teacher or school principal, etc.

i) Explain why and how to improve
ii) Return to step 3) if desired

6) Grant award distribution ceremony

7) Implementation of phase I

a) Identify resources (trainers, suppliers, etc.)
b) Schedule implementation activities
c) Purchase goods and services
d) Check accounting

8) Implementation of phase II

a) Review results/outcomes of phase I
b) Check accounting
c) Submit request for second installment of funds
d) Repeat 7.

9) Monitoring and evaluation

a) Monitor outputs – e.g. number of books purchased, teachers trained, etc.
b) Evaluate outcomes – e.g. increase in enrollment, perceived changes in motivation, improved learning, increased pass rates

10) Animators meet as a group to discuss:

a) Results of step 9.
b) Lessons for improving educational development vision and process
c) Lessons for improving the animation process

11) Animators meet with Provincial Grants Management Committee and POE officials to report results of the grants process and lessons learned.

B. Animation Process

1) Introductory meeting – meet the cluster committee members, teachers, community members to introduce self and gauge interest in participating in the program

2) Cluster committee and PTA meeting

   a) Explain how the grants program works
   b) Discuss a vision for effective schools

   (if no PTA, begin process to form one)
   (suggested format: meet separately with committee and PTA and then together)

3) Action planning

   a) Needs identification (using EMIS, test, attendance, repetition, dropout, school schedule data)

      i) Identify problems
      ii) Assign further investigation (make minigrant available for this purpose)

   b) Solutions discussion

      i) Identify solutions
      ii) Prioritize solutions

   c) Planning discussion

      i) Discuss who could do what, when, and how
      ii) Discuss costs and sources of funds
      iii) Discuss how results can be monitored and evaluated

4) Proposal writing and submission (3-4 weeks)

5) Notification of grants award

   a) If successful, plan to receive money

      i) Provide evidence of a public meeting to announce grant
      ii) Provide training in record keeping/grants accounting
      iii) Develop a calendar of implementation activities
      iv) Develop a supervision plan

   b) If not successful

C. Grants review

1) Provincial Grants Management Committee (PGMC) meets with animators to discuss the results of the previous year's grants

2) PGMC meets with the National Committee to discuss its vision for effective schools and the national priorities for the coming year

3) Review proposals for preliminary approval

   a) Does the proposal advance the national vision and meet priorities?

   b) Is the proposed program of action based on a well thought out needs assessment?

   c) Do proposed solutions address problems identified in the needs assessment?

   d) Has the proposal been approved by school directors and community representatives in the cluster?

   e) Do the proposed actions reduce differences among schools within the cluster?

   f) Is the implementation plan realistic (e.g., is an organized plan presented, is the timetable realistic)?

   g) Is there a plan for monitoring and evaluating results?

   h) If the cluster received a grant in the previous year, does it have a record of successful implementation?

   i) Is the budget reasonable for the tasks proposed?

4) Summarize potential demands on provincial services (e.g. for trainers) and adjust the number of approved proposals if necessary. (make adjustments based on a clear set of priorities, criteria, or a clear plan for providing POE support to clusters)

5) Notify grant applicants

   a) Invite winners to a grants distribution ceremony
   b) Provide those clusters rejected with a report on reasons for rejection and suggestions for improving their application in the next round.

D. POE support plan

1) Following step C) 3) above POE officials summarize potential demands by cluster for services, e.g., trainers, training programs, libraries, etc.

2) The POE assesses available capacity and develops a plan to serve cluster needs. This might require, for example, identifying qualified teacher trainers, allowing some schools to move their regular training from Thursday to Tuesday (to take better advantage of scarce trainers), or identifying resources for community participation or school management training.

3) POE informs PGMC of scope for supporting programs so that PGMC can adjust the number of grants to be awarded based on capacity.

E. Grants award

1. Notify clusters that are to receive grants

2. Certify that cluster has submitted evidence of cluster school committee, teacher and community meeting to announce grant award (see. B.) 5.) a.) i.) above)

3. Certify that cluster has received training in grants accounting (see. B.) 5.) a.) ii.) above)

4. Distribute grants in a public ceremony with cluster committees and community representatives present

F. Implementation

Cluster school leaders work with animators to implement grants: see B) 7) and B) 8) above.

G. Monitoring and evaluation

1) A monitoring and evaluation plan is built into the grants process.

2) Animators work with Cluster leaders (see B) 9) above):

   a) To monitor outputs – what the cluster said it would purchase, e.g. train 80 teachers, purchase 400 books, create 20 additional afternoon classes,

   b) To monitor outcomes – what the cluster said it would achieve, e.g. increase enrollment, reduce repetition, improve motivation, improve teaching methods. Relate to data used at the beginning of the needs identification process (see B) 3) a) above)

H. Lessons

1) Animators meet as a group to discuss educational development lessons of monitoring and evaluation process (see G) above).

2) Animators meet with PGMC and POE authorities to discuss lessons learned.

3) A representative of the animator group participates as a member of the National Committee on School Effectiveness (see A) above)

Note on Animator Training Needs

1) Animators will should be knowledgeable of:

   a) The national vision for effective schools (see A) above)

   b) The animation process (see B) above)

   c) Community development techniques, e.g. action planning, building successful groups, identifying and encouraging the participation of at-risk populations

   d) Educational development resources in Cambodia:

   e) Suppliers of books, furniture, materials, and training

   f) Other donors that might provide resources to schools, e.g. the social fund, embassies grant funds, private benefactors, better off schools that will enter into cooperative agreements for training, etc.

   g) Budgeting and accounting procedures

   h) Ways to use data to identify issues, e.g. enrollment, repetition, dropout, attendance and test data.

   i) Means to organize a schedule of training and visits to several clusters.

2) Animators should be led by a TA with experience in building staff capacity and participatory program development.

3) New animators may be paired with an experienced animator or an overseas volunteer to build capacity on a day to day basis until such a point where they are confident in operating independently.

Note on Possible Packages

1) During preparation there was a debate on whether school clusters should be allowe ot propose any intervention they feel suitable, or if a set of inputs grouped into standard "packages" would be more effective. Creating "packages" with semi-standard inputs can help to focus to the grants program around strategic priorities. It could also simplify the job of the animator and cluster committee by providing examples of model proposals and recommended pricing of inputs. Packages would provide an organizing principle for development of POE services.

2) Clusters might proceed through a needs analysis and then apply for a "package" which could be tailored to their individual needs in terms of the choice of particular items within the package and the size of the package. Clusters could also be permitted to propose activities outside of the standard packages.

3) Some ideas for packages include:

   a) Staff training, consisting of:
      i) Teacher training (subject matter knowledge, lesson planning, pedagogy)
      ii) School management and planning
      iii) Librarian training
      iv) Financial management

   b) School environment, consisting of:
      i) Minor repairs and rehabilitation
      ii) Playgrounds
      iii) Latrines
      iv) Safe water
      v) Gardens and landscaping
      vi) Classroom furniture

   c) Materials, consisting of:
      i) Paper, notebooks and pens (for teachers, PTAs, and students)
      ii) Teaching aids and materials
      iii) Library books, reading corner books
      iv) Classroom decoration
      v) Extra sets of textbooks
      vi) Training associated with above materials

   d) Grade 1-2 repetition and dropout, consisting of:
      i) Creation of a pre-school section for under age children
      ii) Teaching assistants
      iii) Special training for Gr. 1-2 teachers
      iv) Extra books, materials, activities for children at risk of repeating or dropping
      v) Parent and teacher projects to investigate reasons for repetition and dropout

e) Community participation, consisting of:
   i) Parent training (school readiness, hygiene, ways to support children in learning, how to check reports from school)
   ii) Planning and monitoring school development activities
   iii) Activities designed to reach out to at-risk families

f) Teacher contact hours, consisting of:
   i) Salary incentives
   ii) Extra shifts
   iii) Longer school days, extra activities
   iv) Training in scheduling and time recording

g) Costs of education
   i) Training to rationalize cluster financing
   ii) Training to develop policies reduce costs for poor families
   iii) Support for very poor children

Annex XX: Framework of Education Development Activities and Assistance in Cambodia

A effective education system has many elements. The World Bank's proposal for a Comprehensive Development Framework states: "It starts with universal primary education, for both girls and boys, as well as an open and competitive system of secondary and tertiary education. Construction of schools, modern curricula geared toward the new technological age and real needs of the emerging local economy, and effective teacher training and supervision all contribute to successful education programs. Adult education, literacy and lifelong learning must be combined with a fundamental recognition that education of girls and women is central to the process of development. A government must also be careful to learn the lessons of practice and history from indigenous peoples and communities, so that education is not imposed from afar but benefits from relevant local, communal experience. Finally, preschool education must be given its full weight in programs. This can be key to the development of a child, the level of education reached, and thus the eventual achievement. In addition, developments in science, technology, and knowledge transfer offer a unique possibility to countries to catch up with more technologically advanced societies."

Much donor assistance has been focused on building the managerial and administrative capacity of the system, and on providing school buildings. An important gap remains in building a high quality, universally accessible system of primary education: although the number of donors is high in the primary education cluster schools programs, fewer than 100 of 600 clusters actually receive assistance. This project will make a contribution to filling that gap. A second major gap is in building an open and competitive secondary education system. The ADB is planning to conduct exploratory work on this issue.

	schools											schools
VSO/VSA						English language teacher training						
Multilaterals												
WBG			National Higher Education Task Force	Social Fund								
ADB					Textbooks							PMO
UNICEF	Cluster schools				Curriculum development			Education for community development				Cluster schools; EMIS. Education Planning
UNESCO												EMIS. Capacity Building for Planning
UNDP				CARERE								
EU						PASEC						
Bilaterals												
DfID						Training for English Teachers and Secondary school Inspectors (CAMSET)						Inspectorate training
AusAid		Exams										
Japan				JSRC school construction								
France						Franch language teacher training					School of Medicine	

	UPE	Open and competitive secondary education	Open and competitive tertiary education	School construction	Modern curricula	Effective teacher training and supervision	Literacy	Life-long learning opportunities	Learning lessons of practice and history from indigenous peoples and communities	Pre-school education	Science, technology and knowledge transfer	Management and administration
Govt.												
MoEYS	Program enrolls 78% of school age children	16% net enrollment in LSS, 7% in USS	1.4% gross enrollment in tertiary education	More than 50% double shift, more than 75% have no water or latrine	Revising texts with assistance from ADB	Upgrading requirements for entry into the teaching profession	65% of adult population is literate Programs?	Programs?		Programs?	Programs?	Programs?
Prime Ministers Office				Hun Sen Schools								
Civil Society												
Families	Financial support for students and schools											
Religious/ cultural organizations				Wats provide buildings								
Private Sector			Management schools					English language schools; Computer schools				
International NGOs and Voluntary Organizations												
Redd Barna	Cluster schools											Cluster schools
CARE	Girls Action Program											
TOPS	Cluster											Cluster

Annex XX: Framework of Effective Schools and Schools Assistance in Cambodia

The effective schools literature looks at the relationship between the outcomes of schooling (usually academic achievement and persistence in school) and the in-school and contextual variables that contribute to those outcomes. International research has focused on the importance of four broad categories of variables: supporting inputs, enabling conditions, school climate, and the teaching and learning processes.

Supporting Inputs	Enabling Conditions	School Climate	Teaching Learning Processes
▪ parent and community support ▪ a healthy learning environment ▪ effective support from the education system ▪ adequate supplies of books and materials	▪ effective leadership ▪ a capable teaching force ▪ flexibility and autonomy ▪ high time (days and hours) in school	▪ high expectations of students ▪ positive teacher attitudes ▪ order and discipline ▪ organized curriculum ▪ rewards and incentives ▪ high learning time (time on task)	▪ variety in teaching strategies ▪ frequent homework ▪ frequent student assessment and feedback ▪ participation (attendance, continuation, and completion), esp. for girls

The Cambodian MoEYS has set its own ten priorities for basic education and these are presented in the following table, in a way that allows one to compare them with the above variables. The priorities touch on each of the broad categories of variables, but in themselves are unlikely to constitute a set of actions that is sufficiently comprehensive to truly improve performance of schools. Other donors are contributing, but much of their assistance focuses on efforts to build effective support from the education system, and to providing inputs such as books and schools. There is comparatively less attention to issues of improving the school climate or to improving teaching and learning. We hope that this LIL will (i) expand the Government's vision of effective schools; and (ii) shift the locus of control over design of programs to the school level, where in the PHRD pilot, schools proposed numerous initiatives to both improve the school climate and to improve the teaching and learning processes.

	Supporting Inputs				Enabling Conditions			
International Research ⇒	Parent and comm. Support	Healthy learning environment	Effective support from Ed. System	Adequate books and materials	Effective leadership	Capable teaching force	Flexibility and autonomy	High time (days and hours) in school
Government's 10 Priorities ⇒				Produce and use teaching aids		Use experienced teachers in grades 1,2; Regular Thursday technical group meetings		Full day (6 hours) teaching
Government								
MoEYS								
Prime Ministers Office		Hun Sen Schools						
Civil Society								
Families	Financial support							
Religious/cultural organizations		Wats provide buildings						
Private Sector								
International NGOs & Voluntary Orgs.								
Redd Barna			Cluster schools	Story books				
TOPS			Cluster schools					
Multilaterals								
WBG		Social Fund - school construction						
ADB				Textbooks		Textbook training		
UNICEF			Cluster schools; EMIS					
UNESCO			Capacity building for ed. planners; EMIS					
UNDP		CARERE - school construction						
EU					PASEC principal training?	PASEC teacher training		
Bilaterals								
DfID			Inspector training					
Japan		JSRC school construction						

	School Climate						Teaching and Learning Processes			
International Research ⇒	High expectations of students	Positive teacher attitudes	Order and discipline	Organized curriculum	Rewards and incentives	High learning time (time on task)	Variety in teaching strategies	Frequent homework	Frequent student assessment and feedback	Participation (attendance, continuation, completion), esp. for girls
Government's 10 Priorities ⇒			No underage children in school	Link with community and social issues	Improve living conditions of teachers		Promote child centered learning			Equal access for disadvantaged children
Government										
MoEYS					Prime Pedagogique 2nd Shift supplement					
Civil Society										
Families					Gifts and support for teachers					
Private Sector										
International NGOs and Voluntary Organizations										
Redd Barna							Teacher training?			
CARE										Girls Action Program
Multilaterals										
WBG										
ADB										
UNICEF										
UNESCO										
UNFAO				Integrated Pest Management						
UNDP										
EU										
Bilaterals										
DfID										
AusAid									Examinations	

Annex XX: Framework for an Information System to Track Progress of Proposals toward Meeting Goals

The animator service should create a system of note taking, reporting, and analysis which fully captures learning from the experience of the grants programs. Instruments such as proposal forms and cluster monitoring reports should be designed to capture this information systematically. Lessons need to be transferred both back into the design of their work and to policy makers. Summary tables, such as the following would aid policy makers and researchers to take a broad look at the program effectiveness.

Cluster Name	Status	Supporting inputs for schools			Inputs to enhance "enabling conditions"			Inputs to improve the "school climate"			Inputs to improve "teaching and learning processes"			Development indicator at beginning time of proposal			Development indicator at completion of project		
	Specific inputs ▶	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Cluster X	Was intervention proposed?	Yes		Yes		Yes		Yes	Yes	Yes			Yes	3%	9%	2%	5%	9%	8%
	Was intervention actually implemented?	No		Yes		Yes		Yes	No	Yes			Yes						
Cluster Y	Was intervention proposed?																		
	Was intervention actually implemented?																		

គ្រោងការ បង្រៀនភាសា អង់គ្លេស កម្រិតមធ្យម ជាន់ កម្ពុជា
Cambodian Secondary English Teaching Project - CAMSET II

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THE CAMBODIAN SECONDARY ENGLISH TEACHING PROJECT (CAMSET) PHASE II

The project began on 1st September 1997 and will run until 31st August 2000. CAMSET II is funded by **the UK Government's Department for International Development (DFID)**, and is valued at approximately £2.6m. It is managed by C*f*BT Education Services, Reading, UK and continues a programme of UK government assistance which began in 1992.

The operation of the project is controlled by a Steering Committee within the Ministry of Education, Youth and Sport (MoEYS). The Committee is chaired by the Secretary of State. Representatives of all the Ministry Departments in which the project is active sit on the Committee, as does the project Team Leader and a representative of DFID. The Committee sits quarterly.

The project's six main areas of operation are as follows :

- Strengthening the Secondary Education Inspection Office within MoEYS
- Implementing a supervision system at provincial level
- Establishing a co-ordinated system of pre-, in- and on-service English teacher training
- Producing and distributing English textbooks and teachers' materials for all secondary grades, and establishing an evaluation and revision system
- Establishing an ELT evaluation system providing evidence of impact on student learning
- Operating a language upgrading programme for key staff of MoEYS and other Ministries

The project employs 5 specialist staff recruited from UK. They work in the Secondary General Education Department, the Teacher Training Department, The Research Institute and the Faculty of Pedagogy.

6 VSO volunteers also work on the project. They are placed in the Regional Teacher Training Centres (RTTCs) and the National English Teaching Resource Centre (NETREC).

The project has administrative offices within the Cambodian British Centre, which also houses its sister project, the Language and Management Training Unit (LAMTU).

C*f*BT Backgrounder

C*f*BT Education Services is a not for profit education services company, run by an Operations Board, accountable to Trustees. Although it is a charity it operates within a competitive market place and employs commercial disciplines to achieve effective management of resources. The surpluses it generates from its contract management work are reinvested in education in support of innovative projects and by grants and scholarships. Its current turnover is around £37m. In 1998-99 C*f*BT's Trustees will distribute around £850,000 in grants.

C*f*BT believes that sound management of resources, combined with innovative and flexible professional and logistical support services to both individuals and institutions, has a positive sustainable impact on educational outcomes. It addresses underachievement on the one hand, while on the other it effects measurable improvements in educational attainment, set against clear goals.

Founded in 1968 C*f*BT's initial focus was on the Teaching of English as a Foreign Language (EFL). In every one of the last 30 years C*f*BT has employed at least 250 EFL teachers and today manages, in Brunei, the largest English Language Teaching project of its kind in the world involving some 230 teachers.

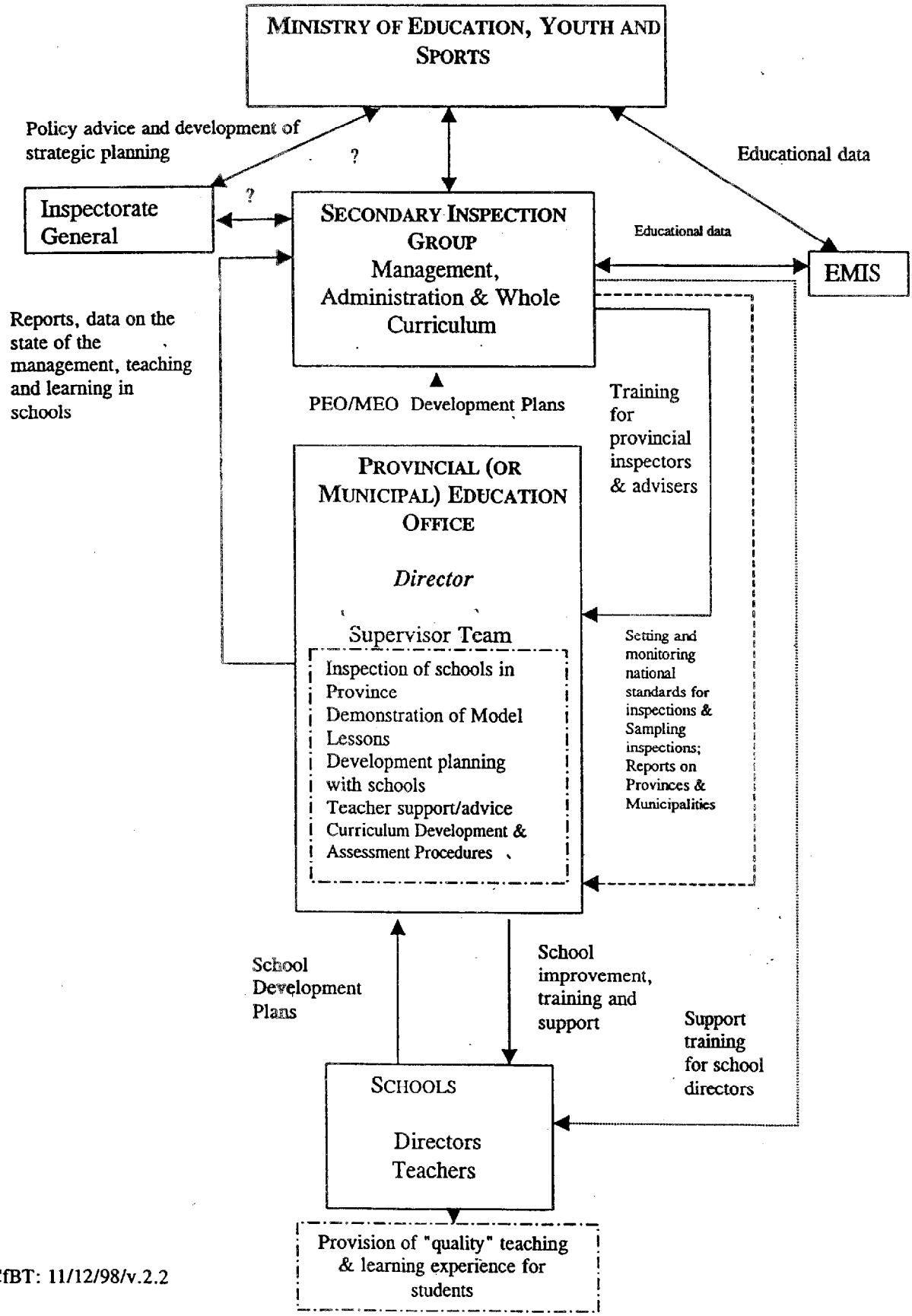
In the early 90s C*f*BT began to offer more general educational services to support overseas aid projects. As a result, C*f*BT staff are working in some 25 countries worldwide in 1998. The professional focus is on schools' management; provision of basic skills, particularly literacy and numeracy; quality assurance in schools, and teacher training.

C*f*BT's roots are in Britain and, since 1993, the experience gained overseas has been put to use in the UK's domestic education market. C*f*BT manages the Careers Service and provides guidance for young people in three English counties and four London Boroughs. The service is helping to equip individuals with the planning and decision making skills as well as the knowledge to improve attainment levels at school and management of their careers thereafter. In addition the company's UK portfolio includes:

- *a partnership with the London Borough of Lambeth to manage one of England's first Education action Zones and the only one where a private sector provider is a full partner;*
- *management of a distance learning school-based PGCE and Graduate Teacher programme allowing would-be teachers to undertake their initial training while in employment in schools;*
- *management of the National Literacy and Numeracy Centre on behalf of the Standards and Effectiveness Unit of the DfEE;*
- *through its 'Schools in Transition' programme CfBT has provided a management team to a school 'in special measures' in Hackney to help turn it round;*
- *extensive experience of school inspection through management of some 1,200 school inspections over the last five years;*
- *INSET services to schools;*
- *management of the education service in prisons.*

C*f*BT believes that its services are improved by being subject to the disciplines and measures of the market on the one hand and strong regulation by public sector clients on the other. It also seeks to ensure that its extensive international experience and more recent wide range of UK work cross-fertilise. C*f*BT is conscious of the need to justify all its services by assessing the impact on learners.

Map of a "quality assurance system for education in Cambodia"



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