添付資料

1．関連分野における当該コースの位置付け

2．フィリピン公教育制度

3．フィリピン公教育に関する統計

4．フィリピン教育省組織図・データ

5．フィリピン理科教育関係機関資料

6．フィリピン大学 UP-ISMED 理科教員再研修プログラム

7．科学高校（USHS）カリキュラム

8．フィリピン教育省 CONSTEL テレビプログラム

9．パキスタン中等教育カリキュラム

10．パキスタン Islamabad College for Boys 学校概要

11．パキスタン教育省 IPSET 概要

12．質問票

13．収集資料リスト

1．関連分野における当該コースの位置付け

科学教育

・教育行政

（国別特設）理数科教育行政（フィリピン）（中国セ）

対象者：理数科教育行政従事者

目的：地方の初等・中等学校理数科教育の運用管理能力の向上

目標：1）理数科教育に関する教育行政制度の理解

2）理数科教育に関する教員研修制度の理解

3）理数科教育に関するカリキュラム開発方法の理解

・初等教育

（一般特設）小学校における理科実験教育（南西アジア諸国）（帯広セ）

対象者：初等教育の教員養成学校の教官

目的：理科教育の指導、実験方法等の知識、技術の習得

目標：1）限られた実験機材を効果的に用いた理科実験の実施

2）理科教育の学校内教育と学校外教育の役割分担の理解

・中等教育

（集団）科学教育実技（中国セ）

対象者：中等学校科学教育教員（理科教師）

目的：実験観察技能向上のための理科教育専門家育成

目標：1）実験観察技能の習得

2）コンピュータ処理基礎技術の習得

3）視聴覚教材開発活用技術の習得

4）理数科現職教員教育プロジェクト立案

・視聴覚教育

（集団）視聴覚メディア制作（A）（B）（沖縄セ）

対象者：視聴覚メディアの企画・制作従事者

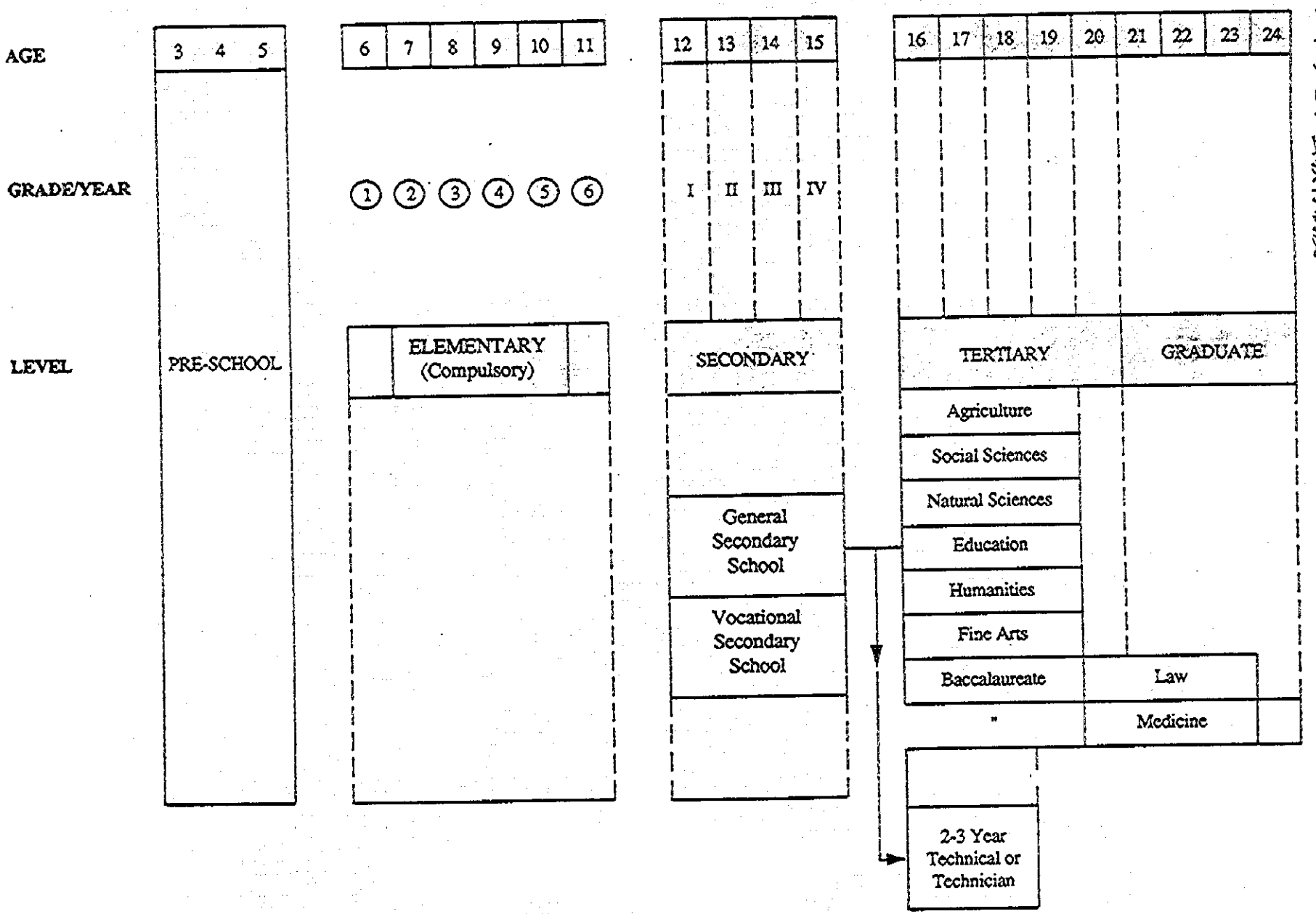
目的：視聴覚メディアの製作技法の習得

目標：1）視聴覚教育の概念の理解

2）基礎的な制作技法の習得

3）視聴覚メディアの活用の実例の理解

STRUCTURE OF THE FORMAL SYSTEM OF EDUCATION – PHILIPPINES



3．フィリピン公教育に関する統計

BASIC EDUCATION STATISTICS SY 1994-1995 to SY 1995-1996

	Enrolment		No. of Schools	
	1995－1996	1996－1997	1995－1996	1996－1997
Elementary Education	11,541,570	11,967,473	36,875	37,670
Secondary Education	4,809,863	4,905,070	6,143	6,411
Tech.－Voc. Education	530,726	565,037 *	1,276	1,276
Higher Education**	1,967,210	2,066,646	1,185	1,287
TOTAL	18,849,369	19,504,226	45,479	46,644

* Projections
** Source: CHED

PERFORMANCE INDICATORS

	Elementary Education		Secondary Education	
	1995－1996	1996－1997	1995－1996	1996－1997
Participation Rate	92.70	94.33	62.25	62.62
Cohort－Survival Rate	67.50	72.13	47.53	48.32
Teacher－Pupil Ratio	1:35	1:36	1:33	1:32
Achievement Level	78.63	80.13	81.59	83.74
Per Capita Cost (Public Education)	P2,421.03	P2,764.21	P2,300.59	P2,742.24

TABLE I

NUMBER OF SCHOOLS BY REGION, LEVEL OF EDUCATION AND SECTOR
SY 1996–1997

REGION	ELEMENTARY EDUCATION			SECONDARY EDUCATION			POST-SEC. EDUCATION**			HIGHER EDUCATION			GRAND TOTAL		
	PUBLIC	PRIVATE	TOTAL	PUBLIC	PRIVATE	TOTAL	PUBLIC	PRIVATE	TOTAL	PUBLIC	PRIVATE	TOTAL	PUBLIC	PRIVATE	TOTAL
NCR	473	531	1,004	116	369	485	2	225	227	17	207	224	608	1,332	1,940
CAR	1,232	52	1,284	123	80	203	17	21	38	11	13	24	1,383	166	1,549
ARMM	1,604	8	1,612	86	24	110	15	0	15	9	6	15	1,714	38	1,752
I	2,243	136	2,379	378	176	554	17	67	84	10	63	73	2,648	442	3,090
II	1,968	86	2,054	160	94	254	28	40	68	13	26	39	2,169	246	2,415
III	2,566	301	2,867	286	250	536	17	99	116	17	99	116	2,886	749	3,635
IV	4,151	651	4,802	529	459	988	32	129	161	27	113	140	4,739	1,352	6,091
V	2,887	106	2,993	348	142	490	33	73	106	33	82	115	3,301	403	3,704
VI	3,146	151	3,297	380	153	533	44	49	93	40	59	99	3,610	412	4,022
VII	2,728	129	2,857	273	183	456	16	70	86	11	69	80	3,028	451	3,479
VIII	3,308	91	3,399	322	81	403	22	4	26	40	26	66	3,692	202	3,894
IX	2,121	52	2,173	181	71	252	8	10	18	8	35	43	2,318	168	2,486
X	1,512	110	1,622	145	135	280	19	63	82	13	76	89	1,689	384	2,073
XI	2,022	239	2,261	215	159	374	15	85	100	10	81	91	2,262	564	2,826
XII	1,328	245	1,573	194	95	289	6	50	56	9	64	73	1,537	454	1,991
XIII	1,444	49	1,493	126	78	204	*	*	*	*	*	*	1,570	127	1,697
TOTAL	34,733	2,937	37,670	3,862	2,549	6,411	291	985	1,276	268	1,019	1,287	39,154	7,490	46,644

* Included in Regions IX & XII
** SY 1995–96 data

SOURCES: RSD,OPS, and CHED

TABLE II

ENROLMENT BY REGION, LEVEL OF EDUCATION AND SECTOR
ACTUAL SY 1996–1997

REGION	ELEMENTARY EDUCATION			SECONDARY EDUCATION			TECH.–VOC. EDUCATION**			HIGHER EDUCATION **			GRAND TOTAL
	PUBLIC	PRIVATE**	TOTAL	PUBLIC	PRIVATE**	TOTAL	PUBLIC	PRIVATE	TOTAL	PUBLIC***	PRIVATE***	TOTAL	
NCR	981,396	354,835	1,336,231	446,685	271,032	717,917	19,601	199,532	219,133	91,856	576,963	668,819	2,942,100
CAR	217,122	21,151	238,273	64,405	34,014	98,419	3,932	7,025	10,956	12,849	48,965	61,814	409,462
ARMM	365,948	3,825	369,773	29,090	12,701	41,791	12,436	NA	12,436	11,388	6,864	18,252	442,252
I	597,655	32,694	630,349	254,405	75,264	329,669	4,298	13,064	17,362	33,047	73,007	106,054	1,083,434
II	440,270	15,076	455,346	154,934	52,282	207,216	4,905	8,186	13,091	16,395	37,677	54,072	729,725
III	1,056,529	106,675	1,163,204	332,394	193,528	525,922	13,390	37,247	50,637	37,217	88,569	125,786	1,865,549
IV	1,536,801	166,869	1,703,670	477,648	264,754	742,402	15,574	28,475	44,049	37,360	121,200	158,560	2,648,681
V	813,982	22,991	836,973	241,352	74,036	315,388	12,029	14,756	26,786	30,066	64,567	94,633	1,273,780
VI	984,768	45,496	1,030,264	335,297	84,304	419,601	18,150	44,167	62,317	31,866	126,040	157,906	1,670,088
VII	831,714	50,928	882,642	237,949	118,991	356,940	5,945	12,305	18,250	21,175	177,232	198,407	1,456,239
VIII	582,418	11,116	593,534	170,442	37,940	208,382	21,484	8,371	29,855	31,568	22,903	54,471	886,242
IX	594,806	13,431	608,237	137,495	31,893	169,388	4,151	3,737	7,888	21,064	33,727	54,791	840,304
X	448,213	23,722	471,935	111,175	60,322	171,497	4,407	9,467	13,873	8,386	104,497	112,883	770,188
XI	782,866	58,606	841,472	230,445	75,652	306,097	4,348	21,722	26,070	11,869	102,373	114,242	1,287,881
XII	418,848	20,330	439,178	125,697	50,512	176,209	5,090	7,243	12,333	37,264	48,692	85,956	713,676
XIII	355,506	10,885	366,391	86,143	32,089	118,232	*	*	*	*	*	*	484,624
TOTAL	11,008,842	958,631	11,967,473	3,435,756	1,469,314	4,905,070	149,740	415,297	565,037	433,370	1,633,276	2,066,646	19,504,226

* Included in Regions IX & XII
** Projections
*** Distribution by region based on SY 1994–95 data

SOURCES: RSD,OPS, and CHED

TABLE V

COST PER PUPIL FOR PUBLIC ELEMENTARY SCHOOLS*
CY 1990--1996

YEAR	ENROLMENT	BUDGET	PER PUPIL COST
1990	9,696,354	12,629,570,000	1,302.51
1991	9,784,998	13,164,268,000	1,345.35
1992	9,878,850	18,659,723,000	1,888.86
1993	9,893,514	19,263,498,000	1,947.08
1994	10,070,037	24,645,864,000	2,447.45
1995	10,594,274	25,649,040,000	2,421.03
1996	10,995,477	30,393,835,000	2,764.21

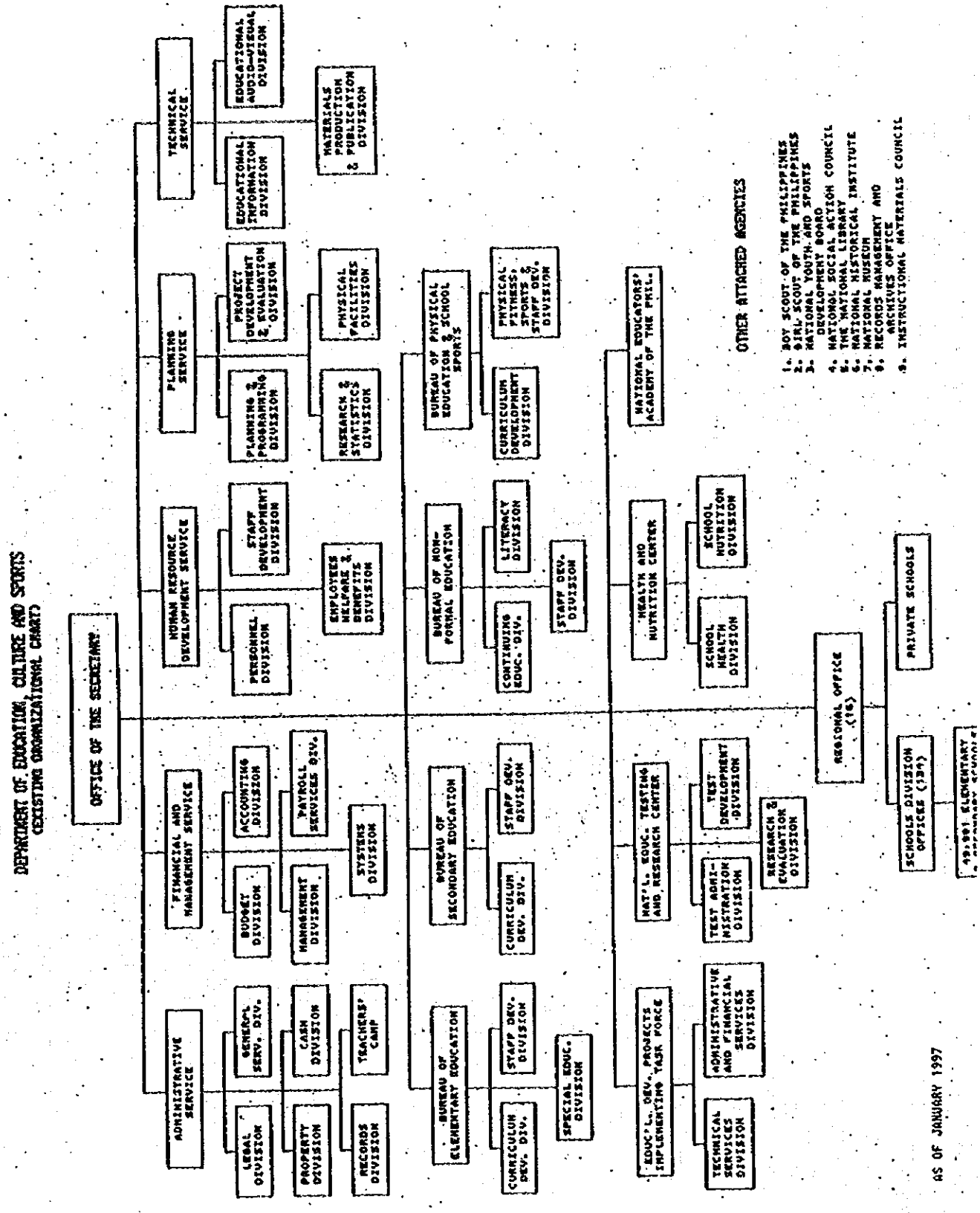
* SUCs excluded

COST PER STUDENT FOR PUBLIC SECONDARY SCHOOLS*
CY 1990--1996

YEAR	ENROLMENT	BUDGET	PER PUPIL COST
1990	2,468,472	5,870,994,000	2,378.39
1991	2,605,147	5,302,316,000	2,035.32
1992	2,803,651	5,797,135,000	2,067.71
1993	2,978,969	5,829,441,000	1,956.87
1994	3,168,937	7,996,267,000	2,523.33
1995	3,259,132	7,497,936,000	2,300.59
1996	3,356,292	9,203,766,000	2,742.24

* SUCs excluded

4．フィリピン教育省組織図・データ



DECS Personnel

Among the government agencies, the DECS has the biggest personnel complement composed of about 481,358 teaching and non-teaching personnel distributed as follows: 425,539 public school teachers; 28,567 other related teaching positions such as school principals, district supervisors, head teachers, schools superintendent, and division supervisors; 23,913 administrative and support staff; and 3,339 Central and Regional Office personnel.

PARTICULARS		NUMBER OF PERSONNEL
I. TEACHERS		
Elementary Education		309,218
Secondary Education		102,816
Secondary (Tech'l./Voc. Educ.)		7,481
Higher (Tech'l. Educ.)		6,024
	Total	**425,539**
II. OTHER RELATED TEACHING POSITIONS*		
Elementary Education		20,572
Secondary Education		5,736
Secondary (Tech'l./Voc. Educ.)		1,373
Higher (Tech'l. Educ.)		886
	Total	**28,567**
III. ADMINISTRATIVE AND SUPPORT STAFF		
Elementary Education		13,034
Secondary Education		5,548
Secondary (Tech'l./Voc. Educ.)		3,224
Higher (Tech'l. Educ.)		2,107
	Total	**23,913**
IV. REGIONAL OFFICE PERSONNEL		1,926
V. CENTRAL OFFICE PERSONNEL		1,413
	Total	3,339
	GRAND TOTAL	481,358**

* Includes principals, division/district supervisors, head teachers, guidance coordinators/counsellors, etc.

** Excludes data on the number of teaching and non-teaching personnel in ARMM.

SOURCE: 1996 PSI
Budget Division

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BASIC EDUCATION STATISTICS
SY 1996-1997

Schools	Public	Private	Total
Pre-school	4,255	2,592	6,847
Elementary	34,708	2,937	37,645
Secondary	3,787	2,549	6,336
Grand Total	42,750	8,078	50,828

Enrolment	Public	Private	Total
Elementary	11,014,664	887,837	11,902,501
Secondary	3,446,364	1,441,882	4,888,246
Grand Total	14,461,028	2,329,719	16,790,747

Performance Indicators

Cohort-Survival Rate
- Elementary - 72.13%
- Secondary - 48.32%

Participation Rate
- Elementary - 94.33%
- Secondary - 62.62%

Enrolment Ratio
- Elementary - 116.92%
- Secondary - 76.10%

Pupil-Teacher Ratio (Public Schools only)
- Elementary - 1:35
- Secondary - 1:34

Simple Literacy
- Rate, 1994 - 93.90%

Functional Literacy
- Rate, 1994 - 83.8%

DECS Personnel

PARTICULARS	NUMBER OF PERSONNEL
I. TEACHERS	
Elementary Education	319,843
Secondary Education	104,156
Secondary (Tech'l./Voc. Educ.)	7,481
Higher (Tech'l. Educ.)	6,024
Total	437,503
II. OTHER RELATED TEACHING POSITIONS*	
Elementary Education	20,572
Secondary Education	5,736
Secondary (Tech'l./Voc. Educ.)	1,373
Higher (Tech'l. Educ.)	886
Total	28,567
III. ADMINISTRATIVE AND SUPPORT STAFF	
Elementary Education	13,034
Secondary Education	5,548
Secondary (Tech'l./Voc. Educ.)	3,224
Higher (Tech'l. Educ.)	2,107
Total	23,913
IV. REGIONAL OFFICE PERSONNEL	1,926
V. CENTRAL OFFICE PERSONNEL	1,413
Total	3,339
Grand Total	493,322

* Includes principals, division/district supervisors, head teachers, guidance coordinators/counsellors, etc.

** Excludes data on the number of teaching and non-teaching personnel in ARMM.

SOURCE: 1996 Personal Services Itemization (PSI)
Budget Division

DECS Profile

Department of Education, Culture and Sports
U.L. Complex, Meralco Avenue
Pasig City
1996

5．フィリピン理科教育関係機関資料

理数科教育関係機関の役割と問題点

組織	実施機関	役割	長所	短所
DECS(文部省)	全ての機関	教育行政・運営の実施	教員の給与支払い	官僚的、中央集権的
DOST（科学技術庁）	SEI(科学教育所)	科学・技術教育の振興	資金をもっている。	中央集権的
UP（フィリピン大学）	ISMED/STTC(理数科教員再教育センター)	現職教員の研修	人材、機材、施設を持っている。	現職教員のみ対象、大学院の単位をあげることは出来ない。
UP（フィリピン大学）	教育学部	学部教育・大学院	RSTCの教員を訓練できる	地方の教員は、研修出来ない。
PNU（フィリピン教育大学）	教育学部、RSTC	学部・再教育の両方	学部・大学院両方ある。	人材、機材、施設が不十分
NODEスクール（理数科重点教育校）	教育学部	学部・再教育、特別理科研修	理数科に強い教員	不十分な研修しか提供していない。
RLS（地域リーダースクール）	DECS	再教育	地域の教員が参加できる	機材不足
村の小学校	DECS	基礎教育	地域の貧しい子供たちが参加できる	機材、施設不足
村の中学校	DECS	基礎教育	地域の貧しい子供たちが参加できる（無償）	教員の力不足、機材、施設不足
RSTC	教育学部	学部・再教育	地域から参加可能、単位を出せる	機材不足
TTI	教育学部	学部教育	教員養成	再教育がない。機材、施設不足

理数科教育関係機関

DOST
DOST/CO
DOST/RO
SEI
DECS
EDPITAF
RELC
DECS/CO
DECS/RO
NSTIC
District Office
RLS
DLS
NODE Schools
Local schools
Board of Region
Private University
RSTC
TTI
UP（フィリピン大学）
UP（フィリピン大学）
教育学部
国立大学
RSTC（地域理科教員センター）
TTI（教員養成機関）

HIGH SCHOOL MATHEMATICS

Title : **Counting Techniques**
No. of Hrs : 18 hrs
Schedule : August 23, 30 and September 6, 1997
Leve : Secondary
Fee : P500.00

Course Description:

A conceptual approach to teaching the concepts and principles involving counting and techniques of counting will be used in this course. Identifying links and relationships among various topics on counting as well as their various real life applications will also be given special attention.

Title : **Dealing with Chances**
No. of Hrs : 18 hrs
Schedule : September 13, 20 and 27, 1997
Level : Secondary
Fee : P500.00

Course Description:

The course will focus on the real life applications of probability specifically on analyzing different games of chance. As well as giving importance to strategies of teaching the topic, special attention will be given to enhancing participants' skill in probabilistic reasoning.

ELEMENTARY SCHOOL MATHEMATICS

Title : **Understanding Rational Numbers**
No. of Hrs : 18 hrs
Schedule : September 13, 20 and 27, 1997
Level : Elementary
Fee : P500.00

Course Description:

This course emphasizes the understanding of basic concepts involving decimals, fractions, ratio and proportion, and percent. It uses practical activities to demonstrate the development of these concepts as well as the enhancement of thinking skills. It employs problem solving activities in a cooperative learning.

ELEMENTARY SCHOOL SCIENCE

Title : **Developing Science Concepts Through Practical Work**
Level : Elementary, Grades 5 and 6

Course Description:

This training program demonstrates how learners develop science concepts through hands-on and minds-on activities. The teacher participants will experience using manipulative/laboratory skills as well as thinking skills to arrive at science concepts. They will be involved in microscope studies, preparation and use of models, designing and doing investigations, measurements. They will be able to hone their observational skill which will serve as the base for developing other thinking skills. Each session ends with a discussion of concepts to be derived from the learning activities.

Three training modules are available addressed to Grades 5 and 6 teachers.

MODULE 1. Physical Science
No. of Hrs : 18
Schedule : September 13, 20 and 27, 1997
Fee : P500.00

MODULE 2. Earth and Space
No. of Hrs : 18
Schedule : November 15, 22 and 29, 1997
Fee : P500.00

MODULE 3. Life Science
No. of Hrs : 18
Schedule : January 10, 17 and 24, 1998
Fee : P500.00

RESEARCH AND EVALUATION

Title : **Doing Investigatory Projects**
No. of Hrs : 18 hrs
Schedule : September 20, 27 and October 11, 1997
Level : Elementary/Secondary
Fee : P500.00

Course Description:

This course will provide opportunities to the elementary and secondary science teachers to acquire skills and techniques in conducting investigatory projects. They will be able to utilize results of researches in science education to make teaching and learning effective and efficient.

Highlighting the course is an actual conduct of an investigatory project.

Title : **Assessing Science Learning**
No. of Hrs : 18 hrs
Schedule : November 15, 22 and 29, 1997
Level : Elementary/Secondary
Fee : P500.00

Course Description:

This course is designed to provide elementary and secondary science teachers with hands-on experience in formulating science instructional objectives and in constructing and validating various assessment or test items. In addition, the participants will be exposed to the administration and coding of performance assessment tasks and other non-traditional test items.

ENVIRONMENTAL SCIENCE

Title : **Teaching Plate Tectonics**
No. of Hrs : 18 hrs
Schedule : September 13, 20 and 27, 1997
Level : Secondary
Fee : P500.00

Course Description:

This is an appreciation course. The participants will understand how restless the Earth was to have produced the awesome Earth structures that we have now, especially, in the Philippines. Furthermore, the forces in Dante's Peak and how the related forces affected the Jurassic Parks eons ago will be discussed. And most importantly, how the Philippine evolved in geologic time and what makes it "tectonically beautiful" will be emphasized in a not-so-technical language.

There will be activities, e.g. model making, designed to better understand geologic processes within the framework of a unifying principle - the Plate Tectonics Paradigm.

Title : **Implementing the Environmental Education Curriculum Framework In Schools**
No. of Hrs : 18 hrs
Schedule : October 11, 18 and 25, 1997
Level : Elementary to Secondary
Fee : P500.00

Course Description:

The DECS, TESDA and CHED recently released memorandum circulars requiring schools to integrate EE in their curricula, training, research and management activities. A curriculum framework was prepared to guide environmental educators in implementing these memo at the national level.

This course is designed to familiarize the participants with the EE curriculum framework and enable them to discuss how this can be adapted to different learning areas. They will develop a scope and sequence chart focused on specific environmental concerns and prepare a sample

interactive activity to emphasize an environmental education core message.

Title : **Weather: Inside the Classroom?**
No. of Hrs : 18 hrs
Schedule : November 8, 15 and 22, 1997
Level : Secondary
Fee : P500.00

Course Description:

What is a cold front? Does it really have a tail? What's inside the eye of a typhoon? Why do thunderstorms occur? These are some of the questions that the course will address. Furthermore, there will be hands-on activities in simulating the common weather phenomena - right inside the classroom. The principles behind these phenomena will be unraveled. In addition, the factors that affect the weather will be measured and analyzed. The participants will also make improvised equipment which they can bring back to their schools.

AUDIO VISUAL

Title : **Improvisation of Teaching Aids in Elementary Mathematics**
No. of Hrs : 36 hrs
Schedule : October 11, 18, 25, November 8, 15 and 22, 1997
Level : Elementary (Grades 4 to 6)
Fee : P1,000.00 (inclusive of basic art materials)

Course Description:

The course aims to develop the teacher's creativity and effectiveness in teaching elementary mathematics through the use of improvised teaching materials.

The sessions will include lectures on topics in fraction, percent, geometry and measurement. A workshop on making improvised teaching materials precedes each lecture.

PHYSICS

Title : **Modern Physics**
No. of Hrs : 18 hrs
Schedule : October 11, 18 and 25, 1997
Target group : HS Physics Teachers & TEI Teacher Educators in Physics
Fee : P500.00

Course Description:

The two major theories of 20th century physics, quantum theory and relativity will be the focus of this course. The experiments that led to these theories and their implications will be the subject of the lecture demonstration sessions. The recent developments such as the microstructure of matter, the grand unified theories, cosmology and astrophysics will be introduced.

Title : **Practical Work in Electromagnetism**
No. of Hrs : 36 hrs
Schedule : November 8, 15, 22, 29, December 6 and 13, 1997
Target group : HS Physics Teachers & TEI Teacher Educators in Physics
Fee : P1000.00

Course Description:

The course includes experiments and laboratory activities that will facilitate the learning of the basic concepts and principles of electromagnetic theory. The concepts to be discussed are magnetic fields, magnetic force, electromagnetic induction and electromagnetic waves.

Various teaching strategies will be incorporated. Discussions will start with motivational activities or discrepant events and will proceed up to a calculus based treatment of the concepts and principles.

BIOLOGY

Title : **Strategies in Teaching Biology**
No. of Hrs : 18 hrs
Schedule : October 11, 18 and 25, 1997
Level : Secondary
Fee : P500.00

Course Description:

This course is designed to demonstrate the use of a variety of strategies in teaching selected topics in Biology and Technology. It shows as well how the relevance of biology to life today can be taught.

The course applies a combination of dry lab and wet lab activities aimed to enhance manipulative and thinking skills. Dry labs include paper and pencil exercises, role playing, etc. which demonstrate how abstract concepts can be taught in concrete ways. Laboratory experiments make use of simplified procedures, improvised apparatus and state-of-the-art equipment including computer.

Title : **Making and Using Improvised Equipment**
No. of Hrs : 18 hrs
Schedule : December 6, 13 and 20, 1997
Level : Secondary
Fee : P500.00

Course Description:

This course involves hands-on activities on improvisation of apparatus using easily available materials and on preparing chemical indicators. These materials and the techniques of their proper use are demonstrated through structured lessons and investigatory activities. The lessons and investigations facilitate the development of important thinking skills (e.g. measuring, systematizing data, making logical interpretation) and the understanding of concepts.

Title : **Making and Using Teaching Aids**
No. of Hrs : 18 hrs
Schedule : February 7, 14 and 21, 1998
Level : Secondary
Fee : P500.00

Course Description:

In this course, the participants will be taught how to develop their own instructional aids such as posters, microscope slides, 3-D models and photomicrographs. The latter involves more sophisticated manipulation and so the technique of photomicrography is a useful skill in itself.

The strategy for using the teaching aids to facilitate comprehension of biological concepts and principles will be demonstrated.

CHEMISTRY

Title : **Enrichment Course in Physical Chemistry for High School Teachers**
No. of Hrs : 18 hrs
Schedule : February 7, 14, and 21, 1998
Level : Secondary
Fee : P500.00

Course Description:

Concepts and principles in Physical Chemistry form the mental structures for understanding the properties and changes of matter and their applications to real-life situations. A chemistry teacher to be effective, must have a strong grasp of this subject matter.

This course aims to provide the participants enhanced knowledge of content and teaching skills to teach physical chemistry concepts to high school students. Teaching/ learning through practical work will be emphasized.

7．科学高校（USHS）カリキュラム

USHS CURRICULUM

	FIRST YEAR			SECOND YEAR			THIRD YEAR			FOURTH YEAR		
	Period (wk)	Mins	Credit Unit	Period (wk)	Mins	Credit Unit	Period (wk)	Mins	Credit Unit	Period (wk)	Mins	Credit Unit
Communication Arts (English)	5	200	1	5	200	1	5	200	1	5 (5)	200 (200)	.5 .5
	Communication Arts 1			Communication Arts 2			a. Introduction to Journalism b. Speech and Oral Communication			a. Introduction to Literature b. Introduction to Literary Criticism		
Reading (English)	5	200	1	—	—	—	—	—	—	—	—	—
Communication Arts (Filipino)	5	200	1	5	200	1	5	200	1	5	200	1
	Sining ng Kumunikasyon I			Sining ng Kumunikasyon 2			Talumpati at Kumunikasyon sa Filipino			Panitikang Filipino		
Social Science	5	200	1	5	200	1	5	200	1	5	200	1
	Philippine History			Asian Civilization			Economics and Sociology			The World: A Cultural Perspective		
Science	10	400	2	10	400	2	10	400	2	10 5	400 200	2 1
	Integrated Science (Science 1)			Science 2 (Biology)			Science 3 (Chemistry)			Science 4 (Physics) Science 5 (Earth & Atmospheric Science		
Mathematics	5	200	1	5 5	200 200	1 1	5	200	1	5	200	1
	Number System (Math 1)			Math 2 - Plane Geometry Math 3 - Algebra			Math 4 - Advanced Algebra and Trigonometry			Math 5 - Elementary Analysis		
Integ. Technology	10	400	2	10	400	2	10	400	2	10	400	2
	Home Economics (Integ Tech. 1)			a. Fundamentals of Animal Husbandry b. Principles of Crop Production			3. Principles of Fish Culture 4 - Industrial Arts			5. Consumer Education and Entrepreneurship		
Values Education	5	200	1	5	200	1	5	200	1	5	200	1
Computer Science	—	—	—	—	—	—	5	200	2	—	—	—
							Basic Computer and Basic Language					
Research 1	—	—	—	—	—	—	—	—	—	5	200	2
										Fundamentals of Research		
PEHM ~ Music	5	200	1	5	200	1	5	200	1	5	200	1
	PE, Music/Health			PE, Music/Health			PE/Health/Music			PE/Health/Music/PMT		
Total Units Earned			11			11			12			13

8．フィリピン教育省 CONSTEL テレビプログラム

LIST OF TELELESSONS

Science Made Easy

HUMAN BODY (7 episodes)

1. You are Wonderfully Made
2. Food: Where Does it Go?
3. The Breath of Life
4. The Body's Transport System
5. The Human Computer and Control Center
6. Support and Movement
7. A New Life is Born

ANIMALS (7 episodes)

8. Animal Groups: Vertebrates
9. Animal Groups: Invertebrates
10. Animal Structure and Function
11. Animal Habitat and Adaptation
12. Whose Babies are These?
13. Needs, Care and Conservation
14. Uses of Animals

PLANTS (7 episodes)

15. Plant Structure and Function
16. Twin Processes of Life
17. Plant Reproduction
18. Plant Habitat and Adaptation
19. Plant Groups
20. Plant Uses
21. The Forest Cover

MATERIALS (3 episodes)

22. Solid, Liquid, Gas
23. Changes
24. Materials at Home

ENERGY (8 episodes)

25. Energy: Forms and Transformation
26. Electromagnetic Waves
27. Chemical Energy
28. Sound
29. Using Electricity
30. Machines
31. Transportation
32. Heat and Temperature

EARTH (5 episodes)

33. Earth: The Living Planet
34. The Precious Soil
35. Water: The Drop of Life
36. Atmosphere: The Earth's Shield
37. The Restless Earth

SPACE (3 episodes)

38. The Great Triumvirate (Earth Moon, Sun)
39. Solar System
40. Beyond the Solar System

CHEMISTRY IN ACTION

1. Chemistry Is Everywhere
2. What is Chemistry?
3. Measurement In Science
4. Measuring and Calculating
5. Mixtures In your Daily Lives
6. Substances We Use
7. Phases Of Matter
8. Kinetic Molecular Theory (KMT)
9. Condensed Phases Of Matter
10. Indicators of Change
11. The Mole
12. Patterns of Change
13. And the Solution is...
14. Colloids: The Special Mixtures
15. Colloids: The Special Mixtures II
16. Energy Conservation
17. Energy and Change
18. Direction of Change
19. The Laws of Disorder
20. The Limits of Change
21. Rates of Change
22. Changes in Equilibrium System
23. Please Pass the Protons: Acids and Base
24. The Atom: A View from Within
25. Electronic Structure of the Atom
26. Trends in Periodic Property
27. Periodic Table of the Elements
28. Putting Atoms Together
29. Bonding Among Molecules
30. Electricity And Change
31. Hydrocarbons
32. Compounds of Carbon, Hydrogen and Oxygen
33. Phenols, Ethers and Esters
34. Hydrocarbon Derivatives
35. Polymers: The Giant Molecules
36. Biomolecules and Reactions in Living Cells
37. Nucleic Acids and Heredity
38. Changes in the Atmosphere
39. Soil Chemistry and Pollution
40. Water in our Environment

PHYSICS IN EVERYDAY LIFE

1. The World Of Physics
2. Measurement
3. Describing Motion
4. Motion In Pictures
5. Changing Motion
6. Newton on Road Motion
7. Law of Acceleration
8. Interaction
9. Collision
10. Projectile Motion
11. Satellite Motion
12. Space Flight
13. Conservation of Energy
14. Machine Power
15. The Human Machine
16. Elasticity
17. Structure and Strength of Materials
18. Forces in Fluids
19. Molecular Motion
20. Heat Engine
21. Electricity
22. Practical Electricity
23. Electrical Hazards and Safety
24. Current Carrying Wire
25. Swings and Motors
26. Currents from Magnets
27. Power Generation and Transmission
28. Mechanical Waves
29. Properties of Waves
30. Sound and Hearing
31. Musical Sound
32. Light, Sight and Color
33. Lenses at Work
34. EM Waves
35. Telecommunication
36. Photons and Electrons
37. Electrons, Photos and Television
38. Lasers and its Applications
39. Discrete Electronics
40. Logic Gates

9．パキスタン中等教育カリキュラム

(Scheme of Studies for the Secondary School Examination by Ministry of Education)

Component	Subject	Weekly Periods
Component I	(compulsory for all)	
	Urdu	4・6
	English	6
	Pakistan Studies	3
	Islamiat	3
Component II	(Science Group)	
	Mathematics	4
	Physics	7
	Chemistry	7
	Biology / Computer Science	7
Component II	(General Group)	
	General Math or Mathematics	4
	General Science	4
	Elective	
Component III	(compulsory non-examination)	
	Physical Exercises	15-30min. daily
	Training in Civil Defense, First Aid and Nursing	72 hrs. in the 2 academic yrs.

１０．パキスタン Islamabad College for Boys 学校概要

（1）Class-Wise Strength (No. of Student)

	Morning Shift	EveningShift
Primary Sectio n		
Class I	240	99
Class II	264	80
Class III	320	122
Class IV	294	145
Class V	252	61
Sub Total	1370	507
High School		
Class VI	165	96
Class VII	170	84
Class VIII	170	71
Class IX	172	79
Class X	158	0
Sub Total	835	330
College Section		
Class XI	194	276
Class XII	215	157
Class XIII	207	114
Class XIV	95	62
Sub Total	711	609
Grand Total	2916	1436

（2）Teaching Strength (No. of Teacher)

	Morning Shift	EveningShift
Primary School		
Junior Lady Teacher	29	24
School/College Section		
Professor	1	0
Associate Professor	13	0
Assistant Professor	27	0

Lecturer	40	0
Senior Teacher	0	29
Total	110	53

(3) Accomodation

	Morning Shift	Evening Shift
Junior Section		
Classroom I to V	23	14
Headmistress Room		1
Staff Room		1
Senior School Section		
Classroom	20	8
Vice Principal Office		1
Staff Room		1
College Section		
Classroom		11
Vice Principal Office		1
Labs		
Zoology		1
Botany		1
Physics		2
Chemistry		2
Statistics		1
Geography		1

(4) Budget (Rs.) (1997-98)

Establishment Charges	13,113,000
Repair and Maintenance of Durable Goods	700,000
Commodities and Services	3,100,000
Transfer of Payments	3,900,000
Total	20,813,000

Consultancy Services

The IPSET provides extension and consultancy services to local, national and international organizations involved and interested in the improvement of science and mathematics education.

MAJOR ACHIEVEMENTS

- Development of science curricula for elementary and Secondary classes (VI-X).
- Development of Teaching Learning Resource Material for elementary and secondary classes (Package for each class includes Textbook, Pupils Manual and Teachers Guide).
- Development of Science Kit for middle schools alongwith user's Guide.
- Development of Test Item Bank (Classes VI-X).
- Human Resource Development Programmes: Orientation courses for Master Trainers, Supervisors and Administrators and School Teachers; Courses for Examiners and School Teachers in Assessment; Lab Teaching and Management Techniques for Teachers; Courses on Teaching Methods and Development of mini Museums in schools.
- Research activities focusing Science Curricula and TLR Material, Teacher Training, Evaluation of Science Curricula and basic Educational Statistics of various aspects of science education.

Facilities

nstitute is housed in its own compact campus having the following facilities:-

Auditorium

An airconditioned auditorium fitted with audio-visual aids, can accommodate more than 100 participants.

Research Library

A good collection of books, journals, references, encyclopedias in the field of science and mathematics education especially on curricula, research, assessment and evaluation, training, instruction and instructional technology are available alongwith books on science subjects: Biology, Chemistry, Physics , Mathematics and Computer Science etc.

Laboratories

Well-equipped laboratories for Biology, Chemistry, Physics & Gen Science are operational alongwith workshop facility.

Audio-visual laboratory

Facilities for preparation of video films and lessons, audio cassettes, charts, transparencies and other instructional material are available.

Classrooms

Two classrooms fitted with audio-visual equipments for lectures, seminars; each can accommodate upto 40 participants.

Syndicate/Committee rooms

Four syndicate/committee rooms each having facility to accommodate 20 participants.

Computer Laboratory

Facilities comprising Desktop publishing system and PCs are installed for development of Teaching Learning Resource material, software and training.

Exhibitions

A spacious hall to hold indoor exhibitions and facility for display.

Hostels

A male and a female hostel on the campus to provide accommodation for 30 male and 30 female participants in biseators.

IPSET

GOVERNMENT OF PAKISTAN
MINISTRY OF EDUCATION
INSTITUTE FOR THE PROMOTION OF
SCIENCE EDUCATION AND TRAINING
FAIZ AHMED FAIZ ROAD
H-8, ISLAMABAD, PAKISTAN
1995

IPSET

Institute for the Promotion of Science Education and Training (IPSET) has been established to cater the existing and futuristic needs of science and mathematics education in Pakistan and to develop related human resources in consonance with the latest approaches and practices. It will assist in policy decisions and directions for promoting excellence in science and mathematics education.

Objectives

- *To undertake and coordinate development of research based science and mathematics curricula and related Teaching Learning Resource material for Elementary, Secondary and Higher Secondary classes.*
- *To organize training programmes for key Science Educators, Supervisors, Administrators and Science and Mathematics Teachers.*
- *To develop human resources and techniques for successful implementation of Science and Mathematics programmes.*
- *To develop, test and propagate new assessment procedures including aptitude tests, achievement tests and attitude scales.*
- *To initiate and coordinate research in science and mathematics education.*
- *To develop low cost instructional equipment and materials.*
- *To liaison with provincial centres of science education, National and International Agencies involved in the development of science and mathematics education.*
- *To provide a forum for National and International Seminars/ Workshops / Symposia.*
- *To disseminate information on science and mathematics education and to act as clearing house for exchanging information with national and international institutions and networks.*
- *To popularize science and promote scientific awareness among students, teachers and general public.*

Organisation

A Board of Governors under the Chairmanship of Federal Education Minister, constitutes the governing body and an Executive Committee headed by Federal Education Secretary looks after day to day matters of the Institute.

The Institute is headed by a Director General supported by Deputy Director General and Directors of various units. The IPSET comprises following units:

- Planning and Development
- Curriculum Development - Physical Sciences
- Curriculum Development - Biological Sciences
- Training
- Research and Evaluation
- Instructional Services
- Administration

Functions

Activities of the IPSET cover all aspects of science and mathematics education, with particular emphasis on the following:-

Curriculum Development

The IPSET has expertise to develop curricula, Teaching-Learning Resources, supplementary support material and other related instructional material.

Research

The Institute undertakes research studies on various aspects of science and mathematics education, mainly curricula, TLR material, teaching methods, evaluation, examination reforms and assessment procedures, classroom management and teacher education.

Human Resource Development

The IPSET plans, organizes and conducts training workshops/ programmes for Educationists, Master Teacher Trainers, Science and Mathematics Teachers, Supervisors and Administrators. It can arrange training programmes on various aspects of teaching-learning processes including pedagogy and content, classroom and laboratory management, supervisory practices etc. IPSET has also the expertise to plan and organise programmes according to the training needs of clients in the allied fields.

Instructional Technology

One of the IPSET's major ongoing activity is the development of low cost and cost effective inquiry oriented experimental activities, identification of indigenous substitute materials/ chemicals, equipment and development of software packages. IPSET has the expertise to develop and prepare video films, charts, transparencies, audio cassettes, graphics, slides etc.

Coordination

The IPSET coordinates various activities related to science and mathematics education and arranges meetings, conferences, seminars, symposia, workshops and special lectures/demostrations at local, national and international levels.

Clearing House

The IPSET acts as clearing house and information centre for dissemination of relevant information at both national and international levels.

12．質問票

To: Ex-participants who attended the Group Training Course on the Practice of Science Education

We greatly appreciate your cooperation in answering the following questions.

1. General Question about Your Current Work

1-1 Name of Office

1-2 Office Address

Telephone Number / Facsimile Number

1-3 Please describe your current job ?

1-4 Please describe your career path after returning to your country ?

2. The Effect of Training Course

2-1 What were the outputs of the training course that you felt most effective ?
Please describe specifically.

2-2 Have you applied what you have obtained through the training course after your return in developing curriculum materials ? Have you transferred it to your colleague ? Please give us specific examples.

2-3 What are the difficulties to promote science education in your country ?
(For example, legislation, lack of standard, etc)

3. The Needs for Follow-up

3-1 What kinds of follow-up activities from JICA are needed at present to fulfill your needs, if any ?

3-2 What do you think about training needs to promote science education in your country ?
Who is the target group and what is the expected output ?

To: High School Authority

(University of Science High School, Central Luzon State University, The Philippines)

We greatly appreciate your cooperation in answering the following questions.

1. General Question about your Office

1-1 Name of Office

1-2 Office Address

Telephone Number / Facsimile Number

2. The Curriculum of Your School

2-1 Please describe the whole curriculum of your school.

2-2 Please describe your science curriculum. How much importance do you give to science subjects ?

2-3 Please describe the curriculum making process in your school (by whom and how).

2-4 What kind of materials and textbooks do you use in the science class ? How are they adopted ?

3. Budget, Staff and Others

3-1 How much of your school budget is used for science ?

3-2 How many teachers are there in your school ? How many of them are teaching science ?

3-3 How many students are currently enrolled in your school ? What percentage of students take the science course after graduation ?

3-4 What kind of qualification are required for science teachers in your school ?

3-5 What are the big problems to be resolved if any ? Please be specific.

3-6 What do you think about training needs to promote science education in your country ? Who is the target group and what is the expected output ?

To: High School Authority

(F.G.Boys Model School and Islamabad College for Boys / Girls, Pakistan)

We greatly appreciate your cooperation in answering the following questions.

1. General Question about your Office

1-1 Name of Office

1-2 Office Address

Telephone Number / Facsimile Number

2. The Curriculum of Your School

2-1 Please describe the whole curriculum of your school.

2-2 Please describe your science curriculum. How much importance do you give to science subjects ?

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3-4 What kind of qualification are required for science teachers in your school ?

3-5 What are the big problems to be resolved if any ? Please be specific.

3-6 What do you think about training needs to promote science education in your country ? Who is the target group and what is the expected output ?

To: Teacher Training Institution

(UP- Institute for Science and Math Education Development, The Philippines)

We greatly appreciate your cooperation in answering the following questions.

1. General Question about your Office

1-1 Name of Office

1-2 Office Address

Telephone Number / Facsimile Number

2. The Curriculum of Your Institution

2-1 Please describe the curriculum for students majoring in science.

2-2 Please describe the curriculum for in-service training for science teachers .

2-3 What kind of materials and textbooks do you use for instruction ?

3. Budget and Staff

3-1 What is your institution's annual budget ? How much of it is currently used for science education ?

3-2 How many staff are there in your institution ? What kind of qualification do they possess (B.Sc, M.Sc, or Ph.D) ? How many of them are currently engaged in science education ?

3-3 What kind of skills are required for science instructors in your institution ?

3-4 What are the current problems in the field of science education to be solved urgently ?

3-5 What do you think about training needs to promote science education in your country ? Who is the target group and what is the expected output ?

To: Teacher Training Institution

(Institute for Promotion of Science Education and Training, Pakistan)

We greatly appreciate your cooperation in answering the following questions.

1. General Question about your Office

1-1 Name of Office

1-2 Office Address

Telephone Number / Facsimile Number

1-3 Please describe the function of your institution.

2. The Curriculum of Your Institution

2-1 Please describe the curriculum for students majoring in science.

2-2 Please describe the curriculum for in-service training for science teachers .

2-3 What kind of materials and textbooks do you use for instruction ?

3. Budget and Staff

3-1 What is your institution's annual budget ? How much of it is currently used for science education ?

3-2 How many staffs are there in your institution ? What kind of qualification do they possess (B.Sc, M.Sc, or Ph.D) ? How many of them are currently engaged in science education ?

3-3 What kind of skills are required for science instructors in your institution ?

3-4 What are the current problems in the field of science education to be solved urgently ?

3-5 What do you think about training needs to promote science education in your country ? Who is the target group and what is the expected output ?

To: Administrative Institution for Education

(Department of Education, Culture and Sports, The Philippines)

We greatly appreciate your cooperation in answering the following questions.

1. General Question about your Office

1-1 Name of Office

1-2 Office Address

Telephone Number / Facsimile Number

2. Budget and Policy

2-1 Please describe the framework to promote science education and budget for education allotted by the national government ? How much it is allotted for secondary education ? How much of the latter is set aside for science ?

2-2 Please indicate the number of students and teachers at the secondary level.

2-3 What kind of academic areas are of higher priority in your region / country ?

2-4 In what rank does science education put ?

2-5 In your curriculum planning, do you have specific target groups of students to cater ? Who are they ?

3. Role of Central and Regional Educational Administration

3-1 How are the decisions made by the DECS (Department of Science, Culture and Sports) and the network of RSTCs (Regional Science Teaching Centers) reflected in the curriculum of secondary school ?

4. International Cooperation

4-1 Please describe the countries offering same cooperation in the field of science education and its activities.

4-2 What do you think about training needs to promote science education in your country ? Who is the target group and what is the expected output ?

To: Administrative Institution for Education
(Ministry of Education, Pakistan)

We greatly appreciate your cooperation in answering the following questions.

1. General Question about your Office

1-1 Name of Office

1-2 Office Address

Telephone Number / Facsimile Number

1-3 Please describe the function of your institution.

2. Budget and Policy

2-1 Please describe the framework to promote science education and budget for education allotted by the national government ? How much it is allotted for secondary education ? How much of the latter is set aside for science ?

2-2 Please indicate the number of students and teachers at the secondary level.

2-3 What kind of academic areas are of higher priority in your region / country ?

2-4 In what rank does science education put ?

2-5 In your curriculum planning, do you have specific target groups of students to cater ? Who are they ?

2-6 Has your institution implemented a special policy for the promotion of science education ? Please describe the policy and the procedure of implementation in detail.

3. Role of Central and Regional Educational Administration

3-1 Please describe the role of central and regional educational administration in implementing policies on secondary science education ?

3-2 How are the decisions made by your institution reflected in the curriculum of secondary school ?

4. International Cooperation

4-1 Please describe the countries offering same cooperation in the field of science education and its activities.

4-2 What do you think about training needs to promote science education in your country ? Who is the target group and what is the expected output ?

１３．収集資料リスト

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