

インドネシア共和国  
初中等理数科教育拡充計画  
終了時評価報告書

平成 15 年 4 月  
( 2003 年 )

国際協力事業団  
社会開発協力部

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## 序 文

インドネシア共和国は「国家開発計画( PROPENAS )」において人的資源の質向上を重点課題と定めている。特に科学技術の進歩に対応した人材育成を重要な柱として位置づけており、そのために理数科教育の強化が急務とされている。

こうした状況を受けてインドネシア共和国は、初中等理数科の教員養成機関であるインドネシア教育大学、ジョグジャカルタ国立大学、マラン国立大学の各理数科教育学部における教育の質の向上・運営管理体制の強化を通じて初中等理数科教育の質の改善をめざすプロジェクト方式技術協力を我が国に要請してきた。

本要請を受けて国際協力事業団は、1998年10月から5年間にわたる技術協力プロジェクトを実施してきた。今般、プロジェクト終了を6か月後に控え、これまでの実績を評価するため、2003年3月23日から4月9日まで終了時評価調査団を現地に派遣した。同調査団によれば、本プロジェクトはインドネシア教育大学理数科教育学部、ジョグジャカルタ国立大学理数科学部、マラン国立大学理数科学部が連携をとりつつ、活発に活動し、インドネシア共和国における初中等理数科教育全般に対し、効果・効率的に寄与し、プロジェクト期間終了までにプロジェクト目標は十分に達成できると判断されている。

本報告書は、同調査団の調査及び協議結果を取りまとめたもので、プロジェクト関係者間での共有、類似プロジェクトへの参考のため、広く活用されることを願うものである。

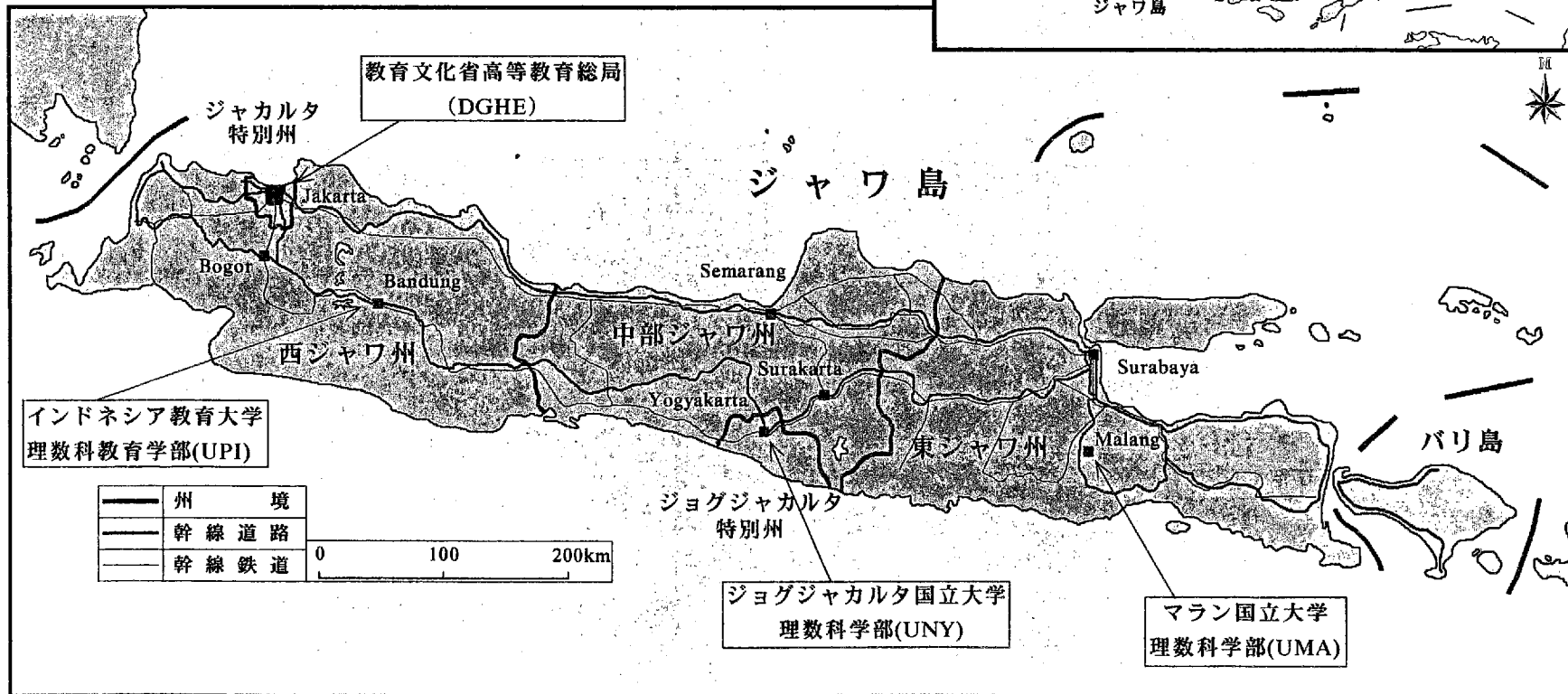
ここに、調査にご協力頂いた外務省、文部科学省、在インドネシア共和国大使館など、内外関係各機関の方々に深く謝意を表するとともに、引き続き一層のご支援を賜るよう、お願い申し上げます。

平成15年4月

**国際協力事業団**

**理事 泉 堅二郎**

# プロジェクト実施機関の位置図



## 略 語 表

|          |                 |
|----------|-----------------|
| BAPPENAS | 国家開発企画庁         |
| BPG      | (旧州レベル)教育研修センター |
| CBC      | 能力資質重視カリキュラム    |
| DGHE     | 国家教育省高等教育総局     |
| DGPSE    | 国家教育省初中等教育総局    |
| GBHN     | 国家政策大綱          |
| IKIP     | 旧教員養成大学         |
| IMSTEP   | 初中等理数科教育拡充計画    |
| JCC      | 合同調整委員会         |
| MGMP     | (地域レベル)教員研修集会   |
| PPPG     | 国レベル教科別教員研修センター |
| PROPENAS | インドネシア国家5か年開発計画 |

## 調査結果要約表

|   |                 |                                     |  |             |    |      |              |         |     |           |              |        |     |       |                 |                |     |           |              |  |  |         |  |
|---|-----------------|-------------------------------------|--|-------------|----|------|--------------|---------|-----|-----------|--------------|--------|-----|-------|-----------------|----------------|-----|-----------|--------------|--|--|---------|--|
| 案件概要  | 国名：インドネシア共和国    |                                     | 案件名：初中等理数科教育拡充計画（IMSTEP）                                     |             |    |      |              |         |     |           |              |        |     |       |                 |                |     |           |              |  |  |         |  |
|   | 分野：教育           |                                     | 援助形態：技術協力プロジェクト  |             |    |      |              |         |     |           |              |        |     |       |                 |                |     |           |              |  |  |         |  |
|   | 所轄部署：社会開発協力部第一課 |                                     |  |             |    |      |              |         |     |           |              |        |     |       |                 |                |     |           |              |  |  |         |  |
|   | 協力期間            | （R/D）：<br>1998年10月1日<br>～2003年9月30日 | 先方関係機関：教育省高等教育総局<br>我が方協力機関：文部科学省、東京学芸大学、<br>静岡大学、群馬大学、宇都宮大学 |             |    |      |              |         |     |           |              |        |     |       |                 |                |     |           |              |  |  |         |  |
| <p>1．協力の背景と概要</p> <p>インドネシア共和国（以下、「インドネシア」と記す）は、「国家開発計画（PROPENAS）」において人的資源の質向上を重点課題と定めている。特に科学技術の進歩に対応した人材育成を重要な柱として位置づけており、そのために理数科教育の強化が急務とされている。</p> <p>このような状況を受け、インドネシアは、初中等理数科の教員養成機関であるインドネシア教育大学、ジョグジャカルタ大学、マラン大学の各理数科教育学部における教育の質の向上、運営管理体制の強化を通じた初中等理数科教育の質の改善をめざしたプロジェクト方式技術協力を日本政府に要請してきた。その結果、1998年10月1日から「インドネシア初中等理数科教育拡充計画」が開始された。</p> <p>2．協力内容</p> <p>(1) 上位目標<br/>プロジェクトで得られた成果が教員養成機関に普及する。</p> <p>(2) プロジェクト目標<br/>インドネシア教育大学、ジョグジャカルタ大学、マラン大学の理数科教育学部の卒業生が学校現場での教育を向上させる。</p> <p>(3) 成 果</p> <p>1) 3大学の学部教育の質が向上する。<br/>2) 現職教員研修プログラムの質が向上する。<br/>3) 3大学の理数科教育学部の運営管理体制が強化される。</p> <p>(4) 投入（評価時点）</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">日本側：長期専門家派遣</td> <td style="width: 10%;">8名</td> <td style="width: 20%;">機材供与</td> <td style="width: 30%;">1,234万1,000円</td> </tr> <tr> <td>短期専門家派遣</td> <td>32名</td> <td>ローカルコスト負担</td> <td>7,135万4,000円</td> </tr> <tr> <td>研修員受入れ</td> <td>35名</td> <td>総額コスト</td> <td>71億1,293万4,000円</td> </tr> <tr> <td>相手側：カウンターパート配置</td> <td>77名</td> <td>ローカルコスト負担</td> <td>47億2,100万ルピア</td> </tr> <tr> <td></td> <td></td> <td>土地・施設提供</td> <td></td> </tr> </table> |                 |                                     |  | 日本側：長期専門家派遣 | 8名 | 機材供与 | 1,234万1,000円 | 短期専門家派遣 | 32名 | ローカルコスト負担 | 7,135万4,000円 | 研修員受入れ | 35名 | 総額コスト | 71億1,293万4,000円 | 相手側：カウンターパート配置 | 77名 | ローカルコスト負担 | 47億2,100万ルピア |  |  | 土地・施設提供 |  |
| 日本側：長期専門家派遣   | 8名              | 機材供与                                | 1,234万1,000円   |             |    |      |              |         |     |           |              |        |     |       |                 |                |     |           |              |  |  |         |  |
| 短期専門家派遣   | 32名             | ローカルコスト負担                           | 7,135万4,000円   |             |    |      |              |         |     |           |              |        |     |       |                 |                |     |           |              |  |  |         |  |
| 研修員受入れ  | 35名             | 総額コスト                               | 71億1,293万4,000円  |             |    |      |              |         |     |           |              |        |     |       |                 |                |     |           |              |  |  |         |  |
| 相手側：カウンターパート配置  | 77名             | ローカルコスト負担                           | 47億2,100万ルピア   |             |    |      |              |         |     |           |              |        |     |       |                 |                |     |           |              |  |  |         |  |
|   |                 | 土地・施設提供                             |  |             |    |      |              |         |     |           |              |        |     |       |                 |                |     |           |              |  |  |         |  |
| 調査者   | 担当分野            | 氏 名                                 | 所 属  |             |    |      |              |         |     |           |              |        |     |       |                 |                |     |           |              |  |  |         |  |
|   | 総括／団長           | 乾 英二                                | 国際協力事業団社会開発協力部社会開発協力第一課<br>課長                                |             |    |      |              |         |     |           |              |        |     |       |                 |                |     |           |              |  |  |         |  |
|   | 理数科教育           | 下條 隆嗣                               | 東京学芸大学教育学部 教授  |             |    |      |              |         |     |           |              |        |     |       |                 |                |     |           |              |  |  |         |  |
|   | 教育行政            | 遠山 紘司                               | 神奈川工科大学教育開発センター 教授   |             |    |      |              |         |     |           |              |        |     |       |                 |                |     |           |              |  |  |         |  |
|   | 教育計画            | 久保木 勇                               | 青年海外協力協会   |             |    |      |              |         |     |           |              |        |     |       |                 |                |     |           |              |  |  |         |  |
|   | 評価企画            | 小林 美弥子                              | 国際協力事業団社会開発協力部社会開発協力第一課                                      |             |    |      |              |         |     |           |              |        |     |       |                 |                |     |           |              |  |  |         |  |
|   | 評価分析            | 田中 紳一郎                              | (株)パデコ   |             |    |      |              |         |     |           |              |        |     |       |                 |                |     |           |              |  |  |         |  |
| 調査期間  | 2003年3月23日～4月9日 |                                     | 評価種類：終了時評価   |             |    |      |              |         |     |           |              |        |     |       |                 |                |     |           |              |  |  |         |  |

### 3. 評価結果の概要

#### (1) 妥当性

- ・インドネシア側の教育状況、日本側の援助政策の観点から、教員育成分野はプロジェクト実施対象として妥当である（国民評議会による国策大綱「GBHN（1999-2004）」、国家開発計画「PROPENAS 2000-2004」、「第4次インドネシア国別援助研究会報告書（国際協力事業団2000年）」等）。
- ・本プロジェクトが推進した「生徒中心型」「実験・体験重視型」の授業・学習法は、インドネシアで2004年導入予定の能力資質重視型カリキュラム（Competency-Based Curriculum：CBC）の方向性と軌を一にしている。

#### (2) 有効性

プロジェクト成果はプロジェクト目標の達成に貢献しつつある。より能力の高い学部学生を輩出する見込みが立っている。学生が習得しつつある「生徒中心型」「実験・体験重視型」の実践は、学校現場でも有効であることが、パイロット事業を通じて確認されつつある。実践における更なる質の向上の余地はあるが、本プロジェクトは、教育改善の必要条件整備に貢献しつつあるといえる。

#### (3) 効率性

- ・おおむね本事業の投入は円滑に実施された。本事業の成果物点数や、学生の成績向上から判断すると、本プロジェクトの効率性は非常に高い。限られたプロジェクト期間内で多くの成果物が作成され、実際に利用されている（シラビ・シラバス、共通教科書、各大学教科書、実験指導書、機材取扱書等、合計200タイトル超）。
- ・上述の「ワーキンググループ」と「タスクチーム」のプロジェクト実施体制が効率的な事業実施にも貢献してきた。
- ・一方で、日本人専門家の専門分野が教科教育ではない、派遣期間が偏りがちである、派遣期間が短すぎるなどの不満が一部カウンターパートにある。また、特定学科（Department）からのカウンターパート派遣数が少ない、多いという強い不満の声も聞かれた。さらに、2002年度以降の共通教科書作成の進捗が遅れている点がやや懸念される。

#### (4) インパクト

予見されていたインパクト〔旧教員養成大学（IKIP）9大学との成果品の共有 - 共通教科書、学術雑誌、及びニュースレター各20部〕に加えて、9大学以外との成果品の共有（確認済みの数は15大学）、パイロット事業を通じた大学 - 現場学校のつながり（相互裨益）、及び県教育局とのつながり（県レベルの現職教員研修、実施枠組みの萌芽）の形成が観察された。

#### (5) 自立発展性

- ・本プロジェクトについては、高等教育機関の活動という観点では、授業改善、パイロット事業の継続が見込まれる。「生徒中心型」「実験・体験重視型」は2004年導入予定のCBCと軌を一にする。カウンターパートは、これら手法の知識・実践経験を蓄積しつつある。さらに、リーダー的人材も育ちつつある。
- ・国家教育省高等教育総局（DGHE）、各学部長は本プロジェクト活動の継続資金を拠出する意思を明らかにしている。
- ・しかしながら、CBCの導入を2004年に控えている点（本格導入以降、現場学校からのアドバンス要請等に応えることが期待される）、地方分権下における現職教員研修の制度的枠組みが未整備・未提示である点に留意が必要である。この点については、特に地方における現職教員研修の普及という観点からは、予断を許さない。



#### 4. 効果発現に貢献した要因

##### (1) 計画内容に起因する要因

パイロット活動を通じた大学 - 現場学校のつながりを重視したことにより、「生徒中心型」「実験・体験重視型」の授業手法は、大学の授業・演習及びパイロット校の両者にて、授業・学習の質の改善手法として有効であると確認されつつある。

##### (2) 実施プロセスに起因する要因

各学科に垂直的な「ワーキンググループ」と学科をまたいだ水平的な「タスクチーム」を組み合わせたプロジェクト実施組織が円滑な事業実施に貢献してきた。

#### 5. 問題点及び問題を惹起した要因

##### (1) 計画内容に起因する要因

プロジェクト目標は「3大学の卒業生が学校現場での教育を向上させる」となっている。しかしながら、プロジェクト期間内において、4年制の大学の教育内容を改善し、卒業生を多数輩出するまでにいたることは困難であり、計画当初の目標の表現に問題があった。ただし、本調査団で確認したとおり、本目標のとらえ方は、「3大学の質の高い卒業生を輩出するための能力向上」という点にあることを日本・インドネシア側双方で了解していたため、現実的な目標を達成することができた。

##### (2) 実施プロセスに起因する要因

- ・日本側の人材リソースが大学教員を中心に実施されたため、派遣期間が日本の大学の休み期間中に偏りがちである。また、日本人専門家の専門が教科教育ではないなど、効率性にやや問題が指摘された。
- ・共通教科書作成に遅れが指摘されているが、作成手順を2002年以前と以降とで変更したことについて、日本・インドネシア側双方のコミュニケーションが不十分であったと思われる。

#### 6. 結 論

本プロジェクトは、インドネシアの理数科教育の質改善に対し、効率的かつ効果的に貢献しており、終了予定時までには、プロジェクト・デザイン・マトリックス (PDM) のプロジェクト目標、成果、活動は達成可能である旨、調査団とインドネシア側で合意した。よって、この技術協力プロジェクトは予定どおり2003年9月末に終了する。

一方、調査団として、以下の観点から、小規模なフォローアップ事業を実施することを提言する。

- (1) Competency-Based Curriculum (CBC) の導入を2004年に控えていること
- (2) 地方分権化による教育セクターへの影響
- (3) 本プロジェクトの成果の普及

#### 7. 提 言

##### (1) 短期的提言 (プロジェクト終了までの半年間)

- 1) フォローアップ事業に係るグランドデザインの作成
- 2) 共通教科書作成の進捗確認
- 3) 機材管理方法・メンテナンス情報を含めた機材台帳の完成
- 4) 国家教育省初等中等教育総局との連携強化
- 5) 成果物の大学課程全体への普及
- 6) パイロット活動の質に係る調査「手法」の改善
- 7) 他のIKIP 9校におけるプロジェクト成果普及の確認

(2) 長期的提言（プロジェクト終了後）

- 1) 予算の確保
- 2) 地方分権化における現職教員研修の組織化のためのモデル・ガイドライン作成
- 3) 新カリキュラム（Competency-Based Curriculum：CBC）用の授業・学習手法の継続的開発・改善
- 4) 理数科教育に係るナショナル・セミナーの例年実施
- 5) 質の改善と量の拡大によるバランスのよい教育協力の実施

8. 教訓

- (1) 「大学間」及び「大学～現場学校」との連携の重要性
- (2) 効果的なプロジェクト実施体制～各学科に垂直的な「ワーキンググループ」と学科をまたいだ水平的な「タスクチーム」の両者をプロジェクト実施組織としたこと
- (3) 活動の実用性
- (4) 日本側のリソースに基づいたプロジェクト・デザインの作成
- (5) カウンターパート機関による評価指標の収集・確認

# 第 1 章 終了時評価調査の概要

## 1 - 1 要請の背景・経緯

インドネシア共和国(以下、「インドネシア」と記す)は、「国家開発計画( PROPENAS )」において人的資源の質の向上を重点課題と定めている。特に科学技術の進歩に対応した人材育成を重要な柱として位置づけており、そのために理数科教育の強化が急務とされている。

こうした状況を受けてインドネシアは、初中等理数科の教員養成機関であるインドネシア教育大学、ジョグジャカルタ国立大学、マラン国立大学の各理数科教育学部における教育の質の向上、運営管理体制の強化を通じて初中等理数科教育の質の改善をめざすプロジェクト方式技術協力を日本政府に要請し、1998年10月1日から「インドネシア初中等理数科教育拡充計画」が開始された。

2001年4月に、中間評価が実施され、技術移転の進捗状況の確認及び日本・インドネシア間の今後の協力に関する方向性が検討された。その結果、プロジェクト全般において計画どおり進捗していることが確認された。また、各大学のパートナー校におけるパイロティング活動、供与機材の目録作成、3大学以外の教員養成大学への成果の普及等が提言された。

今般、協力終了を2003年9月30日に控え、評価5項目の観点からプロジェクトを評価するとともに、先方政府による今後の初中等理数科教育のあり方や我が国の協力方針についてインドネシア側関係機関と協議することを目的に、本調査団を派遣する。

## 1 - 2 調査団派遣の目的

- (1) 本プロジェクトの協力期間終了を2003年9月30日に控え、これまで実施した協力活動全般について、当初計画に照らし、計画達成度(投入実績、活動実績、プロジェクト成果の達成状況)を把握する。
- (2) 上記(1)を踏まえたうえで、評価5項目の観点からプロジェクトの評価を行う。
- (3) 評価結果から他のプロジェクトの形成、運営、評価等の参考となる教訓を導き出すとともに、日本・インドネシア側双方の今後の対応等について提言を行う。

## 1 - 3 調査団の構成

| 担当分野  | 氏名     | 所属                         |
|-------|--------|----------------------------|
| 総括/団長 | 乾 英二   | 国際協力事業団社会開発協力部社会開発協力第一課 課長 |
| 理数科教育 | 下條 隆嗣  | 東京学芸大学教育学部 教授              |
| 教育行政  | 遠山 紘司  | 神奈川工科大学教育開発センター 教授         |
| 教育計画  | 久保木 勇  | 青年海外協力協会                   |
| 評価企画  | 小林 美弥子 | 国際協力事業団社会開発協力部社会開発協力第一課    |
| 評価分析  | 田中 紳一郎 | (株)パデコ                     |

1 - 4 調査日程

| 日<br>順 | 月 日   | 曜<br>日 | 移動と業務内容  |                                |
|--------|-------|--------|--|--------------------------------|
|        |       |        | コンサルタント  | 官団員                            |
| 1      | 3月23日 | 日      | 成田発 ジャカルタ着   |                                |
| 2      | 3月24日 | 月      | ジャカルタ バンドン<br>インドネシア教育大学現地調査   |                                |
| 3      | 3月25日 | 火      | インドネシア教育大学現地調査   |                                |
| 4      | 3月26日 | 水      | ジョグジャカルタ スラバヤ マラン<br>マラン大学現地調査   |                                |
| 5      | 3月27日 | 木      | マラン大学現地調査  |                                |
| 6      | 3月28日 | 金      | マラン大学現地調査  |                                |
| 7      | 3月29日 | 土      | マラン スラバヤ ジョグジャカルタ  |                                |
| 8      | 3月30日 | 日      | データ収集、分析調査結果まとめ  |                                |
| 9      | 3月31日 | 月      | データ収集、分析調査結果まとめ  | 成田発 ジャカルタ着<br>ジャカルタ発 ジョグジャカルタ着 |
| 10     | 4月1日  | 火      | ジョグジャカルタ大学現地調査 / パイロティング活動見学   |                                |
| 11     | 4月2日  | 水      | ジョグジャカルタ ジャカルタ<br>(乾団長) 成田 ジャカルタ<br>19:00 団内打合せ (徳田チーフアドバイザー)  |                                |
| 12     | 4月3日  | 木      | 9:00 国家開発企画庁 (BAPPENAS) 訪問<br>10:00 国家教育省高等教育総局 (DGHE) 訪問<br>13:30 JICAインドネシア事務所 神田所長、大竹次長と面談<br>15:30 国家教育省初中等教育総局 (DGPSE) 訪問 |                                |
| 13     | 4月4日  | 金      | 午前 ジャカルタ バンドン (車で移動)<br>13:30 初中等理数科教育拡充計画 (IMSTEP) プロジェクト 評価団から目的・評価方法等を説明<br>14:00 専門家 / カウンターパートへのインタビュー                    |                                |
| 14     | 4月5日  | 土      | パイロティング活動現地調査  |                                |
| 15     | 4月6日  | 日      | バンドン ジャカルタ (車で移動) ミニッツ準備   |                                |
| 16     | 4月7日  | 月      | 9:00-12:00 合同調整委員会 (Joint Coordinating Committee : JCC) との協議<br>13:30 ミニッツ署名・交換  |                                |
| 17     | 4月8日  | 火      | 15:00 在インドネシア日本大使館報告 長谷川一等書記官<br>16:00 JICAインドネシア事務所報告 神田所長、大竹次長に報告<br>23:55 ジャカルタ 成田 (JL716)                                  |                                |
| 18     | 4月9日  | 水      | 9:50 成田着   |                                |

1 - 5 主要面談者

インドネシア側

(1) 国家開発企画庁

Dra. Nina Sardjunana, MA Director of Region and Education

(2) 国家教育省高等教育総局

Prof. Dr. Ir. Satorio Soemantri Director General

Ir. Oetomo Djajanegara

(3) 国家教育省初等中等教育総局

Dr. Ir. Indra Djati Sidi

Dr. Zamroni

Director for General Senior Secondary  
Education, DGPSE

Dr. Sungkowo

Director for General Junior Secondary  
Education, DGPSE

(4) インドネシア教育大学

Prof. Dr. H. Mohammad Fakry Gaffar

M. Ed.

Rector of Indonesia University of Education

Drs. Harry Firman, M. Pd.

Dean of FPMIPA UPI

Dr. Sumar Hendayana, M. Sc.

Vice Dean of FPMIPA UPI

Drs. Harun Imansyah, M. Ed.

(5) ジョグジャカルタ大学理数科学部

Prof. Suyanto, Ph. D

Rector of State University of Yogyakarta

Drs. Sukirman, M. Pd

Dean of FMIPA UNY

Drs. Marsigit, M. Ed

LC of FMIPA UNY

(6) マラン大学理数科学部

Prof. Dr. Imam Syafi'e

Rector of State University of Malang

Drs. Kadim Masjkur, M. Pd

Dean of FMIPA UM

Dra. Herawati Susilo, M. Sc., P. hD

LC of FMIPA UM

日本側

(1) IMSTEPプロジェクト

徳田 耕一

チーフアドバイザー

中津 将樹

業務調整

神志那 良雄

物理教育(長期専門家)

寺谷 敬介

化学教育(長期専門家)

(2) 在インドネシア日本大使館

長谷川 和弘

一等書記官

(3) 国際協力事業団専門家

平中 英二

高等教育総局顧問

高澤 直美

初等中等教育計画

(4) 国際協力事業団インドネシア事務所

神田 道男

所 長

大竹 祐二

次 長

橘 秀治

所 員

## 第2章 終了時評価の方法

### 2 - 1 プロジェクト・デザイン・マトリックス( PDM )の改訂

#### (1) 中間評価時( PDM Ver. 1 Ver. 2 ):

- ・対象大学の呼称変更に伴う改訂(「旧教員養成大学：IKIP」から「State University」へ)
- ・上位目標、プロジェクト目標の指標の改訂(各目標による裨益をより直接的に示す指標に改訂)
- ・成果の指標の改訂：学部教育と現職教員教育に関する指標の一部共通化と、裨益をより具体的に示す数値に改訂

#### (2) 終了時評価時( PDM Ver. 2 PDMe ):

- ・プロジェクト目標の指標に、パイロティング事業協力校の認識・見解を追加、及び一部標記の修正
- ・活動のうちパイロット事業に属する項目について、その旨を明示

### 2 - 2 評価方法

「JICA事業評価ガイドライン」に準拠し、計画達成度、実施プロセス、及び評価5項目の観点から評価を実施した。

手法：資料のレビュー、質問票調査、及びインタビュー。

質問票調査とインタビューはカウンターパート（教育省、インドネシア教育大学、マラン国立大学、ジョグジャカルタ教育大学）、及び日本人専門家を対象とした。

中間評価時同様、「活動進捗指標マトリックス」「パフォーマンス指標マトリックス」が3大学によって準備された。これらマトリックスにはプロジェクト指標が網羅的に収録されている。効率的な情報収集、分析、照合に大きく貢献した点は特筆される。

### 第3章 分野別評価結果

#### 3 - 1 生物

|                  |  |
|------------------|--|
| 1. 投入実績          | <p>(日本側)</p> <ul style="list-style-type: none"> <li>1. 長期専門家 生物分野 0名</li> <li>2. 短期専門家派遣数 8名</li> <li>3. カウンターパート研修 7名</li> <li>4. 機材供与</li> </ul> <p>(インドネシア側)</p> <ul style="list-style-type: none"> <li>1. カウンターパート配置 12名</li> <li>2. 予算措置</li> </ul>   |
| 2. 活動実績          | <ul style="list-style-type: none"> <li>1. 機材供与</li> <li>2. 教科書の作成</li> <li>3. 実験マニュアルの作成</li> <li>4. 生物学的知見及び実験方法の教授</li> <li>5. 供与機材の管理マニュアルの作成</li> <li>6. スクール・パイロティングの実施</li> <li>7. 初中等教育教員の教育コンテストの実施</li> <li>8. ワークショップの開催</li> <li>9. カウンターパートの日本研修</li> </ul>                                      |
| 3. 成果の達成状況       | <ul style="list-style-type: none"> <li>1. 実験機器、器材が整備された。</li> <li>2. 実験の重要性を認識させた。</li> <li>3. 質の高い実験ができるようになった。</li> <li>4. 大学教員スタッフの知識及び実験技術が向上した。</li> <li>5. 教科書、実験マニュアルが多数作成された（詳細は「付属資料1 - 2 . PDMe」のとおり）。</li> <li>6. 機材管理マニュアルの作成により、機材管理ができた。</li> <li>7. パイロティングにより、中学・高校の実験技術が急速に向上した。</li> </ul> |
| 4. プロジェクト目標の達成状況 | <p>大学教員が生物教育における実験の重要性を認識するとともにテキスト作成と併せ、学部教育の質が向上した。また、パイロット校における実験に対する考え方及び技術が向上した。</p>  |



### 3 - 2 数 学

|                  |   |
|------------------|---|
| 1. 投入実績          | <p>(日本側)</p> <ul style="list-style-type: none"> <li>1. 長期専門家 数学分野 0名</li> <li>2. 短期専門家派遣数 9名</li> <li>3. カウンターパート研修 9名</li> <li>4. 機材供与</li> </ul> <p>(インドネシア側)</p> <ul style="list-style-type: none"> <li>1. カウンターパート配置 12名</li> <li>2. 予算措置</li> </ul>  |
| 2. 活動実績          | <ul style="list-style-type: none"> <li>1. 共通教科書の作成</li> <li>2. スクール・パイロティングの実施</li> <li>3. 中等教育教員の授業コンテストの実施</li> <li>4. 専門家による大学教員への講義</li> <li>5. パソコン、ネットワークについての新しい考え方の指導</li> <li>6. 輪講形式によるセミナーの開催</li> <li>7. 数学教育論文執筆と投稿の勧め</li> <li>8. グラフ電卓の高校教育への導入</li> <li>9. カウンターパートの日本研修</li> </ul>                           |
| 3. 成果の達成状況       | <ul style="list-style-type: none"> <li>1. 共通に使用できる標準的で安価な教科書を作成した(詳細は「付属資料 1 - 2 . PDMe」のとおり)。</li> <li>2. パイロティング活動により、高校教員と大学教員の連携が深まり、現職教員による授業に工夫がみられるようになった。</li> <li>3. 授業コンテストにより、現職教員に器具の利用、教え方の工夫の必要性が理解されるようになった。</li> <li>4. 講義、輪講を通して大学教員に専門的な力、教育力の改善が認められた。</li> <li>5. 国際的教育雑誌への8編の投稿があり、研究意欲を刺激した。</li> </ul> |
| 4. プロジェクト目標の達成状況 | <p>大学教員自らが研究し、教育を改善することの重要性を認識して実行に移しつつある。また、大学教員と中学・高校教員の連携により、人材育成に新しい方向性がみえてきつつある。</p>   |

### 3 - 3 化 学

|                  |  |
|------------------|--|
| 1. 投入実績          | <p>(日本側)</p> <ul style="list-style-type: none"> <li>1. 長期専門家 化学分野 各 1 名</li> <li>2. 短期専門家派遣数 8 名</li> <li>3. カウンターパート研修 7 名</li> <li>4. 機材供与</li> </ul> <p>(インドネシア側)</p> <ul style="list-style-type: none"> <li>1. カウンターパート配置 12 名</li> <li>2. 予算措置</li> </ul>   |
| 2. 活動実績          | <ul style="list-style-type: none"> <li>1. 共通教科書、個別教科書の作成</li> <li>2. シラバスの作成</li> <li>3. 実験マニュアルの作成</li> <li>4. ワークショップの開催</li> <li>5. スクール・パイロティングの実施</li> <li>6. 供与機材のインベントリーリスト作成</li> <li>7. カウンターパートの日本研修</li> <li>8. 化学実験プログラムの開発</li> <li>9. 教育現場との連携</li> </ul>  |
| 3. 成果の達成状況       | <ul style="list-style-type: none"> <li>1. インドネシア語の教科書や実験マニュアルが作成され(詳細は「付属資料 1 - 2 . PDMe」のとおり)使われるようになった。</li> <li>2. 化学の講義の内容が現代化された。</li> <li>3. 安全や環境に配慮した実験プログラムの開発が行われるようになった。</li> <li>4. 科学科スタッフの実験技術が向上し、学生の個別実験の機会が増えた。</li> <li>5. 機材が整備され、インベントリーリストの作成により、機材管理が改善された。</li> <li>6. 日本での研修経験者がプロジェクト実践のリーダーとして活躍した。</li> <li>7. パイロット活動を通して教材・LESSONプラン開発が行われた。</li> <li>8. ワークショップを契機として中学・高校の理科教師との連携が強まった。</li> </ul> |
| 4. プロジェクト目標の達成状況 | <p>伝統の一斉暗唱型の授業から個に目を向けた学習重視、実験を通じた科学的考察の体得とともに、安全と環境に配慮した化学教育の提案が受け入れられ、成果を生みつつある。</p>   |

### 3 - 4 物 理

|                 |   |
|-----------------|---|
| 1．投入実績          | <p>(日本側)</p> <ul style="list-style-type: none"> <li>1．長期専門家 生物分野 各1名</li> <li>2．短期専門家派遣数 8名</li> <li>3．カウンターパート研修 8名</li> <li>4．機材供与</li> </ul> <p>(インドネシア側)</p> <ul style="list-style-type: none"> <li>1．カウンターパート配置 12名</li> <li>2．予算措置</li> </ul>   |
| 2．活動実績          | <ul style="list-style-type: none"> <li>1．機材供与</li> <li>2．教科書の作成</li> <li>3．実験マニュアルの作成</li> <li>4．供与機材の管理方式の作成（供与機材のインベントリーリスト作成）</li> <li>5．スクール・パイロティングの実施</li> <li>6．初中等教育教員の教育コンテストの実施</li> <li>7．カウンターパートの日本研修</li> </ul>   |
| 3．成果の達成状況       | <ul style="list-style-type: none"> <li>1．実験機材が整備された。</li> <li>2．実験の重要性を認識させた。</li> <li>3．大学教員スタッフが定量化され、質の高い実験を実施できるようになった。</li> <li>4．大学教育スタッフの実験技術が向上した。</li> <li>5．教科書、実験テキストが新たに多数作成された（詳細は「付属資料1 - 2・PDMe」）のとおり。</li> <li>6．機材管理方式の作成により、機材が管理された。</li> <li>7．パイロティング活動により、大学教員が初中等教育現場との関係を強めた。</li> <li>8．初中等教育教員が授業に物理実験を取り入れるようになった。</li> <li>9．日本での研修を終えたカウンターパートが各学科の教育改善の中心になってきた。</li> </ul> |
| 4．プロジェクト目標の達成状況 | <p>従来の知識伝授型のインドネシアの物理教育から実験重視、問題解決型の教育への流れという方向性と方法を提示し、理解されつつある。</p>   |

3 - 5 タスクA(教育課程及び教授内容)

|                         |  |
|-------------------------|--|
| <p>1. 投入実績</p>          | <p>(日本側)</p> <ul style="list-style-type: none"> <li>1. 長期専門家 チーフアドバイザー 2名</li> <li style="padding-left: 20px;">物理教育 1名</li> <li style="padding-left: 20px;">化学教育 1名</li> <li style="padding-left: 20px;">業務調整 2名</li> <li>2. 短期専門家派遣数 32名</li> <li>3. カウンターパート研修 36名</li> <li>4. 機材供与 理数科実験機材、コンピューター等</li> </ul> <p>(インドネシア側)</p> <ul style="list-style-type: none"> <li>1. カウンターパート配置 12名</li> <li>2. 予算措置</li> </ul>  |
| <p>2. 活動実績</p>          | <ul style="list-style-type: none"> <li>1. 現職教師研修のための改定教育課程開発並びにそのモニタリング</li> <li>2. 教師養成のための教育課程改善の草案</li> <li>3. 実験科目のための指導書作成</li> <li>4. 実験科目のための実験手引き書作成</li> <li>5. 実験科目の指導法のモニタリング</li> <li>6. 教育実習の方法</li> <li>7. 授業研究法</li> <li>8. 教育実習と学級活動のモニタリング(教育実習は教師養成、学級活動は現職教師)</li> <li>9. 各学科別実験室管理ガイド作成</li> </ul>   |
| <p>3. 成果の達成状況</p>       | <ul style="list-style-type: none"> <li>1. 学部カリキュラムの改定が進められ、シラバスも作成された。</li> <li>2. 供与された多数の器材を用いて行う数学・物理学・化学・生物学に関する学部の基礎実験の手引書が多数作成され、それらを用いて、新たな実験や少人数の実験がなされるようになった。基礎実験は、学校理科を指導する(将来の)教師の基礎力を形成するものであり、理科教育改善の決め手となるものと考えられるものである。</li> <li>3. パイロット・スクールにおいて、授業研究が行われ、理数科授業を大学教員が評価するモニタリングも実施されるようになった。</li> <li>4. 本プロジェクト並びに無償資金によって供与された多数の機材について機材目録が作成され、個別番号による機材の識別が可能となり、供与機材の管理がスムーズに行われるようになった。<br/>〔改定カリキュラム数、手引書等の数、供与機材等については、各大学からの報告書を参照〕</li> </ul>   |
| <p>4. プロジェクト目標の達成状況</p> | <p>学部カリキュラムの改定やシラバスの作成は、理数(教育)学部教育の中身の透明性を高め、大学教員相互あるいは学生からの批判を通して学部の理数科教育の改善を図るシステムが、学部に着したことを意味する。</p> <p>実験については、プロジェクト開始前は、機材不足のため、理数科教育教員養成や現職教育教員の資質・向上に必要な「基礎実験」が行われなかったり、多人数の学生による実験が行われていたが、本プロジェクトによってそれらが改善された。理数科の実験が、教師の指導力の基礎力となるため、卒業生の観察・実験能力が向上したと考えられる。</p> <p>大学と学校を結ぶ組織がつくれ、パイロットングが実施されるようになり、大学教員が教育研究に深くかかわるようになったことは、レベルの高い学校教師の養成に大きな成果を生み出しつつある。特に、パイロットングは、インドネシアが2004年度から実施予定の資質・能力を重視した学校カリキュラムの授業実践のモデルを提供するものであり、インドネシアの理数科教育に大きく寄与すると考えられる。</p> <p>本プロジェクト並びに無償資金によって供与された多数の機材についての目録の作成は、機材やそれらのための消耗品等が容易に入手できず、また高い湿度など機材保守に課題がある国にあって、学部における長期にわたる安定的な教育活動を保証するために、実態を把握することを意図して企画されたものである。今後、「機材目録」には故障時の連絡先も追加される予定で、機器の長期的保守体制が確立される。</p> |

### 3 - 6 タスクB(カリキュラム及びシラバス)

|                         |  |
|-------------------------|--|
| <p>1. 投入実績</p>          | <p>(日本側)</p> <p>1. 長期専門家 チーフアドバイザー 2名<br/>物理教育 1名<br/>化学教育 1名<br/>業務調整 2名</p> <p>2. 短期専門家派遣数 32名</p> <p>3. カウンターパート研修 36名</p> <p>4. 機材供与 理数科実験機材、コンピューター等</p> <p>(インドネシア側)</p> <p>1. カウンターパート配置 12名</p> <p>2. 予算措置</p>   |
| <p>2. 活動実績</p>          | <p>1. 現職教師研修用の指導案作成並びに同指導案のモニタリング</p> <p>2. 教師養成用の指導案作成並びに同指導案のモニタリング</p> <p>3. 現職教師研修用と教師養成用の両指導法に対する指導法の改善</p> <p>4. 指導法の適切性についてのモニタリング</p>  |
| <p>3. 成果の達成状況</p>       | <p>1. 学校の教科指導に直結する活動として、3大学の理数科教育学部教員と学校の理数科教師が協力し、教師中心から生徒中心で、かつ作業や観察・実験活動に伴う授業が実施された(パイロティング)。生徒中心の授業、作業や観察・実験の導入、実施された授業について授業後に授業の長所や欠点を指摘しあって改善を図る授業研究は、インドネシアにこれまで存在しなかったものである。3大学の教員は、授業設計の段階からパイロティングに参加する。このような斬新な授業や授業研究は教員養成教育、すなわち、理数教育学部の理数科教育法の授業に反映されつつある。</p> <p>2. パイロット・スクールにおいて、指導案作成やそのモニタリングが行われた。<br/>〔作成した指導案の数やパイロティングに関与した学校数、大学教員数、学校教師数、パイロティングの回数等の詳細は、各大学からの報告書を参照〕</p> |
| <p>4. プロジェクト目標の達成状況</p> | <p>パイロティングを通して、卒業生などの教科指導の実力が向上し、かつ大学側教官も学部の授業において教科教育的内容を向上させた。パイロティングは、2004年度からインドネシアにおいて導入予定である「生徒の資質能力を高める理数科カリキュラム」に対応するものであり、今後、パイロティングの質的向上という課題はあるものの、3大学の理数(教育)学部は理数科教育改善の促進者になりつつある。インドネシア教育省の関係者は、3大学あるいは本プロジェクトがパイロティングの成果を他の教員養成・現職教育教員研修機関へ普及することを希望している模様であるが、その理由はこれらの事実によるものと考えられる。</p>   |

3 - 7 タスクC(教材開発)

|                         |   |
|-------------------------|---|
| <p>1. 投入実績</p>          | <p>(日本側)</p> <p>1. 長期専門家 チーフアドバイザー 2名<br/>物理教育 1名<br/>化学教育 1名<br/>業務調整 2名</p> <p>2. 短期専門家派遣数 32名</p> <p>3. カウンターパート研修 36名</p> <p>4. 機材供与 理数科実験機材、コンピューター等</p> <p>(インドネシア側)</p> <p>1. カウンターパート配置 12名</p> <p>2. 予算措置</p>  |
| <p>2. 活動実績</p>          | <p>1. 現職教師研修用テキストの開発</p> <p>2. テキストの適切性についてのモニタリングとその報告書</p> <p>3. 機材</p> <p>4. 機材の使用法(活用マニュアル)</p> <p>5. 機材の適切性についてのモニタリングとその報告書</p>   |
| <p>3. 成果の達成状況</p>       | <p>1. 3大学で共通に活用するインドネシア語の学部学生用の自然科学や中等理数科教育の「共通教科書」や、3大学の各々で活用する「個別用教科書」が、計数十冊作成された。これらは、学部の教師養成カリキュラム(現職教育にも適用可)のかなりの部分をカバーした。</p> <p>2. 学部の自然科学・自然科学教育用の教材も多数開発された〔共通・個別各教科書の冊数、分野別分布などの詳細や、教材のリスト等は、各大学からの報告書を参照〕。</p>   |
| <p>4. プロジェクト目標の達成状況</p> | <p>本プロジェクト開始以前には、3大学ではインドネシア語で書かれた教科書は存在していなかった(このことは、他の教員養成大学・学部でも同様である)。大学教員による板書には正確さと量において限界があり、また教科書がない場合には予習・復習が不可能であるため、教科書が存在しないことは、学生にとって講義内容の理解や知識の把握に致命的といえる。また、母国語で書かれた教科書の使用は、外国語で書かれた教科書の使用に比較して、学生の内容の理解は格段に向上すると考えられる。したがって、母国語の教科書の作成は、実験の実施と併せて、「理数科教育改善の要」といえる。教科書や教材は、今後のインドネシアにおける理数科教育向上のための教育上の知的資産である。学部学生用の教科書は今後改定作業の継続が必要とされるものの、学生の成績(GPA)向上や学部卒業期間の短縮に寄与していると考えられる。これらの教科書は、教員養成を担う3大学以外の9大学の理数(教育)学部へも送付され、成果の普及にも寄与している。</p> |

3 - 8 タスクD(教育評価及び学術交流)

|                         |  |
|-------------------------|--|
| <p>1. 投入実績</p>          | <p>(日本側)</p> <p>1. 長期専門家 チーフアドバイザー 2名<br/>物理教育 1名<br/>化学教育 1名<br/>業務調整 2名</p> <p>2. 短期専門家派遣数 32名</p> <p>3. カウンターパート研修 36名</p> <p>4. 機材供与 理数科実験機材、コンピューター等</p> <p>(インドネシア側)</p> <p>1. カウンターパート配置 12名</p> <p>2. 予算措置</p>   |
| <p>2. 活動実績</p>          | <p>1. 学校活動の評価ガイドの開発</p> <p>2. 学級活動の評価とその報告書</p> <p>3. 形成的評価とその報告書</p> <p>4. ニュースレター又は雑誌の発行</p>   |
| <p>3. 成果の達成状況</p>       | <p>1. パイロティングの評価ガイドや報告書、本プロジェクトの評価報告書が作成された。</p> <p>2. セミナーやワークショップが開催され、3大学カウンターパート以外の他大学の教員や学校の現職教員を含む多数の教員が参加し、成果が共有と普及に寄与した。</p> <p>3. 雑誌やニュースレターを発行した。</p>  |
| <p>4. プロジェクト目標の達成状況</p> | <p>本プロジェクトは、3大学にまたがるものであるため、プロジェクトを進めるために3大学間の相互交流が必要であった。このため、ニュースレターが発行された。ニュースレターや雑誌の発行は、理数科教育改善の啓発や、プロジェクトの成果を他の教員養成・研修機関や学校に普及するためにも必要なものである。ジャーナルの発行は、インドネシアの大学における研究の質的向上を通して、理数科教育に貢献するものであり、オーナーシップの育成につながるものである。インドネシアでは、理数科教育の改善を主な目的とする科学教育関係の学会の設置が望まれるが、これらの活動は、学会設置等の今後の布石になると考えられる。</p> <p>また、本プロジェクトではセミナーやワークショップも開催されたが、これらにより本プロジェクトの成果の共有と普及がなされた。青年海外協力隊員や教材会社職員をまき込んだ実験法のワークショップも開催され、観察・実験法の学校への普及に寄与した。</p> <p>また、3大学では本プロジェクトに関する多くの報告書が作成されたが、これらは、今後のより一層の理数科教育改善のための基礎資料となるものである。</p> |

## 第4章 評価結果

### 4-1 プロジェクトの実績

本プロジェクトは、終了時までにおおむね当初の目標を達成できると結論される。学部教育、現職教員再訓練の質向上の項目(成果1、2)についても、学部運営能力(成果3)についても、当初の計画に沿ってプロジェクトは成果を上げつつある。

学部教育については、学生はより短期間で、かつより好成績で学部を卒業する傾向にあり、プロジェクト実施を通じ、より優秀な学生が育成されつつあることが示された。また、「生徒中心型」「実験・体験重視型」の授業手法は、大学の授業・演習、パイロットパートナー校の両者にて、授業・学習の質を改善する手法として歓迎されている。

本プロジェクトでは、各学科に垂直的な「ワークグループ」と学科をまたいだ水平的な「タスクチーム」の両者をプロジェクト実施組織として設置した。この組織を通じて学科・学部内外の連絡・交流が再活性化され、学術研究・教育の両面で学部の運営能力が向上した。また、各大学にて導入されたコンピューターシステムを通じ、教室・実験室管理及び機材維持管理が向上し、より無駄のない学部運営が実現されつつある。

他大学と成果物の共有もおおむね計画どおりなされている。

### 4-2 実施プロセス

プロジェクト対象3学部、及び国家教育省高等教育総局(DGHE)の支援を得て、プロジェクトはおおむね順調に推移してきている。

「ワークグループ」と「タスクチーム」の実施体制が円滑な事業実施に貢献してきた。各学科、学部、3大学では定期的な協議がなされ、これが各レベルでの事業モニタリングにあたっている。また、この実施体制が関係者間に協力・協働、及び適度な「競争意識」を醸成し、プロジェクトの進捗に貢献した。

### 4-3 5項目による評価

#### (1) 妥当性

インドネシアの教育状況、日本側の援助政策の観点から、教員育成分野はプロジェクト実施対象として妥当である。

教員能力の向上を通じた初中等教育の質の向上は、インドネシア政策文書では優先順位の高い分野として位置づけられている(国民評議会による国策大綱「GBHN(1999-2004)」や国家開発計画「PROPENAS 2000-2004」)。一方、最新の「第4次インドネシア国別援助研究会報告書(国際協力事業団 2000年)」では教員の資質向上が5つの優先分野のうちのひとつとしてあ



げられている。

教育手法、教育理念的にも、本事業が推進した「生徒中心型」実験・体験重視型授業・学習法は、インドネシアの事情に照らして妥当である。同国は、2004年に能力資質重視型カリキュラム(Competency-Based Curriculum : CBC)を導入予定であるが、これも上記の手法・理念を軸においている。

## (2) 有効性

プロジェクト成果はプロジェクト目標の達成に貢献しつつある。

より能力の高い学部学生を輩出する見込みが立ち、また、その学生が習得しつつある「生徒中心型」実験・体験重視型授業・学習法に関する一連の技能・能力は、現場の学校にとっても有効であることが、パイロット事業を通じて確認されつつある。授業・学習法の習得には依然として質の向上の余地はあるものの、教育改善の必要条件整備に貢献しつつあるといえる。

## (3) 効率性

一部の例外を除き、おおむね本事業の投入は円滑に実施された。一方で、本事業の成果物の点数や、学生の成績向上を考慮すると、本プロジェクトの効率性は非常に高い。限られたプロジェクト期間内に、シラビ・シラバス全面改訂版、3大学間共通教科書、各大学作成の教科書、実験指導書、機材取扱書等、合計200タイトルが作成され、その多くが実際に利用されている。こうした(局所的ではない)全般的な教育投入の質的・量的改善が、学生の学習環境を向上させ、より優秀な学生の輩出に貢献しつつある。

実施体制としては、上述の「ワーキンググループ」と「タスクチーム」のプロジェクト実施体制が、効率的な事業実施にも貢献してきた。

一方で、日本人専門家の投入、及び日本におけるカウンターパート研修については、若干の非効率性が指摘された。日本人専門家の専門が教科教育ではない、派遣期間が日本の大学の休み期間中に偏りがちである、また短期派遣専門家の派遣期間が短すぎるなどの不満を一部のカウンターパートは有している。さらに、特定学科からのカウンターパート派遣数が少ない、多いという強い不満の声も聞かれた。

また、共通教科書作成の進捗が遅れている点がやや懸念される。共通教科書作成手順を2002年以前と以降とで変更したことが背景にあり、日本・インドネシア側双方のコミュニケーションが不十分であったと思われる。

## (4) インパクト

本プロジェクトでは予見されていたインパクトと併せ、予見されなかったインパクトも観察

される。

予見されていたインパクトは、旧教員養成大学( IKIP )9大学とのプロジェクト成果品の共有である。各大学には共通教科書、学術雑誌、及びニュースレターが各20部ずつ送付されている。各大学ではシラビ・シラバス改訂や教科書改訂の際の参考資料として好評とのことである。

予見されなかったインパクト(外部効果)としては、9大学以外との成果品の共有、パイロット事業を通じた大学 - 現場学校のつながり、及び 県教育局とのつながりの形成があげられる。

#### 1) 9大学以外との成果品の共有

終了時評価期間中に名前が確認された限りでも15大学がプロジェクト対象学部に接触、教科書、実験・体験重視型授業の教材、教員用指導書などを入手し、それぞれの大学で利用している模様である。

#### 2) 大学 - 学校現場のつながり

2002/2003年度にはパイロット事業パートナー校は21校(中学校・高等学校)を数えるが、そのほかにも同事業に参加を希望する学校は多い。多くの希望校から数校に協力校を絞らざるを得なかった経緯がある。また中学校・高等学校が実験授業を3大学で実施するケースや学校見学の件数も劇的に増加した。

#### 3) 県教育局とのつながり

県教育局( Dinas P&K Kabuapten/Kota )が現職教員研修の一環として、県下の初・中等学校の教員をグループで派遣し、その研修を対象3大学に委託するケースが従前に比して増加した。

### (5) 自立発展性

本プロジェクトについては、高等教育機関としての活動の継続を見込むことは妥当である。

本プロジェクトでは「生徒中心型」「実験・体験重視型」の教育手法を導入・推進した。これは2004年に初中等教育に導入予定のCBCと軌を一にするものであり、今後ともこれらの授業・学習手法に対する需要は高い。カウンターパートは、これら手法を導入した学部教育活動を今後実践する意思を有するとともに、継続に必要な能力、経験も蓄積しつつある。またこうした継続的な改善の鍵となるリーダー的存在も各学部で認識されている。

DGHEは、本プロジェクト終了後も3年間の活動継続のための予算確保の意思を明らかにしている。また各学部長も、学部予算から本プロジェクト活動の継続資金を拠出する意思を明らかにしている。

翻って、CBCの導入を2004年に控えている点(本格導入以降、現場学校からのアドバイス要請等に応えることが期待される)、地方分権下における現職教員研修の制度的枠組みが未整備・未提示である点に留意が必要である。この点については、特に地方における現職教員研修の普及という観点からは、予断を許さない。

## 第5章 総括

### 5 - 1 結論

本プロジェクトは、インドネシアにおける理数科教育の質の改善に対し、効率的かつ効果的に貢献しており、終了予定時までには、プロジェクト・デザイン・マトリックス(PDM)のプロジェクト目標、成果、活動は達成可能である旨、調査団・インドネシア側双方で確認した。よって、この技術協力プロジェクトは予定どおり、2003年9月末に終了する。

一方、調査団として、以下の観点から、小規模なフォローアップ事業を実施することを提言する。

#### (1) 能力資質重視型カリキュラム(Competency-Based Curriculum : CBC)の導入を2004年に控えていること

本プロジェクトは「生徒中心型」「実験・体験重視型」の教育手法を導入・推進した。これは2004年に初中等教育に導入予定のCBCと軌を一にするものであり、今後ともこれらの授業・学習手法に対する需要は高い。本格導入以降、現場学校からのアドバイス要請等に応える必要性が高まっている。

#### (2) 地方分権化による教育セクターへの影響

地方分権化後、現職教員研修は県教育局(Dinas P&K Kabuapten/Kota)が主として実施責任機関として機能することとなるが、制度的枠組みが未整備・未提示であり、今後は、大学が、各地域における教員養成機関の協力関係・ネットワーク形成に積極的に関与する必要がある。具体的な動向としては、現職教員研修の一環として、県下の初・中等学校の教員をグループで派遣し、その研修を対象3大学に委託するケースが従前に比して増加している。

#### (3) 本プロジェクトの成果の普及

上記(1)及び(2)の状況に伴い、本プロジェクトの多くの成果物は、県教育局、現職教員訓練機関(PPPG、BPG、MGMP等)及び他の教員養成大学に普及され、かつ共有される必要性がより高まっている。

### 5 - 2 提言

#### (1) 短期的提言(プロジェクト終了までの半年間)

##### 1) フォローアップ事業に係るグランドデザインの作成

プロジェクトはフォローアップ事業の内容に関し、期間、プロセス、投入規模、開始時

期、パイロティング活動、地域レベル教員養成ネットワーク形成支援の実施等に係るグラ  
ンドデザインを作成し、JICAインドネシア事務所に2003年7月末までに提出する。

2) 共通教科書作成の進捗確認

共通教科書作成が遅れているため、日本・インドネシア側双方で現状の進捗状況を確認  
し、早急に遅れを取り戻すための手続きを図る。

3) 機材管理方法・メンテナンス情報を含めた機材台帳の完成

供与機材はすべて機材台帳の下で管理されているが、故障時に備えた連絡先等メンテナ  
ンス情報も追加する。

4) 国家教育省初等中等教育総局との連携強化

国家教育省初等中等教育総局へは中間評価以降、プロジェクトの進捗状況が報告されてい  
なかった。パイロティング活動など現場学校における活動が増加するなか、今後は同局と  
連携を強化する。

5) 成果物の大学課程全体への普及

プロジェクトの成果物を大学課程の全体へ普及するための具体的な計画を作成する。

6) パイロティング活動の質に係る調査の改善

2001年2月及び2003年3月に、パイロティング活動に係る包括的調査が3大学及びパー  
トナー校にて実施されている。今後は、管理グループ・クラスを設け、同活動に係る基礎調  
査、パイロティング後の調査を実施する必要がある。これにより、パイロティング方法  
論の効果を測る明確な指標が策定できる。

7) 他の旧教員養成大学9校におけるプロジェクト成果普及の確認

プロジェクト成果普及の確認のため、各大学が他の旧教員養成大学9校に送付した質問票  
を回収し、その結果を基に、プロジェクトの成果を最大限に利用する方法を分析する。

(2) 長期的提言(プロジェクト終了後)

1) 予算の確保

国家教育省高等教育総局からプロジェクト終了後3年間は予算が確保される旨を確認し  
た。インドネシアは現職教員訓練のため、パイロティング活動及び機材のメンテナンス等  
に対し、適切な予算を配分する。

2) 地方分権化における現職教員研修の組織化のためのモデル・ガイドライン作成

地方分権化後、現職教員研修は県教育局が主として実施責任機関として機能することとな  
るが、制度的枠組みが未整備・未提示である。よって、現職教員研修実施における教育関係  
機関の連携体制・組織化のためのモデル・ガイドラインを作成する。

- 3) 新カリキュラム(Competency-Based Curriculum : CBC)用の教育手法の開発  
大学はCBCを実施できる教員養成を行うため、CBCに沿った教育手法を開発する。
- 4) 理数科教育に係るナショナル・セミナーの恒常化  
本セミナーは理数科教育に係る知識・経験の交換の場として効果的である。今後、国家教育省が中心となり、毎年同セミナーを開催するよう主催者となり、かつ予算の確保を行うことが望まれる。
- 5) 「質の改善」と「量の拡大」によるバランスのよい教育協力の実施  
9年制の義務教育の一環である中学校においても、依然就学率が低い現状があるなか、大学及び現場学校は、「質の改善」及び「量の拡大」の両輪を認識し、活動を進めるべきである。

### 5 - 3 教 訓

#### (1) 「大学間」及び「大学～現場学校」との連携の重要性

「大学間」の連携は、成果物の作成だけでなく、関係者の意識面においても連携機関全体に対し責任感をもつことができ、効果的である。同様に、「大学～現場学校間」の連携は、両者にとって大変有効である。大学は、現場に直結した成果物の開発を行うことで、初・中等教育の改善に自らが関わっているというコミットメントの意識が強化される。一方、現場学校においては、大学との連携は教授法の改善に対して強力な支援者が得られることを意味する。

#### (2) 効果的なプロジェクト実施体制

本プロジェクトは、各学科に垂直的な「ワーキンググループ」と学科をまたいだ水平的な「タスクチーム」の両者をプロジェクト実施組織とし、縦と横の両軸から活動を実施したことが、効果的な運営につながった。

#### (3) 活動の実用性

プロジェクトは、現場で実際利用されているものから成果品を作成すべきである。例えば、実験器具の材料なども現場の小・中学校、高等学校及び大学にて日常利用できる範囲のものにする。

#### (4) 日本側のリソースに基づいたプロジェクト・デザインの作成

本プロジェクトは、日本側の人材リソースが大学教員を中心に実施されたため、派遣期間が日本の大学の休み期間中に偏りがちであった。また日本人専門家の専門が教科教育ではないなどの問題が指摘された。プロジェクト準備期間の段階で大学のみならず、他のリソース(協力隊経験者、教育委員会、現場学校教員、コンサルタント等)を視野に入れた国内支援システム

を策定すべきである。

#### (5) カウンターパート機関による評価指標の収集・確認

本プロジェクトは、カウンターパート機関である3大学が評価指標を基に活動のモニタリング・評価を行っていた。これにより、評価調査時には、詳細な内容の把握と効率的な調査が可能となった。

### 5 - 4 今後の取り組み( 団長所感 )

#### (1) 初中等理数科教育の重要性

インドネシアは、1994年から9年制の義務教育を導入し、また、2004年度からは、CBCの実施を予定している。それらの取り組みにより、従来の先生から生徒への一方的な講義や暗記による知識偏重型教育方法を改め、実験等を通じた確実な体験に基づく知識を先生と生徒との対話により確実に習得する初中等教育の向上をめざしている。

また、理数科教育は、ロジカルなものの考え方、「なぜ」を考える基本ともなり、今後、民主化を推進する際の基本的な考え方を育成するに際し非常に重要な分野である。世界的な学問の共通性も多く、同分野の教育の知見を多く有する我が国が、協力を実施するうえでも比較優位が高い。

しかしながら、同分野への協力は、今まで戦略的には、実施されておらず、個々のプロジェクトベースの協力が終始していた感がある。今後、同分野で展開している協力の方向性を総合的・包括的に検討し、個々の案件の連携・棲み分け整理、他ドナーの動向も視野に入れながら、戦略的な援助を実施すべきである。

#### (2) 地方分権化に沿った援助

インドネシアは、1999年に地方分権化を進めるための法律第22令を発布し、初等教育分野の行政主体についても、中央政府から、地方政府に移しつつある。しかしながら、その具体的な実施方法や各機関の役割分担もまだ明確ではない。そのなかで、本プロジェクトが推進しているパイロティング活動は、中央と地方政府、高等教育と初等教育現場をつなぐ試みであり、この試みに対するインドネシア政府の期待・信頼性については、インドネシアの本活動に対する将来的な計画・予算措置等からも推察される。本プロジェクトのフォローアップを実施する際には、初中等教育の質の改善に関する関係機関・役割分担についても明確にしながら取り組む必要がある。

### (3) よい活動・成果の継続的支援

従来、プロジェクト方式技術協力は、ある一定の目標を設定し、それが達成されれば、終了するというパターンに終始してきた。しかしながら、2003年度からプロジェクト方式技術協力という投入内容・規模に基づく定型的な概念を取りやめ、投入規模・期間等にこだわらない技術協力プロジェクトを実施し、柔軟な協力を展開することを志向している。実際の教育現場の状況・ニーズに呼応した教育の質の改善を進めるための協力の芽が開花しつつあり、地方分権化・児童中心の教育方法を実践して行うとする本分野の協力については、インドネシア側のイニシアティブを醸成しつつ、何らかの支援を継続していくべきである。また、本プロジェクト期間中に構築しつつある教育現場と教員養成をつなぐメカニズム(パイロティング活動)の協力効果を拡大することは、新規プロジェクトを新たな分野で展開するより、費用対効果の面からも大いに意義のあることだと思う。

### (4) 事務所への依頼事項(フォローアップ協力への考え方)

- 1) 本調査団が締結したミニッツの提言中の、プロジェクト終了までに実施又は対応する事項の進捗状況の確認をお願いしたい。特に、フォローアップ協力の具体的な内容、期間、規模等をプロジェクトとともにフォローしていただきたい。
- 2) 本プロジェクトのフォローアップ内容は、本協力期間中に成果をあげつつあるパイロティングや教材開発等の活動を、インドネシア国内の制度・システムとして定着させるための支援を中心においた協力がよいと思われる。
- 3) フォローアップ協力への日本からの投入については、1名の長期派遣専門家(パイロティングや教材開発のための制度構築支援等)、数名の短期専門家(理数教科教育)、必要に応じたカウンターパート研修と現地業務費(現地国内研修費等)などが考えられる。
- 4) フォローアップ協力の進め方については、本調査団の帰国報告会時に本プロジェクトの関係者(含む外務省、文部科学省)間で、本調査団の結論、提言を報告し、承認された場合は以下の進め方になると思われる。

調査団帰国報告会結果の公電ベースでの連絡(フォローアップ協力の承認)

インドネシア側との協議により、フォローアップ協力内容の検討

フォローアップ協力に関するミニッツの締結

フォームによるインドネシア側からの正式要請





## 付 属 資 料

1 - 1 . ミニッツ(M/D)

1 - 2 . PDMe

1 - 3 . Plan of Operation

1 - 4 . 評価グリッド

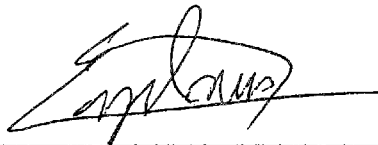


MINUTES OF DISCUSSIONS  
BETWEEN  
THE JAPANESE EVALUATION STUDY TEAM  
AND  
AUTHORITIES CONCERNED OF THE REPUBLIC OF INDONESIA  
ON  
JAPANESE TECHNICAL COOPERATION  
FOR  
THE PROJECT FOR SCIENCE AND MATHEMATICS TEACHING  
FOR PRIMARY AND SECONDARY EDUCATION

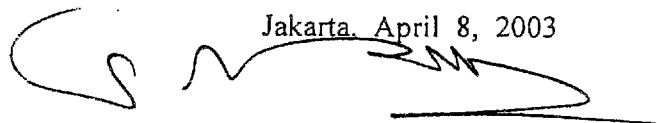
The Japanese Final Evaluation Team (hereinafter referred to as "the Team"), organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA"), headed by Mr. Eiji Inui, visited the Republic of Indonesia from March 23 to April 9, 2003, for the purpose of final evaluation of the Project for Science and Mathematics Teaching for Primary and Secondary Education (hereinafter referred to as "the Project").

During its stay in the Republic of Indonesia, the Team had a series of discussions with the Indonesian authorities concerned and jointly evaluated the achievements of the Project and exchanged views on the project activities to fulfill the Record of Discussions signed on July 14, 1998.

As a result of the discussions, the both sides agreed upon the matters referred to in the documents attached hereto.



Mr. Eiji Inui  
Leader  
Japanese Project Evaluation Team  
Japan International Cooperation Agency  
Japan



Jakarta, April 8, 2003  
Prof. Dr. Ir. Satryo Soemantri Brodjonegoro  
Director General,  
Directorate General of Higher Education  
Ministry of National Education  
Republic of Indonesia



(Witness)  
Dr. Ir. Indra Djati Sidi  
Director General,  
Directorate General of Primary and  
Secondary Education  
Ministry of National Education  
Republic of Indonesia

## THE ATTACHED DOCUMENT

### 1. INTRODUCTION

#### 1-1. Preface

The Project was commenced in October 1998 and scheduled to complete in September 2003. The Team dispatched by JICA visited the Republic of Indonesia from March 23 to April 9, 2003 to evaluate the achievements of the Project. The evaluation has been undertaken jointly by the Indonesia authorities concerned and the Team.

#### 1-2. Objectives of Evaluation

Objectives of the evaluation are as below;

- (1) To grasp the achievement of the Project according to the Project Design Matrix, in to summarize the output.
- (2) To evaluate the Project from the aspects of five evaluation criteria: Effectiveness, Efficiency, Impact, Relevance, and Sustainability.
- (3) To suggest necessary arrangements for successful completion of the Project.

#### 1-3. Schedule of the Japanese Final Evaluation Team

| Date & Time      | Activities  |
|------------------|---|
| March.23-April 2 | <ul style="list-style-type: none"><li>● Interview with Counterparts of Indonesia University of Education (UPI), State University of Malang (UM) and State University of Yogyakarta(UNY)</li><li>● Observation of Piloting Activities</li></ul>  |
| April. 3         | <ul style="list-style-type: none"><li>● Courtesy Call to BAPPENAS</li><li>● Meeting with JICA Indonesia Officers</li><li>● Interview with Prof. Dr. Satryo Soemantri Brodjonegoro (Director General of Higher Education ,Ministry of National Education )</li><li>● Interview with Dr. Ir. Indra Djati Sidi (Directorate General of Primary and Secondary Education, Ministry of National Education )</li></ul> |
| April. 4 – 6     | <ul style="list-style-type: none"><li>● Interview with JICA Experts</li><li>● Interview with Dean of UPI</li><li>● Observation of Piloting Activities</li></ul>   |
| April 7          | Joint Coordinating Committee  |
| April. 8         | <ul style="list-style-type: none"><li>● Signing of M/M</li><li>● Report to the Embassy of Japan</li><li>● Report to JICA Indonesia Office</li></ul>   |

#### 1-4. Evaluators

##### 1-4-1. The Japanese Side

|                           |                                   |
|---------------------------|-----------------------------------|
| Mr. Eiji Inui             | Leader                            |
| Prof. Dr. Takashi Shimojo | Science and Mathematics Education |
| Prof. Dr. Kouji Toyama    | Educational Administration        |
| Mr. Isamu Kuboki          | Educational Planning              |
| Ms. Miyako Kobayashi      | Evaluation Planning               |
| Mr. Shinichiro Tanaka     | Evaluation and Analysis           |

##### 1-4-2. The Indonesian Side

|   |  |
|---|--|
| Prof. Dr. Satrio Soemantri Brodjonegoro | Director General of Higher Education (DGHE)  |
| Prof. Dr. Ir. Indra Djati Sidi          | Director General of Primary and Secondary Education (DGPSE)  |
| Dr. Sukamto                             | Director for Supervision & Development of Educational Staff and Personal of Higher Education, DGHE |
| Prof. Dr. Mohammad Fakry Gaffar, M Ed.  | Rector of Indonesia University of Education  |
| Prof. Dr. Imam Syafi'e                  | Rector of State University of Malang   |
| Prof. Suyanto, Ph.D                     | Rector of State University of Yogyakarta   |
| Dr. Zamroni                             | Director for General Senior Secondary Education, DGPSE   |
| Dr. Sungkowo                            | Director for General Junior Secondary Education, DGPSE   |

#### 1-5. Methodology and Process of the Evaluation

The evaluation study was conducted in accordance with JICA Project Evaluation Guideline and JICA Project Cycle Management (JPCM) methods in the following steps.

(1) The Project Design Matrix (hereinafter referred to as "PDM") Version 2, which was revised from the original PDM upon the Mid-Term Evaluation in April 2001, has been modified by End-Term Evaluation Team to be PDMe (PDM for evaluation). PDMe is attached in the Appendices to this document.

(2) Achievement of the Project and Implementation Process were examined and evaluated by assessing relevant data and information indicated in PDMe.

(3) The Team reviewed activities records and evidence to evaluate the Project based on the following criteria of evaluation.

Relevance: The relevance of the Project plan is reviewed by the validity of Project Purposes and the Overall Goal in connection with the policies of the Republic of Indonesia and needs of the society, and also by the logic of the Project Plan.

- Effectiveness: Effectiveness is assessed by evaluating to what extent the Project has achieved the Project Purpose and examining the relationship between the Project Purpose and the Project Outputs.
- Efficiency: Efficiency of the implementation of the Project is analyzed by focusing the relationship between the Project Outputs and the Project Inputs in terms of timing, quality and quantity.
- Impact: Impact of the Project plan is analyzed by assessing negative or positive and direct or indirect effects caused by the Project. It also examines effects that are not originally expected.
- Sustainability Sustainability of the Project is assessed in organizational, financial, technical and socio-cultural aspects, by examining the extent to which the achievement of the Project could be sustained or expanded after the termination of the Project.

(4) Following interviews and reference materials were used in the Evaluation

- (a) Record of interviews and observations made by the Team through visitation to the three universities. At each university, Interviews were made to (i) management group at targeted faculties (Deans, Vice Deans and Department Heads), (ii) Task Teams A, B, C, and D, and (iii) Working Groups at targeted departments (e.g., Mathematics, Physics, Chemistry, and Biology.)
- (b) Record of Discussion (R/D), Tentative Schedule of Implementation (TSI), Plan of Operation (PO), Minutes of Meeting held during project period, and other document agreed on and accepted in the course of implementation of the Project.
- (c) PDMe
- (d) The Matrix of Performance Indicator and the Matrix of Activity prepared by the three universities (attached in the Appendices).
- (e) Project Reports
- (f) Project Outcomes (e.g., syllabi, textbooks, teaching materials, teaching guides, reports on activities (e.g., classroom action research, piloting activities, etc.), instruction manuals for experiments, equipment - operation manuals, newsletter, journal, etc.
- (g) Result of questionnaire analysis made by the Team

## **2. BACKGROUND AND SUMMARY OF THE PROJECT**

### **2-1. Background of the Project**

In Indonesia, quality improvement of primary and secondary education is one of prioritized area in development of education. The Indonesian Government considers improvement of mathematics and science education is indispensable to develop country 's human resources.

With such understandings, the Indonesian Government requested the Japanese Government to provide assistance to improve quality of science and mathematics education in primary and secondary schools. For this reason, "the Development of Science and Mathematics Teaching for Primary and Secondary Education (IMSTEP)" program has been launched on October 1,1998 with technical assistance by the Japan International Cooperation Agency (JICA).

### **2-2. Summary of the Project**

The project management has been guided by PDM, which was revised during the Mid-Term Evaluation in March 2001 as PDM Version 2. The project purpose "Graduates from 3 universities improve lectures at school" During the Final Evaluation, both sides have confirmed and agreed that;

- (1) The Project aims to prepare more competitive graduates that are capable to improve teaching and learning at primary and secondary schools;
- (2) During the Project period (1998~2003) , however, there are only limited number of graduates from targeted faculties ,as students need approximately 4-5 years to complete the pre-service course;
- (3) Reflecting above (1) and (2) the verifiable indication of the Project Purpose have been modified accordingly

The Overall Goal of the "Output of the project is extended to other teacher training institutions in Indonesia". Followings are the expected outcomes of the Project:

- (1) Quality of undergraduate education at 3 universities is improved.
- (2) Degree and/or non-degree programs for in-service teachers are improved.
- (3) Administrative and management system of 3 universities is strengthened.

### **3. EVALUATION**

#### **3-1. Achievement of the Plan**

The Team concluded that, in overall, project has been implemented as planned. There are some delays of particular activities detected, however, it is reasonable to conclude that the Project is going to generate its planned outputs and achieve its project purpose: "Graduates from 3 universities improve lectures at schools" by the end of September 2003, the scheduled project termination.

##### **3-1-1 Inputs**

Inputs made by Japanese and Indonesian sides are summarized as follows. Further information on the Inputs is shown in the Appendices.

1-1-1 Inputs from the Japanese side were as follows;

- (1) Long-term experts: 8 personnel
- (2) Short-term experts: 51 dispatches (32 personnel)
- (3) Equipment (laboratory and teaching-aid equipment/material)
- (4) Counterpart training: 36 personnel
- (5) Expenses for the implementation of the Project: IDR 5,364,770,675 (equivalent to approx. JPY 71,351,450) (excluding JFY 2003, excluding cost for item (1) to (4))

1-1-2 Inputs from the Indonesian side were as follows:

- (1) Counterpart personnel: 77 Personnel (as of April 2003)
- (2) Facilities
- (3) Equipment
- (4) Counterpart Budget: expenses for project implementation

##### **3-1-2 Outputs/Project Purpose**

The Project has generated the Outputs and reasonably achieved the Project Purpose as expected in the plan. Students at the targeted universities have been gaining competency. A set of new methodologies and materials introduced by the Project is improving teaching and learning process of mathematics and science subjects at targeted faculties. It also turned out, through the Piloting, that they are also effective to improve mathematics and science education at schools.



Administrative and management system of the targeted faculties have been enhanced. Project implementation organization (inter-departmental Task Teams and departmental Working Groups) has facilitated a smoother and systemized communication among personnel concerned, and contributed to revitalize the faculties' operation. Targeted faculties are able to maximize classroom and equipment utilization through equipment inventory system and local area network of computer introduced during the Project.

### **3-1-3 Overall Goal**

The Project has reasonably achieved the Overall Goal: "Output of the project is extended to other teacher training institutions in Indonesia". The Overall Goal is expected to be attained literally if the targeted institutions continues its activities and deliver the Outcomes to share with other institutions.

### **3-2. Implementation Process**

Project has been smoothly implemented with firm and consistent commitment of the targeted 3 universities, supported by moral and financial support by the Directorate General of Higher Education, Ministry of National Education, Republic of Indonesia.

Cross-dimensional implementation organization of the Task Teams and Working Groups functioned effectively. A sense of well-balanced collaboration and competition has been fostered through inter-University communication, which in turn contributed efficient implementation of the Project.

### **3-3. Results of the Evaluation**

#### **3-3-1 Relevance**

The project directly addresses to social needs for basic education in Indonesia – quality improvement of mathematics and science education. Social needs for providing qualified teacher is found to be very firm, given that Indonesia is attempting to achieve a universal provision of 9-year basic education in the first decade of this century.

In terms of educational methodology and thoughts employed, the project has promoted a shift from lecture-oriented, teacher-centered, outcome-oriented, and passive learning education, to experiment-introduced, student-centered, process-oriented, and active learning education, and tried to strike a good balance between them. Such shift is very

much consistent with the Competency-based Curriculum, whose implementation is scheduled in 2004 by the Government.

### 3-3-2 Effectiveness

The extent of attainment of the Project Purpose is satisfactory. Targeted faculties are able to prepare more competitive students with better skills to cope with the Competency-based Curriculum, whose implementation is scheduled in 2004. Graduates of the targeted faculties has gained on average high GPA, with reduced number of semester required for graduation. Piloting activities indicates that new approaches in teaching, which are introduced by the targeted faculties during the Project period, are effective to improve teaching and learning of mathematics and science at primary and secondary schools, however, the quality of the activities should be improved further.

Regarding the for-degree in-service courses, the targeted faculties/departments have no graduates since 2000, due to governmental financial subsidization was seized. Yet, the targeted faculties have paid a great efforts to expand non-degree in-service courses instead of for-degree in-service courses. The Team concluded that effectiveness of the Project has not been hindered by this unexpected termination of the government subsidization for the for-degree in-service courses.

### 3-3-3 Efficiency

The Outputs of the Project have been reasonably attained against the actualized Inputs. It is noteworthy that the project has produced a lot of "outcomes" such as syllabi (full revision and syllabi for mathematics, physics, biology and chemistry), textbooks (63 titles), instruction manual for experiment (102 titles), journals (37 issues), many teaching materials, teaching guide , etc (in total of 201 titles/items), and they are actually used in classroom teaching and leaning. Such a comprehensive improvement of educational inputs, in terms of both quantity and quality, have been contributing the targeted faculties to start preparing more competitive graduates.

Project organization (e.g., inter-departmental Task Team and department-based Working Group) has facilitated systematic and interdisciplinary interactions within-/inter- individual staffs, faculties, departments, and universities. Faculty members recognize that communication for the Project has enhanced managerial and administrative skills, and academic/technical knowledge exchanges, assisted by computerized system containing equipment inventory, local area network (LAN) and classroom operation.

They fully understood and sympathized with human resource constraints in Japanese Side, though it found that a considerable number of counterpart felt uncomfortable with Japanese Expert dispatch and C/P training in Japan.. Some of counterparts find many of the experts are not specialized in subject education and their duration of stay is bit too short to cover the 3 universities. Also some counterpart felt they are “discriminated” as their department has less number of C/P trainee compared to others.

### 3-3-4 Impact

Positive impacts are observed at two layers: impact to non-targeted universities and piloted primary and secondary schools.

The Project shares the Common Textbooks (20 copies each), Academic Journal (20 copies each) and Newsletter (20 copies each) among 9 educational universities (ex-IKIP) in addition to the three-targeted universities. In addition, various project outcomes, also have been shared with many universities (at least 16 Universities), though this is not originally planned. These shared outcome of the Project have been greatly appreciated by non-targeted universities as good references for these universities. The National Seminar on Mathematics and Science Education is very effective to share the benefit of the Project among universities, including those not targeted by the Project.

The piloting activities are highly appreciated by the pilot schools (28 piloting school for 2002/3), and many schools have interest to participate. The pilot schools consider that the Piloting is a great opportunity to put new ideas into practices. Assessment reports of the Piloting activities indicate that methodologies introduced through the Project does improve teaching and learning processes at primary and secondary schools. Further, the Piloting initiated/revitalized links between targeted faculties and primary and secondary schools, which is indispensable for the educational faculties to maintain their curriculum relevance to the actual situations, and for schools to be provided with chance to practice new methodologies.

### 3-3-5 Sustainability

An analysis on sustainability from institutional, financial and technical criteria concludes that the Project has laid a groundwork for its sustainability, and its benefits would be replicated and further enhanced if properly administered by Indonesian stakeholders.

The targeted faculties are going to maintain essential functions of the project implementation organization (Task Teams and Working Groups), as they found it is an effective way of organizing faculty. After the Project terminated, the activities will be carried out by the Task Teams and Working Groups as was carried out through the Project, or will be handed over to a taskforce attached to each department.

Majority of stakeholders interviewed gained confidence in their academic and managerial skills and knowledge. Also they consider that their faculties has acquired a self-determined leaders/promoters of changes which is a necessary conditions to continue project activities.

DGHE has pledged to maintain support for 3 years for the targeted faculties to continue activities learnt from the Project. In addition, all targeted faculties has a strong intention to allocate budget for equipment maintenance and continuation of the activities, which provide a better financial basis for the continuation of the activities.

#### 4. CONCLUSION

Both sides concluded that the Project has efficiently and effectively contributed to the social needs for basic education in Indonesia - quality improvement of mathematics and science education in Indonesia.

Therefore, both sides mutually agree that the Project Purpose, Output and Activity will be accomplished in the PDMe by the end of the cooperation period. The Project will be terminated by the end of September 2003.

The Team recommends, however, to carry out Follow-up Activities, which is smaller compared to the present Project, for following reasoning;

(1) Implementation of the Competency-Based Curriculum (CBC) in 2004

Competency-Based Curriculum is going to be implemented to primary and secondary schools in 2004. There will be a need to continue and enhance the Piloting Activities to closely monitor actual situation/conditions of teaching and learning of mathematics and science education under the Competency-based Curriculum. This will be helpful to both universities and primary/secondary schools to optimize the teaching and learning activities.

(2) Decentralization in Educational Sector

Dinas P&K Kabupaten/Kota is primarily responsible for providing in-service teacher training under decentralization. Universities should play an active role in implementation of in-service teacher training positively with collaboration by educational stakeholders in the region (e.g., Dinas P&K, PPPG, BPG, MGMP, Province, educational universities, etc.).

(3) Needs for further dissemination of the project Outcomes

The Project has produced a variety of useful Outcomes. This should be further disseminated and shared among stakeholders (e.g., Dinas P&K, PPPG, BPG, MGMP, educational universities, etc.).

#### 4-1. Recommendation to Future Prospects of the Project

##### 4-1-1 Current Position of the Project Based on the Evaluation

The Project has reasonably achieved its targets, yet there found several issues to ensure and further develop achievement of the Project during the remaining period of the Project;

- (1) To prepare the basic plan of the Follow-up Activities for the Project:  
The Project is requested to prepare the basic plan of the Follow-up Activities for the Project which includes duration, process, measure, scale, the time of start and so on, especially the Piloting Activity. That plan will be submitted to JICA Indonesia Office by the end of July.
- (2) To recover delay of textbook development:  
Textbook development has been delayed. None of printing for the Common Textbook has not been completed since FY 2000/1. Both Indonesian and Japanese side needs to reconfirm current status of the progress, agree on the procedures for quick recovery of the delay.
- (3) To complete the Inventory with contact information:  
Though all the equipment and materials procured under the Project have been registered to the Inventory, contact information seems to be insufficient. Inventory needs contact information to cope with malfunctioning of equipment that can not be fixed by faculty.
- (4) To strengthen liaison and communication with DGPSE of MONE:  
DGPSE of MONE has not been informed Project progress since the Mid-Term Evaluation. Though DGPSE is not a primal counterpart institution at the central government, the Projects' links to the Directorate should be reinsured during the remaining period.
- (5) To prepare strategic plan:  
Though immense number of the Outcomes has been prepared and utilized, this has not covered all educational activities at the faculties that typically consist of 30-40 subject courses. The targeted faculties and departments need to have a set of holistic targets and concrete plans, to continue development of the Outcomes aiming to provide proper educational inputs fully consistent with the Competency-based Curriculum
- (6) To improve research quality regarding the Piloting:  
A comprehensive review of the Piloting activities has been done for those conducted by the targeted faculties and partner schools in 2001/2. A similar review needs to be done for those conducted in 2002/3. Baseline and post-piloting data should be collected not only from pilot school classes but also from control group/classes in the Piloting scheduled in 2003/4. It is important to develop a dissemination system of the Outcomes produced through the Piloting activities. This will provide a set of useful

indicator to measure effects of the piloted methodologies and measures.

(7) To analyze the response to the questionnaire to 9 ex-IKIP universities: Each faculty has dispatched a questionnaire to ex-IKIP universities to ask for their perception on the Outcomes of the Project. Response from the universities, however, was not made available during Final Evaluation. The response needs to be analyzed to further optimize the Activities and Outcomes of the Project.

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#### 4-1-2 Recommendation to Future Prospects

(1) Proper budgetary allocation

The team has confirmed that the budget for the Project will be allocated from the DGHE for three years after the current JICA support is terminated. The government of Indonesia shall allocate appropriate budget for the implementation of the Project, especially for the operational cost of piloting activity and equipment maintenance conducted for the teachers working in other teacher training organization (in-service training).

(2) Referential model/guideline for regional stakeholders to institutionalize in-service teacher training:

Dinas P&K Kabupaten/Kota is primarily responsible for providing in-service teacher training in the region. A set of referential model or guideline for Dinas P&K Kabupaten should be prepared for them to take initiative in implementation of in-service training with collaboration by educational stakeholders (e.g., Dinas P&K, PPPG, BPG, MGMP, educational universities, etc.).

(3) Development of Teaching & Learning Methods consistent with CBC at Teacher Education Institutions:

Universities should be able to prepare teachers that are capable of conducting CBC at school.

(4) Annualization of the National Seminar on Mathematics and Science Education:

The seminar found to be very effective in sharing knowledge and experiences. It is worth considering to annualize the seminar even after the Project completed. Possibly MONE would host and finance the annual seminar while educational university (faculty) set agenda and arrange logistics.

(5) Qualitative and quantitative (equity) aspects of education:

Both university and school teacher should have a well-balanced awareness to qualitative and quantitative (equity) aspects of education. Particularly enrolment to junior-secondary education, which is a part of compulsory 9-year basic education, remains low. It is worth understanding that quality improvement can gain attractiveness of school which in turn contribute to increase enrolment.



#### 4-1-3 Lessons Learn from the Project

(1) Links among universities and primary/secondary schools:

It is found that collaboration among universities is effective in producing the Outputs, as assigned personnel felt responsible not only for his/her institutions but also for other collaborating universities. In a similar manner, collaboration between university and primary/secondary schools found to be effective. This reinforced universities' sense of commitment to improvement of primary and secondary education, which is end-user of teacher development "products" of the university. From a perspective of primary/secondary schools, collaboration with university provides a strong moral support for improvement of teaching - learning.

(2) Project implementation organization:

A combination of vertical and horizontal structure is effective as a project implementation organization. In the Project, vertical structure provide counterparts with a clear information of tasks to be done, while horizontal structure facilitated intra communication over department and faculties, which in turn laid a ground of synergies.

(3) Practicability of activities:

Project activities should directly address to day-to-day needs of beneficiially. In the Project, one of keys to success was that the Activities produced a range of the Outcomes that can be utilized in classes in universities and primary and secondary schools. Another key is that the Outcomes were comprehensive with a shared direction of improvement. This prevented the Project from overall misdirection and/or mislead.

(4) Project design in accordance with availability of Japanese Experts

It is not always easy to recruit and dispatch Japanese Long/Short Experts from Japanese universities at the Project wishes. It is very important to set up a recruit system that covers not only universities but also other potential resources (e.g., ex-Junior Expert, member of Board of Education, primary/secondary school teacher, consultant and so on) at the initial/preparatory stage of a project. That will contribute for a more efficient Project implementation.

(5) Performance indicators to be collected and maintained by the targeted institution:

This avoids Evaluation Team from wasting time for collecting and verifying information and data. That will contribute for more focused and better arranged evaluation works.

Project Design Matrix Version 3 (PDMe) (Blue: Proposed Modification from Ver.2): Development of Science and Mathematics Teaching for Primary and Secondary Education Project (6 April, 2003)

Target Group: Faculties and students at 3 Universities (FPMIPA-UPI, FMIPA-UNY, and FMIPA-UM) Duration: 5 years (1998-2003) Output and Activities should be related to science and mathematics education

| Narrative Summary   | Verifiable Indicators  | Means of Verification   | Important Assumptions   |     |                                       |         |   |     |  |         |   |     |   |         |  |     |  |         |  |     |                                    |         |   |  |  |         |                              |  |  |         |                  |  |  |         |                                  |  |  |           |   |  |  |      |  |  |  |   |  |
|---|--|---|---|-----|---------------------------------------|---------|---|-----|--|---------|---|-----|---|---------|--|-----|--|---------|--|-----|------------------------------------|---------|---|--|--|---------|------------------------------|--|--|---------|------------------|--|--|---------|----------------------------------|--|--|-----------|---|--|--|------|--|--|--|---|--|
| <p>Super Goal<br/>To improve scholastic ability and practical application ability of students in science and mathematics at primary and secondary school in Indonesia.</p>  |  |   |   |     |                                       |         |   |     |  |         |   |     |   |         |  |     |  |         |  |     |                                    |         |   |  |  |         |                              |  |  |         |                  |  |  |         |                                  |  |  |           |   |  |  |      |  |  |  |   |  |
| <p>Overall Goal:<br/>Output of the project is extended to other teacher training institutions in Indonesia.</p>   | <ol style="list-style-type: none"> <li>Number of Universities/Faculties being delivered with the non-equipment Project Outcomes (i.e. revised/ developed syllabi, textbooks, teaching materials, teaching guide, instruction manual for experiment, etc.).</li> <li>Number of participants at the National Seminar on Mathematics and Science Education.</li> <li>Number of participating Universities at the National Seminar on Mathematics and Science Education.</li> <li>Perception of other universities regarding the outcome of the project.</li> </ol>  | <p>"Matrix of Performance Indicators" and "Matrix of Activities" to be prepared by the universities prior to the project completion evaluation.</p> | <ol style="list-style-type: none"> <li>Parents recognize importance of school education.</li> <li>National income does not sharply decrease.</li> <li>Popularity of becoming teacher remain high.</li> <li>Facilities at primary and secondary school are installed</li> <li>Out-of-schools science education take place.</li> </ol>  |     |                                       |         |   |     |  |         |   |     |   |         |  |     |  |         |  |     |                                    |         |   |  |  |         |                              |  |  |         |                  |  |  |         |                                  |  |  |           |   |  |  |      |  |  |  |   |  |
| <p>Project Purpose:<br/>Graduates from 3 universities improve lectures at school.</p>   | <ol style="list-style-type: none"> <li>Perception of primary/secondary school on Number of items of developed teaching material used at primary/secondary school where graduates teach.</li> <li>Number of hours for laboratory activities conducted at primary/secondary school where graduates teach</li> <li>Number of school teachers graduates that attend workshop/seminar for improving teacher competences</li> <li>Primary/secondary student perception regarding piloting activities</li> <li>Overall perception of schools regarding the Piloting</li> </ol>  | <p>"Matrix of Performance Indicators" and "Matrix of Activities" to be prepared by the universities prior to the project completion evaluation.</p> | <ol style="list-style-type: none"> <li>Current teacher training institutions remain.</li> <li>There is no drastic change in the rate of graduates who become teachers.</li> <li>The number of teachers does not sharply decrease.</li> <li>Teachers' living standard does not excessively deteriorate.</li> <li>Teacher training institutions (i.e., other universities, PPPG, BPG, etc.) are cooperative with the universities.</li> </ol> |     |                                       |         |   |     |  |         |   |     |   |         |  |     |  |         |  |     |                                    |         |   |  |  |         |                              |  |  |         |                  |  |  |         |                                  |  |  |           |   |  |  |      |  |  |  |   |  |
| <p>Output:<br/>1. Quality of undergraduate education at 3 universities is improved.<br/>2. Degree and/or non-degree programs for in-service teachers are improved.<br/>3. Administrative and management system of 3 universities is strengthened.</p> | <table border="0"> <tr> <td>1-1/2-1</td> <td>Number of revised/developed syllabi actually implemented.</td> <td>3-1</td> <td>Number of the Task Team meeting held.</td> </tr> <tr> <td>1-2/2-2</td> <td>Number of developed/revised items made newly available to students and/or lecture/experiment (i.e. textbooks, teaching materials, teaching guide, instruction manual for experiment, etc.).</td> <td>3-2</td> <td>Number of Working Group Conference held.</td> </tr> <tr> <td>1-3/2-3</td> <td>Number of subjects that utilize the equipment provided under the project.</td> <td>3-3</td> <td>Positive change in perception of the faculty staff, regarding administrative and managerial capability of the target faculties.</td> </tr> <tr> <td>1-4/2-4</td> <td>Number of subject-hours that utilize the equipment provided under the project.</td> <td>3-4</td> <td>Number of equipment registered in equipment/facility inventory system together with supplier/provider information at target faculties.</td> </tr> <tr> <td>1-5/2-5</td> <td>Decrease in number of students/equipment ratio by subject.</td> <td>3-5</td> <td>Number of equipment that function.</td> </tr> <tr> <td>1-6/2-6</td> <td>Decrease in number of students/textbook ratio by subject.</td> <td></td> <td></td> </tr> <tr> <td>1-7/2-7</td> <td>Students satisfaction index.</td> <td></td> <td></td> </tr> <tr> <td>1-8/2-8</td> <td>Increase of GPA.</td> <td></td> <td></td> </tr> <tr> <td>1-9/2-9</td> <td>Reduced average length of study.</td> <td></td> <td></td> </tr> <tr> <td>1-10/2-10</td> <td>Number of students who complete the in-/pre- service courses.</td> <td></td> <td></td> </tr> <tr> <td>1-11</td> <td>Number of pre-service graduates who become primary/secondary teachers.</td> <td></td> <td></td> </tr> </table> | 1-1/2-1   | Number of revised/developed syllabi actually implemented.   | 3-1 | Number of the Task Team meeting held. | 1-2/2-2 | Number of developed/revised items made newly available to students and/or lecture/experiment (i.e. textbooks, teaching materials, teaching guide, instruction manual for experiment, etc.). | 3-2 | Number of Working Group Conference held. | 1-3/2-3 | Number of subjects that utilize the equipment provided under the project. | 3-3 | Positive change in perception of the faculty staff, regarding administrative and managerial capability of the target faculties. | 1-4/2-4 | Number of subject-hours that utilize the equipment provided under the project. | 3-4 | Number of equipment registered in equipment/facility inventory system together with supplier/provider information at target faculties. | 1-5/2-5 | Decrease in number of students/equipment ratio by subject. | 3-5 | Number of equipment that function. | 1-6/2-6 | Decrease in number of students/textbook ratio by subject. |  |  | 1-7/2-7 | Students satisfaction index. |  |  | 1-8/2-8 | Increase of GPA. |  |  | 1-9/2-9 | Reduced average length of study. |  |  | 1-10/2-10 | Number of students who complete the in-/pre- service courses. |  |  | 1-11 | Number of pre-service graduates who become primary/secondary teachers. |  |  | <p>"Matrix of Performance Indicators" and "Matrix of Activities" to be prepared by the universities prior to the project completion evaluation.</p> | <ol style="list-style-type: none"> <li>There is no drastic change in Indonesia national educational policy.</li> <li>The number of would-be teachers does not sharply decrease.</li> <li>The curriculum of primary and secondary schools does not change beyond the acceptability of educational experts.</li> <li>Necessary educational budget is secured.</li> <li>Teachers' living standard does not excessively deteriorate</li> </ol> |
| 1-1/2-1   | Number of revised/developed syllabi actually implemented.  | 3-1   | Number of the Task Team meeting held.   |     |                                       |         |   |     |  |         |   |     |   |         |  |     |  |         |  |     |                                    |         |   |  |  |         |                              |  |  |         |                  |  |  |         |                                  |  |  |           |   |  |  |      |  |  |  |   |  |
| 1-2/2-2   | Number of developed/revised items made newly available to students and/or lecture/experiment (i.e. textbooks, teaching materials, teaching guide, instruction manual for experiment, etc.).  | 3-2   | Number of Working Group Conference held.  |     |                                       |         |   |     |  |         |   |     |   |         |  |     |  |         |  |     |                                    |         |   |  |  |         |                              |  |  |         |                  |  |  |         |                                  |  |  |           |   |  |  |      |  |  |  |   |  |
| 1-3/2-3   | Number of subjects that utilize the equipment provided under the project.  | 3-3   | Positive change in perception of the faculty staff, regarding administrative and managerial capability of the target faculties.   |     |                                       |         |   |     |  |         |   |     |   |         |  |     |  |         |  |     |                                    |         |   |  |  |         |                              |  |  |         |                  |  |  |         |                                  |  |  |           |   |  |  |      |  |  |  |   |  |
| 1-4/2-4   | Number of subject-hours that utilize the equipment provided under the project.   | 3-4   | Number of equipment registered in equipment/facility inventory system together with supplier/provider information at target faculties.  |     |                                       |         |   |     |  |         |   |     |   |         |  |     |  |         |  |     |                                    |         |   |  |  |         |                              |  |  |         |                  |  |  |         |                                  |  |  |           |   |  |  |      |  |  |  |   |  |
| 1-5/2-5   | Decrease in number of students/equipment ratio by subject.   | 3-5   | Number of equipment that function.  |     |                                       |         |   |     |  |         |   |     |   |         |  |     |  |         |  |     |                                    |         |   |  |  |         |                              |  |  |         |                  |  |  |         |                                  |  |  |           |   |  |  |      |  |  |  |   |  |
| 1-6/2-6   | Decrease in number of students/textbook ratio by subject.  |   |   |     |                                       |         |   |     |  |         |   |     |   |         |  |     |  |         |  |     |                                    |         |   |  |  |         |                              |  |  |         |                  |  |  |         |                                  |  |  |           |   |  |  |      |  |  |  |   |  |
| 1-7/2-7   | Students satisfaction index.   |   |   |     |                                       |         |   |     |  |         |   |     |   |         |  |     |  |         |  |     |                                    |         |   |  |  |         |                              |  |  |         |                  |  |  |         |                                  |  |  |           |   |  |  |      |  |  |  |   |  |
| 1-8/2-8   | Increase of GPA.   |   |   |     |                                       |         |   |     |  |         |   |     |   |         |  |     |  |         |  |     |                                    |         |   |  |  |         |                              |  |  |         |                  |  |  |         |                                  |  |  |           |   |  |  |      |  |  |  |   |  |
| 1-9/2-9   | Reduced average length of study.   |   |   |     |                                       |         |   |     |  |         |   |     |   |         |  |     |  |         |  |     |                                    |         |   |  |  |         |                              |  |  |         |                  |  |  |         |                                  |  |  |           |   |  |  |      |  |  |  |   |  |
| 1-10/2-10   | Number of students who complete the in-/pre- service courses.  |   |   |     |                                       |         |   |     |  |         |   |     |   |         |  |     |  |         |  |     |                                    |         |   |  |  |         |                              |  |  |         |                  |  |  |         |                                  |  |  |           |   |  |  |      |  |  |  |   |  |
| 1-11  | Number of pre-service graduates who become primary/secondary teachers.   |   |   |     |                                       |         |   |     |  |         |   |     |   |         |  |     |  |         |  |     |                                    |         |   |  |  |         |                              |  |  |         |                  |  |  |         |                                  |  |  |           |   |  |  |      |  |  |  |   |  |

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| Narrative Summary  | Verifiable Indicators   | Means of Verification                      | Important Assumptions  |
|--|---|--|--|
| Activities   | 2-1 To study curriculum and syllabi for in-service teacher training   | Input (Japan)                              | 1 Faculties at 3 universities remain in the positions.   |
| 1-1 To conduct surveys on the current situation at primary and secondary schools.  | 2-2 To revise the curriculum and syllabi for in-service teacher training.   | Experts                                    | 2 The curriculum of primary and secondary schools does not change beyond the acceptability of educational experts. |
| 1-2 To develop teaching materials  | 2-3 To monitor the appropriateness of the revised curriculum and syllabi for in-service teacher training.   | Long-term experts                          |  |
| 1-3 To conduct training on teaching material usage.  | 2-4 To conduct surveys on current degree programs for in-service teachers.  | Chief advisor (science education)          |  |
| 1-4 To monitor the appropriateness of the developed teaching materials.  | 2-5 To study teaching methods for in-service teacher training   | Coordinator                                |  |
| 1-5 To review and revise syllabi.  | 2-6 To produce textbooks for in-service teacher training  | Science education                          | Equipment  |
| 1-6 To monitor the appropriateness of the revised syllabi.   | 2-7 To conduct surveys on the current situation of qualification for in-service teachers.   | Mathematics education                      | Purchasing expenses  |
| 1-7 To study teaching methods in each subject concerned.   | 2-8 To study on methods for monitoring and evaluation for in-service degree course programs.  | Short-term experts                         | Installation expenses  |
| 1-8 To study teaching methods concerning laboratory activities.  | 2-9 To monitor the effects of in-service training programs.   | Physics education                          | Maintenance and management expenses  |
| 1-9 To revise the instruction manuals for laboratory activities.   | 3-1 To establish task teams on curriculum and subject contents, syllabi and teaching methods, teaching materials, educational evaluation and communication for the project. | Chemistry education                        | Consumable supply expenses   |
| 1-10 To assess the appropriateness of the teaching plans of laboratory activities.   | 3-2 To hold regular study meetings for task teams within 3 universities.  | Biology education                          | Local costs  |
| 1-11 To review the existing evaluation methods in science and mathematics teaching.  | 3-3 To run each task team.  | Geology and environment Education          | Expenses for seminars committee and conferences  |
| 1-12 To develop alternative methods of evaluation in science and mathematics teaching.   | 3-4 To establish networks between the task team.  | Mathematics education                      | Local traveling expenses   |
| 1-13 To monitor the appropriateness of the alternative methods of evaluation.  | 3-5 To evaluate activity 3-3  | Faculty management                         | Consumable supply expenses   |
| 1-14 To revise the alternative method of evaluation.   | 3-6 To install necessary utilities and equipment  | Others                                     | Communication and transportation expenses  |
| 1-15 To develop the new textbooks for students.  | 3-7 To produce manuals on equipment's usage in Indonesian languages.  | Equipment                                  | Purchasing expenses for materials  |
| 1-16 To develop the teaching guide.  | 3-8 To conduct training in equipment's usage.   | Training in Japan (approx. 6 persons/year) | Expenses for research and study  |
| 1-17 To select monitoring areas and schools for the piloting activities.   | 3-9 To conduct training in maintenance of utilities and equipment.  |  | Publication expenses   |
| 1-18 To conduct study meetings on monitoring and evaluation for schools in the piloting activities.                                | 3-10 To strengthen preservation and management systems for utilities and equipment.   |  | Personnel expenses   |
| 1-19 To conduct piloting for improving mathematics and science education in primary/secondary schools.                             | 3-11 To publish newsletters and/or journals for communication among participants and stakeholders of the project.   |  | Miscellaneous expenses   |
| 1-20 To exchange experience on curriculum and its implementation with schools and pre-and in-service teacher training institutions |   |  |  |
| 1-21 To hold seminars and workshops for LPTK faculties.  |   |  |  |
| 1-22 To update guideline of laboratory activities  |   |  |  |
| 1-23 To update standard of monitoring and evaluation   |   |  |  |

1-5

Plan of operation for whole period (Revised in April, 2001)

| Activities  | Target                 | Fiscal Year |    |   |      |     |    |      |    |     |      |   |    | Responsibility |      |    |   |      |     |    |  |  |         |                  |
|---|------------------------|-------------|----|---|------|-----|----|------|----|-----|------|---|----|----------------|------|----|---|------|-----|----|--|--|---------|------------------|
|   |                        | 1998        |    |   | 1999 |     |    | 2000 |    |     | 2001 |   |    |                | 2002 |    |   | 2003 |     |    |  |  |         |                  |
|   |                        | III         | IV | I | II   | III | IV | I    | II | III | IV   | I | II |                | III  | IV | I | II   | III | IV |  |  |         |                  |
| 1-1 To conduct surveys on the current situation at primary and secondary schools.   | Survey reports         |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  | A,B,C,D |                  |
| 1-2 To develop teaching materials.  | Teaching materials     |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | C                |
| 1-3 To conduct training on teaching material usage.   | Training manuals       |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | A,B,C            |
| 1-4 To monitor the appropriateness of the developed teaching materials.   | Monitoring reports     |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | A,C              |
| 1-5 To review and revise syllabi.   | Syllabi                |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | A,D              |
| 1-6 To monitor the appropriateness of the revised syllabi.  | Monitoring reports     |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | A,B              |
| 1-7 To study teaching methods in each subject concerned.  | Study papers           |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | A,B              |
| 1-8 To study teaching methods concerning laboratory activities.   | Course descriptions    |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | A,B              |
| 1-9 To revise the instruction manuals for laboratory activities.  | Instruction manuals    |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | A,B              |
| 1-10 To assess the appropriateness of the teaching plans of laboratory activities.  | Monitoring reports     |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | A,B              |
| 1-11 To review the existing evaluation methods in science and mathematics teaching.   | Study reports          |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | A,B,D            |
| 1-12 To develop alternative methods of evaluation in science and mathematics teaching.  | Evaluation manuals     |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | A,B,D            |
| 1-13 To monitor the appropriateness of the alternative methods of evaluation.   | Monitoring reports     |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | A,B,D            |
| 1-14 To revise the alternative method of evaluation.  | Evaluation manuals     |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | A,B,D            |
| 1-15 To develop the new textbooks for students.   | Textbooks              |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | A,B,C            |
| 1-16 To develop the teaching guide.   | Teaching manuals       |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | A,B,C,D          |
| 1-17 To select monitoring areas and schools.  | Monitoring network     |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean             |
| 1-18 To conduct study meetings on monitoring and evaluation for schools.  | Standard of Mon./Eva.  |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean             |
| 1-19 To conduct piloting for improving mathematics and science education in primary/secondary schools.  | Piloting reports       |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean, A, B, C, D |
| 1-20 To exchange experience on curriculum and its implementation with schools and pre-and in-service teacher training institutions.   | Study reports          |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean, A, B, C, D |
| 1-21 To hold seminars and workshops for LPTK faculties.   | Study network          |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean, A, B, C, D |
| 1-22 To update guideline of laboratory activities.  | Study reports          |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean, A, B, C, D |
| 1-23 To update standard of monitoring and evaluation.   | Study reports          |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean, A, B, C, D |
| 2-1 To study curriculum and syllabi for in-service teacher training.  | Survey reports         |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | A, B             |
| 2-2 To revise the curriculum and syllabi for in-service teacher training.   | Curricula/syllabi      |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | A, B             |
| 2-3 To monitor the appropriateness of the revised curriculum and syllabi for in-service teacher training.   | Monitoring reports     |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean, A, B       |
| 2-4 To conduct surveys on current degree programs for in-service teachers.  | Survey reports         |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean, A, B       |
| 2-5 To study teaching methods for in-service teacher training.  | Study reports          |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean, A, B       |
| 2-6 To produce textbooks for in-service teacher training.   | Textbooks              |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | A, B, C          |
| 2-7 To conduct surveys on the current situation of qualification of in-service teachers.  | Survey reports         |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean, A, B       |
| 2-8 To study on methods for monitoring and evaluation for in-service degree course programs.  | Evaluation standard    |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean, A, B, D    |
| 2-9 To monitor the effects of in-service training programs.   | Monitoring reports     |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean, D          |
| 3-1 To establish task teams on curriculum and subject contents, syllabi and teaching methods, teaching materials, educational evaluation and communication for the project. | Task team              |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean             |
| 3-2 To hold regular study meetings for task teams within 3 universities.  | Study reports          |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean             |
| 3-3 To run each task team.  | Working groups         |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean             |
| 3-4 To establish networks between the task team.  | Coordinating committee |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | D                |
| 3-5 To evaluate activity 3-3.   | Evaluation report      |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean             |
| 3-6 To install necessary utilities and equipment.   | Teaching environment   |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean, A          |
| 3-7 To produce manuals on equipment's usage in Indonesian languages.  | Manuals                |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean, A, B, C    |
| 3-8 To conduct training in equipment's usage.   | Training               |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean, A, B, C    |
| 3-9 To conduct training in maintenance of utilities and equipment.  | Management ledger      |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean, A, B, C    |
| 3-10 To strengthen preservation and management systems for utilities and equipment.   | Management system      |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean, A, C       |
| 3-11 To publish newsletters and/or journals for communication among participants and stakeholders of the project.   | Newsletters/Journals   |             |    |   |      |     |    |      |    |     |      |   |    |                |      |    |   |      |     |    |  |  |         | Dean, A, B, C, D |

15

# ANNUAL WORK PLAN WITH DETAIL, SCHEDULE FOR 2003

| No.                                   | Activities  | Detail activities  | /Month | 4 | 5 | 6 | 7 | 8 | 9 | Task           | Remarks   |
|---------------------------------------|---|--|--------|---|---|---|---|---|---|----------------|---|
| <b>1. School</b>                      |   |  |        |   |   |   |   |   |   |                |   |
| 1-19                                  | To conduct piloting for improving mathematics and science education in primary/secondary schools.                               | To discuss on piloting in 2001/2002, and to decide the matter piloted in 2002/2003.<br>To decide the procedure of piloting.<br>To select the partner schools, and to decide the schedule and method for piloting.<br>To implement piloting, to analyze, and to report.   |        |   |   |   |   |   |   | Dean (A,B,C,D) | All Task Meeting<br>Each Univ. & All Task Meeting<br>Each Univ. & All Task Meeting<br>Each Univ. & All Task Meeting<br>All Task Meeting |
| 1-20                                  | To exchange experience on curriculum and its implementation with schools and pre- and in-service teacher training institutions. | To discuss on exchanging in 2001/2002, and to decide the matter exchanged in 2002/2003.<br>To decide the procedures of exchanging.<br>To select the partner schools, and to decide the schedule and method for exchanging.<br>To exchange experience, to analyze, and to report.   |        |   |   |   |   |   |   | Dean (A,B,C,D) | Each Univ. & All Task Meeting<br>Each Univ. & All Task Meeting<br>Each Univ. & All Task Meeting   |
| <b>2. Teaching Material</b>           |   |  |        |   |   |   |   |   |   |                |   |
| 1-3                                   | To conduct training on teaching material usage.   | [2001/2002] To select the developed teaching materials for training/To decide the instructor, the way and schedule for training.<br>To make the manual for training and to implement the training.   |        |   |   |   |   |   |   | C(A,B)         | Finished in 2001/2002<br>Each Univ.<br>Finished in 2000/2001  |
| 1-4                                   | To monitor the appropriateness of the developed teaching materials.   | [2000/2001] To select the developed teaching materials to be monitored/To decide the way and schedule for monitoring.<br>[2001/2002] To implement monitoring.<br>To analyze the monitoring results, and discuss on the appropriateness.<br>To make the monitoring reports.<br>To submit the proposal on the improvement of teaching materials.   |        |   |   |   |   |   |   | C(A)           | Finished in 2001/2002<br>All Task A,C Meeting<br>Each Univ. & A-Task A,C Meeting<br>Each Univ. & A-Task A,C Meeting                     |
| <b>3. Textbook and Teaching Guide</b> |   |  |        |   |   |   |   |   |   |                |   |
| 1-7                                   | To study teaching method in each subject concerned.   | [1999/2000] To review the current curriculum, teaching method and textbooks/To survey the teaching method in other institutions.<br>[2000/2001] To study on the curriculum, teaching method, and textbooks.<br>[2001/2002] To determine the principle to improve and develop the teaching method.<br>To improve and develop the teaching method. |        |   |   |   |   |   |   | B(A,C)         | Finished in 1999/2000<br>Finished in 2000/2001<br>Finished in 2001/2002<br>Each Univ. & A-Task A,B,C Meet.<br>All Task A,B,C Meeting    |
| 1-15                                  | To develop the new textbooks for students.  | To select the subject of textbooks to be developed in 2002/2003.<br>To decide the contents of the textbooks, and to select the writers and reviewers.<br>To produce the tryout textbooks in 2002/2003.   |        |   |   |   |   |   |   | C(A,B)         | All Task A,B,C Meeting<br>Each Univ.<br>Each Univ. & A-Task A,B,C Meet.<br>Finished in 2000/2001  |
| 1-16                                  | To develop the teaching guide.  | [2000/2001] To study on the teaching guide/To select the teaching guide to be produced/To discuss on common concept for teaching guide.<br>[2001/2002] To produce the instruction manual of Teaching Practice and Lesson Plan.<br>To complete the teaching guide.  |        |   |   |   |   |   |   | B(A,C,D)       | Finished in 2001/2002<br>Each Univ. & All Task Meeting  |
| <b>4. Syllabus and Curriculum</b>     |   |  |        |   |   |   |   |   |   |                |   |
| 1-5                                   | To review and revise the syllabi.   | To review the new syllabi.<br>To study how to use the new syllabi for future.  |        |   |   |   |   |   |   | B(A)           | Each Univ.<br>Each Univ. & A-Task A,B Meeting<br>Finished in 2000/2001  |
| 1-6                                   | To monitor the appropriateness of the revised syllabi.  | [2000/2001] To select the syllabus to be monitored, To plan the schedule and contents for the monitoring of the revised syllabi.<br>[2001/2002] To monitor the revised syllabi/ To discuss on the effect of the improvement and the necessity of the re-revise.<br>To complete the syllabi.  |        |   |   |   |   |   |   | B(A)           | Finished in 2001/2002<br>Each Univ.   |
| <b>5. Laboratory Activity</b>         |   |  |        |   |   |   |   |   |   |                |   |
| 1-22                                  | To update guideline of laboratory activities.   | To summarize the activities concerning laboratory.<br>To study on the results summarized and to observe the updating laboratory activities.<br>[2003] To update and make the guideline of laboratory activities.   |        |   |   |   |   |   |   | Dean (A,B,C,D) | Each Univ.<br>All Task Meeting<br>Scheduled in 2003   |
| 3-10                                  | To strengthen preservation and management systems for utilities and equipment.  | [2001/2002] To discuss how to preserve and maintain the utility and equipment/To make Equipment List and Equipment ID (Inventory).<br>To establish the network system to preserve and maintain the utility and equipment.<br>To study on Laboratory Management by the network.   |        |   |   |   |   |   |   | A(C)           | Finished in 2001/2002<br>Each Univ.<br>Each Univ. & A-Task A,C Meeting  |
| <b>6. In-service Training</b>         |   |  |        |   |   |   |   |   |   |                |   |
| 2-9                                   | To monitor the effects of in-service teacher training program.  | To implement the monitoring in 2002/2003.<br>To analyze the monitoring data.<br>To report the effect of the in-service teacher training program.   |        |   |   |   |   |   |   | D              | Each Univ.<br>All Task D Meeting<br>Each Univ. & A-Task D Meeting   |
| <b>7. Evaluation</b>                  |   |  |        |   |   |   |   |   |   |                |   |
| 1-14                                  | To revise the alternative method for evaluation.(non-degree)  | To confirm the developed alternative evaluation method (refer to Activity 1-12)<br>To study on the results of monitoring (refer to Activity 1-13)<br>To revise the developed evaluation method and to report.  |        |   |   |   |   |   |   | D(A,B)         | All Task A,B,D Meeting<br>Each Univ. & A-Task A,B,D Meet.<br>Each Univ. & A-Task A,B,D Meet.  |
| 1-23                                  | To update standard of monitoring and evaluation.  | To summarize the activities concerning monitoring and evaluation.<br>To study on the results summarized.<br>[2003] To update and make the standard of monitoring and evaluation.   |        |   |   |   |   |   |   | Dean (A,B,C,D) | Each Univ.<br>All Task Meeting<br>Scheduled in 2003   |

\*Activities for Meeting (3-2, 3-3, 3-5), Seminar and Workshop (1-21), Network (3-4), Equipment (3-6, 3-7, 3-8, 3-9) and Newsletter (3-11) are not included in this table.

Final evaluation Description: Development of Science and Mathematics Teaching for Primary and Secondary Education Project (April 2003)

- Achievement of the Plan
- Implementation Process
- Evaluation Sheet – 5 criteria.

### Achievement of the Plan

#### Achievement of the Plan

| Narrative Summary   | Verifiable Indicators  | Results*  |  |                |                   |  |                |                  |                  |      |              |     |   |   |   |   |      |    |     |    |   |    |    |      |     |     |    |   |   |    |      |    |     |    |   |    |
|---|--|---|--|----------------|-------------------|--|----------------|------------------|------------------|------|--------------|-----|---|---|---|---|------|----|-----|----|---|----|----|------|-----|-----|----|---|---|----|------|----|-----|----|---|----|
| Overall Goal: Output of the project is extended to other teacher training institutions in Indonesia | 1. Number of Universities/Faculties being delivered with the non-equipment Project Outcomes (i.e. revised/ developed syllabi, textbooks, teaching materials, teaching guide, instruction manual for experiment, etc.). | <ul style="list-style-type: none"> <li>• <u>Common Textbook, Journal, and Newsletters (20 copies each): Targeted 3 universities and other 9 ex-IKIP universities.</u> Though some of common textbook has not been printed yet as of April 2003.</li> <li>• Universities shared <u>other Outcomes (not planned):</u> As far as recognized, <u>15 universities</u> have copies of the Project Outcomes, if not all.</li> <li>• Such university typically contact a targeted faculties to ask for copies or provided with (part of) the Outcomes upon their laboratory practices at the Targeted faculties.</li> </ul>   |  |                |                   |  |                |                  |                  |      |              |     |   |   |   |   |      |    |     |    |   |    |    |      |     |     |    |   |   |    |      |    |     |    |   |    |
|   | 2. Number of participants and participating universities at the National Seminar on Mathematics and Science Education.   | <table border="1"> <thead> <tr> <th>Year</th> <th>Venue</th> <th># of participants</th> <th>Participating Educational Univ. (incl.P3G, etc)*</th> <th>Primary School</th> <th>Junior Secondary</th> <th>Senior Secondary</th> </tr> </thead> <tbody> <tr> <td>1999</td> <td>IKIP Bandung</td> <td>153</td> <td>6</td> <td>5</td> <td>7</td> <td>7</td> </tr> <tr> <td>2000</td> <td>UM</td> <td>251</td> <td>10</td> <td>0</td> <td>18</td> <td>13</td> </tr> <tr> <td>2001</td> <td>UPI</td> <td>312</td> <td>11</td> <td>7</td> <td>8</td> <td>31</td> </tr> <tr> <td>2002</td> <td>UM</td> <td>388</td> <td>21</td> <td>4</td> <td>21</td> <td>25</td> </tr> </tbody> </table> | Year   | Venue          | # of participants | Participating Educational Univ. (incl.P3G, etc)* | Primary School | Junior Secondary | Senior Secondary | 1999 | IKIP Bandung | 153 | 6 | 5 | 7 | 7 | 2000 | UM | 251 | 10 | 0 | 18 | 13 | 2001 | UPI | 312 | 11 | 7 | 8 | 31 | 2002 | UM | 388 | 21 | 4 | 21 |
| Year  | Venue  | # of participants   | Participating Educational Univ. (incl.P3G, etc)* | Primary School | Junior Secondary  | Senior Secondary                                 |                |                  |                  |      |              |     |   |   |   |   |      |    |     |    |   |    |    |      |     |     |    |   |   |    |      |    |     |    |   |    |
| 1999  | IKIP Bandung   | 153   | 6  | 5              | 7                 | 7  |                |                  |                  |      |              |     |   |   |   |   |      |    |     |    |   |    |    |      |     |     |    |   |   |    |      |    |     |    |   |    |
| 2000  | UM   | 251   | 10   | 0              | 18                | 13   |                |                  |                  |      |              |     |   |   |   |   |      |    |     |    |   |    |    |      |     |     |    |   |   |    |      |    |     |    |   |    |
| 2001  | UPI  | 312   | 11   | 7              | 8                 | 31   |                |                  |                  |      |              |     |   |   |   |   |      |    |     |    |   |    |    |      |     |     |    |   |   |    |      |    |     |    |   |    |
| 2002  | UM   | 388   | 21   | 4              | 21                | 25   |                |                  |                  |      |              |     |   |   |   |   |      |    |     |    |   |    |    |      |     |     |    |   |   |    |      |    |     |    |   |    |
|   | 4. Perception of other universities regarding the outcome of the project.  | <ul style="list-style-type: none"> <li>• According to information that counterparts have, <u>9 ex-IKIP Universities appreciate that quality of the Outcomes of the Project as they are very useful references.</u></li> <li>• Questionnaires were sent to 9 ex-IKIP by the targeted faculties, however, it was not made available to the Final Evaluation Team. The questionnaire aims to collect information on their perception.</li> </ul>   |  |                |                   |  |                |                  |                  |      |              |     |   |   |   |   |      |    |     |    |   |    |    |      |     |     |    |   |   |    |      |    |     |    |   |    |
|   | 5. Perception of Japanese experts and Indonesian counterparts regarding achievement in overall goal.   | <ul style="list-style-type: none"> <li>• A majority of the counterparts considers that the Project has improved teaching and learning at the targeted faculties. Counterparts consider that the <u>Project has performed reasonably well in sharing the Outcomes.</u></li> <li>• Japanese experts have a more conservative opinion. They consider it is too early to make any conclusion on achievement of the Overall Goal as <u>more intensive dissemination should be taken in post-Project period.</u></li> </ul>   |  |                |                   |  |                |                  |                  |      |              |     |   |   |   |   |      |    |     |    |   |    |    |      |     |     |    |   |   |    |      |    |     |    |   |    |

Achievement of the Plan

| Narrative Summary  | Verifiable Indicators   | Results*  |
|--|---|---|
| <p>Project Purpose: Graduates from 3 universities improve lectures at school.</p>      | <ol style="list-style-type: none"> <li>1. Perception of primary/secondary school on developed teaching material used at primary/secondary schools</li> <li>2. Increase of hours for laboratory activities conducted at primary/secondary school where graduates teach</li> <li>3. Number of school teachers graduates that attend workshop/seminar for improving teacher competences</li> <li>4. Primary/secondary student perception regarding piloting activities</li> <li>5. Overall perception of schools regarding the Piloting</li> </ol> | <p>(+)</p> <ul style="list-style-type: none"> <li>• Piloting schools and teachers have <u>positive perception on the teaching material and others they prepared collaboratively with the Targeted faculties.</u> They consider the Piloting is very useful and "on-hands".</li> <li>• <u>An increased minutes have been allocated in the Piloting.</u> The length would be further extended at schools from 2004, when the Competency-based Curriculum is scheduled to commence.</li> <li>• A number of graduates have been participated in the piloting activities. In 2002/3, there are in total of 18 teachers directly conduct piloting classes at , while many other teachers observed the classes at respective school.</li> <li>• Overall review paper on Piloting (for 2002/3 (IMPSTEP (2003)) reports following were observed though the Piloting               <ul style="list-style-type: none"> <li>• <u>Students perspectives:</u> enthuslasm, active and enjoyable learning, willingness to learn</li> <li>• <u>Teachers perspectives:</u> more "comfortable" class for teachers to handle, better-oriented classroom, more focused selection of material</li> </ul> </li> </ul> <p>(+) (-)</p> <ul style="list-style-type: none"> <li>• Many piloting has no baseline and post pilot data from Control-group. This prevents the Evaluation Team from capturing overall quantitative indications to measure the effect of the piloting</li> </ul> |
| <p>Output<br/>1. Quality of undergraduate education at 3 universities is improved.</p> | <p>1-7/2-7 Students satisfaction index.</p>   | <p>(+)</p> <p>At each universities, students were requested to evaluate their taught courses. According to that,</p> <ul style="list-style-type: none"> <li>• Students were very satisfied with lecturers' respond on students' questions (UPI)</li> <li>• Almost all students gave a better satisfaction index. (UM)</li> <li>• Most of students satisfied enough with faculty members' service and facilities provided by JICA (UNY).</li> </ul>  |



Achievement of the Plan

| Narrative Summary  | Verifiable Indicators                   | Results*  |      |                 |                |      |       |                |             |      |      |             |  |  |  |      |      |     |       |      |      |     |       |      |      |     |       |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |               |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|------|-----------------|----------------|------|-------|----------------|-------------|------|------|-------------|--|--|--|------|------|-----|-------|------|------|-----|-------|------|------|-----|-------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|------|------|------|------|------|------|-------|------|------|------|------|------|-----------|------|------|------|------|------|------|-------|------|------|------|------|------|---------------|---|---|---|---|---|---|---|---|---|---|---|---|
| <p>2. Degree and/or non-degree programs for in-service teachers are improved.</p> <p>3. Administrative and management system of 3 universities is strengthened.</p> <p>(for other verifiable indicator, please refer to Matrices of the Performance Indicator attached in Appendices</p> | <p>1-8/2-8 Increase of GPA.</p>         | <p>1-8/2-8 Increase of GPA.</p> <table border="1"> <thead> <tr> <th rowspan="2">Year</th> <th colspan="4">UPI (Semesters)</th> <th colspan="4">UM</th> <th colspan="4">UNY</th> </tr> <tr> <th>Math</th> <th>Phys</th> <th>Bio</th> <th>Chem.</th> <th>Math</th> <th>Phys</th> <th>Bio</th> <th>Chem.</th> <th>Math</th> <th>Phys</th> <th>Bio</th> <th>Chem.</th> </tr> </thead> <tbody> <tr> <td>1997/1998</td> <td>2.67</td> <td>2.64</td> <td>2.67</td> <td>2.69</td> <td>2.57</td> <td>2.48</td> <td>2.59</td> <td>2.57</td> <td>2.78</td> <td>2.70</td> <td>2.79</td> <td>2.78</td> </tr> <tr> <td>1998/1999</td> <td>2.66</td> <td>2.63</td> <td>2.64</td> <td>2.78</td> <td>2.51</td> <td>2.48</td> <td>2.65</td> <td>2.51</td> <td>2.70</td> <td>2.82</td> <td>2.80</td> <td>2.96</td> </tr> <tr> <td>1999/2000</td> <td>2.77</td> <td>2.69</td> <td>2.65</td> <td>2.82</td> <td>2.54</td> <td>2.58</td> <td>2.70</td> <td>2.72</td> <td>2.82</td> <td>2.88</td> <td>2.77</td> <td>2.97</td> </tr> <tr> <td>2000/2001</td> <td>2.79</td> <td>2.74</td> <td>2.78</td> <td>2.86</td> <td>2.62</td> <td>2.64</td> <td>2.74</td> <td>2.69</td> <td>2.93</td> <td>2.89</td> <td>3.09</td> <td>2.84</td> </tr> <tr> <td>2001/2002</td> <td>2.95</td> <td>2.74</td> <td>2.80</td> <td>2.96</td> <td>2.71</td> <td>2.68</td> <td>2.82</td> <td>2.89</td> <td>2.94</td> <td>2.73</td> <td>2.94</td> <td>2.88</td> </tr> <tr> <td>2002/2003</td> <td>2.88</td> <td>2.79</td> <td>2.84</td> <td>2.96</td> <td>2.84</td> <td>2.81</td> <td>2.81</td> <td>2.98</td> <td>2.98</td> <td>2.84</td> <td>3.08</td> <td>3.05</td> </tr> <tr> <td>Overall Trend</td> <td>↗</td> <td>↗</td> <td>↗</td> <td>↗</td> <td>↗</td> <td>↗</td> <td>↗</td> <td>↗</td> <td>↗</td> <td>↗</td> <td>↗</td> <td>↗</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>• GPA is on a increase trend at the all department, and this is all agreed among 3 Universities</li> <li>• Indicators from 1996/97 to 2000/01 was not made available to the Team during the Evaluation period. This needs to be collected to confirm such a positive tendency.</li> </ul>  | Year | UPI (Semesters) |                |      |       | UM             |             |      |      | UNY         |  |  |  | Math | Phys | Bio | Chem. | Math | Phys | Bio | Chem. | Math | Phys | Bio | Chem. | 1997/1998 | 2.67 | 2.64 | 2.67 | 2.69 | 2.57 | 2.48 | 2.59 | 2.57 | 2.78 | 2.70 | 2.79 | 2.78 | 1998/1999 | 2.66 | 2.63 | 2.64 | 2.78 | 2.51 | 2.48 | 2.65 | 2.51 | 2.70 | 2.82 | 2.80 | 2.96 | 1999/2000 | 2.77 | 2.69 | 2.65 | 2.82 | 2.54 | 2.58 | 2.70 | 2.72 | 2.82 | 2.88 | 2.77 | 2.97 | 2000/2001 | 2.79 | 2.74 | 2.78 | 2.86 | 2.62 | 2.64 | 2.74 | 2.69 | 2.93 | 2.89 | 3.09 | 2.84 | 2001/2002 | 2.95 | 2.74 | 2.80 | 2.96 | 2.71 | 2.68 | 2.82  | 2.89 | 2.94 | 2.73 | 2.94 | 2.88 | 2002/2003 | 2.88 | 2.79 | 2.84 | 2.96 | 2.84 | 2.81 | 2.81  | 2.98 | 2.98 | 2.84 | 3.08 | 3.05 | Overall Trend | ↗ | ↗ | ↗ | ↗ | ↗ | ↗ | ↗ | ↗ | ↗ | ↗ | ↗ | ↗ |
| Year   | UPI (Semesters)                         |   |      |                 | UM             |      |       |                | UNY         |      |      |             |  |  |  |      |      |     |       |      |      |     |       |      |      |     |       |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |               |   |   |   |   |   |   |   |   |   |   |   |   |
|  | Math                                    | Phys  | Bio  | Chem.           | Math           | Phys | Bio   | Chem.          | Math        | Phys | Bio  | Chem.       |  |  |  |      |      |     |       |      |      |     |       |      |      |     |       |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |               |   |   |   |   |   |   |   |   |   |   |   |   |
| 1997/1998  | 2.67                                    | 2.64  | 2.67 | 2.69            | 2.57           | 2.48 | 2.59  | 2.57           | 2.78        | 2.70 | 2.79 | 2.78        |  |  |  |      |      |     |       |      |      |     |       |      |      |     |       |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |               |   |   |   |   |   |   |   |   |   |   |   |   |
| 1998/1999  | 2.66                                    | 2.63  | 2.64 | 2.78            | 2.51           | 2.48 | 2.65  | 2.51           | 2.70        | 2.82 | 2.80 | 2.96        |  |  |  |      |      |     |       |      |      |     |       |      |      |     |       |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |               |   |   |   |   |   |   |   |   |   |   |   |   |
| 1999/2000  | 2.77                                    | 2.69  | 2.65 | 2.82            | 2.54           | 2.58 | 2.70  | 2.72           | 2.82        | 2.88 | 2.77 | 2.97        |  |  |  |      |      |     |       |      |      |     |       |      |      |     |       |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |               |   |   |   |   |   |   |   |   |   |   |   |   |
| 2000/2001  | 2.79                                    | 2.74  | 2.78 | 2.86            | 2.62           | 2.64 | 2.74  | 2.69           | 2.93        | 2.89 | 3.09 | 2.84        |  |  |  |      |      |     |       |      |      |     |       |      |      |     |       |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |               |   |   |   |   |   |   |   |   |   |   |   |   |
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| 2002/2003  | 2.88                                    | 2.79  | 2.84 | 2.96            | 2.84           | 2.81 | 2.81  | 2.98           | 2.98        | 2.84 | 3.08 | 3.05        |  |  |  |      |      |     |       |      |      |     |       |      |      |     |       |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |               |   |   |   |   |   |   |   |   |   |   |   |   |
| Overall Trend  | ↗                                       | ↗   | ↗    | ↗               | ↗              | ↗    | ↗     | ↗              | ↗           | ↗    | ↗    | ↗           |  |  |  |      |      |     |       |      |      |     |       |      |      |     |       |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |               |   |   |   |   |   |   |   |   |   |   |   |   |
|  | <p>1-9/2-9 Average length of study.</p> | <p>1-9/2-9 Average length of study.</p> <table border="1"> <thead> <tr> <th rowspan="2">Year</th> <th colspan="4">UPI (Semesters)</th> <th colspan="4">UM (Semesters)</th> <th colspan="4">UNY (Years)</th> </tr> <tr> <th>Math</th> <th>Phys</th> <th>Bio</th> <th>Chem.</th> <th>Math</th> <th>Phys</th> <th>Bio</th> <th>Chem.</th> <th>Math</th> <th>Phys</th> <th>Bio</th> <th>Chem.</th> </tr> </thead> <tbody> <tr> <td>1997/1998</td> <td>10.9</td> <td>12.7</td> <td>11.5</td> <td>11.5</td> <td>11.0</td> <td>10.6</td> <td>10.0</td> <td>10.0</td> <td>5.8</td> <td>6.2</td> <td>5.9</td> <td>5.7</td> </tr> <tr> <td>1998/1999</td> <td>11.1</td> <td>13.0</td> <td>11.0</td> <td>11.1</td> <td>10.3</td> <td>10.4</td> <td>10.4</td> <td>9.9</td> <td>5.5</td> <td>5.6</td> <td>5.5</td> <td>5.2</td> </tr> <tr> <td>1999/2000</td> <td>10.4</td> <td>12.8</td> <td>11.0</td> <td>11.2</td> <td>11.0</td> <td>10.2</td> <td>10.6</td> <td>9.7</td> <td>5.7</td> <td>5.8</td> <td>5.3</td> <td>5.6</td> </tr> <tr> <td>2000/2001</td> <td>10.0</td> <td>12.4</td> <td>10.4</td> <td>10.5</td> <td>10.1</td> <td>10.0</td> <td>9.72</td> <td>10.1</td> <td>5.3</td> <td>5.6</td> <td>5.2</td> <td>5.4</td> </tr> <tr> <td>2001/2002</td> <td>10.0</td> <td>11.6</td> <td>9.7</td> <td>9.8</td> <td>9.7</td> <td>9.6</td> <td>10.45</td> <td>9.98</td> <td>5.2</td> <td>5.6</td> <td>5.2</td> <td>5.5</td> </tr> <tr> <td>2002/2003</td> <td>9.9</td> <td>10.9</td> <td>9.5</td> <td>9.5</td> <td>9.2</td> <td>9.1</td> <td>10.04</td> <td>9.20</td> <td>5.2</td> <td>5.0</td> <td>4.9</td> <td>5.2</td> </tr> <tr> <td>Overall Trend</td> <td>↘</td> <td>↘</td> <td>↘</td> <td>↘</td> <td>↘</td> <td>↘</td> <td>→</td> <td>↘</td> <td>↘</td> <td>↘</td> <td>↘</td> <td>↘</td> </tr> </tbody> </table> <p>(+)</p> <ul style="list-style-type: none"> <li>• Length of study is on a decreasing trend at all the faculties</li> <li>• This indicates that university has improved internal efficiency of the faculties</li> <li>• Indicators from 1996/97 to 2000/01 was not made available to the Team during the Evaluation period. This needs to be collected to confirm such a positive tendency.</li> </ul> | Year | UPI (Semesters) |                |      |       | UM (Semesters) |             |      |      | UNY (Years) |  |  |  | Math | Phys | Bio | Chem. | Math | Phys | Bio | Chem. | Math | Phys | Bio | Chem. | 1997/1998 | 10.9 | 12.7 | 11.5 | 11.5 | 11.0 | 10.6 | 10.0 | 10.0 | 5.8  | 6.2  | 5.9  | 5.7  | 1998/1999 | 11.1 | 13.0 | 11.0 | 11.1 | 10.3 | 10.4 | 10.4 | 9.9  | 5.5  | 5.6  | 5.5  | 5.2  | 1999/2000 | 10.4 | 12.8 | 11.0 | 11.2 | 11.0 | 10.2 | 10.6 | 9.7  | 5.7  | 5.8  | 5.3  | 5.6  | 2000/2001 | 10.0 | 12.4 | 10.4 | 10.5 | 10.1 | 10.0 | 9.72 | 10.1 | 5.3  | 5.6  | 5.2  | 5.4  | 2001/2002 | 10.0 | 11.6 | 9.7  | 9.8  | 9.7  | 9.6  | 10.45 | 9.98 | 5.2  | 5.6  | 5.2  | 5.5  | 2002/2003 | 9.9  | 10.9 | 9.5  | 9.5  | 9.2  | 9.1  | 10.04 | 9.20 | 5.2  | 5.0  | 4.9  | 5.2  | Overall Trend | ↘ | ↘ | ↘ | ↘ | ↘ | ↘ | → | ↘ | ↘ | ↘ | ↘ | ↘ |
| Year   | UPI (Semesters)                         |   |      |                 | UM (Semesters) |      |       |                | UNY (Years) |      |      |             |  |  |  |      |      |     |       |      |      |     |       |      |      |     |       |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |               |   |   |   |   |   |   |   |   |   |   |   |   |
|  | Math                                    | Phys  | Bio  | Chem.           | Math           | Phys | Bio   | Chem.          | Math        | Phys | Bio  | Chem.       |  |  |  |      |      |     |       |      |      |     |       |      |      |     |       |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |               |   |   |   |   |   |   |   |   |   |   |   |   |
| 1997/1998  | 10.9                                    | 12.7  | 11.5 | 11.5            | 11.0           | 10.6 | 10.0  | 10.0           | 5.8         | 6.2  | 5.9  | 5.7         |  |  |  |      |      |     |       |      |      |     |       |      |      |     |       |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |               |   |   |   |   |   |   |   |   |   |   |   |   |
| 1998/1999  | 11.1                                    | 13.0  | 11.0 | 11.1            | 10.3           | 10.4 | 10.4  | 9.9            | 5.5         | 5.6  | 5.5  | 5.2         |  |  |  |      |      |     |       |      |      |     |       |      |      |     |       |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |               |   |   |   |   |   |   |   |   |   |   |   |   |
| 1999/2000  | 10.4                                    | 12.8  | 11.0 | 11.2            | 11.0           | 10.2 | 10.6  | 9.7            | 5.7         | 5.8  | 5.3  | 5.6         |  |  |  |      |      |     |       |      |      |     |       |      |      |     |       |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |               |   |   |   |   |   |   |   |   |   |   |   |   |
| 2000/2001  | 10.0                                    | 12.4  | 10.4 | 10.5            | 10.1           | 10.0 | 9.72  | 10.1           | 5.3         | 5.6  | 5.2  | 5.4         |  |  |  |      |      |     |       |      |      |     |       |      |      |     |       |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |               |   |   |   |   |   |   |   |   |   |   |   |   |
| 2001/2002  | 10.0                                    | 11.6  | 9.7  | 9.8             | 9.7            | 9.6  | 10.45 | 9.98           | 5.2         | 5.6  | 5.2  | 5.5         |  |  |  |      |      |     |       |      |      |     |       |      |      |     |       |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |               |   |   |   |   |   |   |   |   |   |   |   |   |
| 2002/2003  | 9.9                                     | 10.9  | 9.5  | 9.5             | 9.2            | 9.1  | 10.04 | 9.20           | 5.2         | 5.0  | 4.9  | 5.2         |  |  |  |      |      |     |       |      |      |     |       |      |      |     |       |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |               |   |   |   |   |   |   |   |   |   |   |   |   |
| Overall Trend  | ↘                                       | ↘   | ↘    | ↘               | ↘              | ↘    | →     | ↘              | ↘           | ↘    | ↘    | ↘           |  |  |  |      |      |     |       |      |      |     |       |      |      |     |       |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |           |      |      |      |      |      |      |       |      |      |      |      |      |               |   |   |   |   |   |   |   |   |   |   |   |   |



V

Achievement of the Plan

| Narrative Summary | Verifiable Indicators   | Results*   |         |         |             |         |         |           |       |           |     |    |    |    |    |     |    |    |    |    |    |     |     |    |    |    |    |     |        |     |     |     |     |     |           |     |     |     |     |     |     |    |    |    |    |    |     |     |    |    |    |    |     |       |     |     |     |     |     |           |     |    |    |    |    |     |    |    |    |    |    |    |     |    |    |    |    |     |       |     |     |     |     |     |       |     |     |     |     |     |      |    |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |      |
|-------------------|---|--|---------|---------|-------------|---------|---------|-----------|-------|-----------|-----|----|----|----|----|-----|----|----|----|----|----|-----|-----|----|----|----|----|-----|--------|-----|-----|-----|-----|-----|-----------|-----|-----|-----|-----|-----|-----|----|----|----|----|----|-----|-----|----|----|----|----|-----|-------|-----|-----|-----|-----|-----|-----------|-----|----|----|----|----|-----|----|----|----|----|----|----|-----|----|----|----|----|-----|-------|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|------|
|                   | 2-10 Number of students who complete the pre- service courses | <p>2-10 Number of students who complete the pre- service courses since 2000/01.</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Univ.</th> <th>Mathematics</th> <th>Physics</th> <th>Biology</th> <th>Chemistry</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td rowspan="4">2000/2001</td> <td>UPI</td> <td>94</td> <td>61</td> <td>88</td> <td>65</td> <td>308</td> </tr> <tr> <td>UM</td> <td>91</td> <td>83</td> <td>59</td> <td>91</td> <td>324</td> </tr> <tr> <td>UNY</td> <td>40</td> <td>43</td> <td>44</td> <td>24</td> <td>151</td> </tr> <tr> <td>Total*</td> <td>185</td> <td>144</td> <td>147</td> <td>156</td> <td>632</td> </tr> <tr> <td rowspan="4">2001/2002</td> <td>UPI</td> <td>131</td> <td>108</td> <td>107</td> <td>125</td> <td>471</td> </tr> <tr> <td>UM</td> <td>50</td> <td>91</td> <td>48</td> <td>62</td> <td>251</td> </tr> <tr> <td>UNY</td> <td>46</td> <td>47</td> <td>41</td> <td>50</td> <td>184</td> </tr> <tr> <td>Total</td> <td>227</td> <td>246</td> <td>196</td> <td>237</td> <td>906</td> </tr> <tr> <td rowspan="4">2002/2003</td> <td>UPI</td> <td>67</td> <td>65</td> <td>88</td> <td>89</td> <td>309</td> </tr> <tr> <td>UM</td> <td>17</td> <td>23</td> <td>24</td> <td>23</td> <td>87</td> </tr> <tr> <td>UNY</td> <td>43</td> <td>46</td> <td>55</td> <td>45</td> <td>189</td> </tr> <tr> <td>Total</td> <td>127</td> <td>134</td> <td>167</td> <td>157</td> <td>585</td> </tr> <tr> <td rowspan="4">Total</td> <td>UPI</td> <td>292</td> <td>234</td> <td>283</td> <td>279</td> <td>1088</td> </tr> <tr> <td>UM</td> <td>158</td> <td>197</td> <td>131</td> <td>176</td> <td>662</td> </tr> <tr> <td>UNY</td> <td>129</td> <td>136</td> <td>140</td> <td>119</td> <td>524</td> </tr> <tr> <td>Total</td> <td>579</td> <td>567</td> <td>554</td> <td>574</td> <td>2274</td> </tr> </tbody> </table> <p>(+)</p> <ul style="list-style-type: none"> <li>In total of more than 2,200 students have graduated since 2000/2001</li> <li>Approximately 80%-90% of the graduate is recruited as teachers at primary/secondary school</li> </ul> <p>(+) (-)</p> <ul style="list-style-type: none"> <li>There are no graduates from in-service degree course since 2000, due to termination of government subsidization for in-service teachers.</li> </ul> | Year    | Univ.   | Mathematics | Physics | Biology | Chemistry | Total | 2000/2001 | UPI | 94 | 61 | 88 | 65 | 308 | UM | 91 | 83 | 59 | 91 | 324 | UNY | 40 | 43 | 44 | 24 | 151 | Total* | 185 | 144 | 147 | 156 | 632 | 2001/2002 | UPI | 131 | 108 | 107 | 125 | 471 | UM | 50 | 91 | 48 | 62 | 251 | UNY | 46 | 47 | 41 | 50 | 184 | Total | 227 | 246 | 196 | 237 | 906 | 2002/2003 | UPI | 67 | 65 | 88 | 89 | 309 | UM | 17 | 23 | 24 | 23 | 87 | UNY | 43 | 46 | 55 | 45 | 189 | Total | 127 | 134 | 167 | 157 | 585 | Total | UPI | 292 | 234 | 283 | 279 | 1088 | UM | 158 | 197 | 131 | 176 | 662 | UNY | 129 | 136 | 140 | 119 | 524 | Total | 579 | 567 | 554 | 574 | 2274 |
| Year              | Univ.   | Mathematics  | Physics | Biology | Chemistry   | Total   |         |           |       |           |     |    |    |    |    |     |    |    |    |    |    |     |     |    |    |    |    |     |        |     |     |     |     |     |           |     |     |     |     |     |     |    |    |    |    |    |     |     |    |    |    |    |     |       |     |     |     |     |     |           |     |    |    |    |    |     |    |    |    |    |    |    |     |    |    |    |    |     |       |     |     |     |     |     |       |     |     |     |     |     |      |    |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |      |
| 2000/2001         | UPI   | 94   | 61      | 88      | 65          | 308     |         |           |       |           |     |    |    |    |    |     |    |    |    |    |    |     |     |    |    |    |    |     |        |     |     |     |     |     |           |     |     |     |     |     |     |    |    |    |    |    |     |     |    |    |    |    |     |       |     |     |     |     |     |           |     |    |    |    |    |     |    |    |    |    |    |    |     |    |    |    |    |     |       |     |     |     |     |     |       |     |     |     |     |     |      |    |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |      |
|                   | UM  | 91   | 83      | 59      | 91          | 324     |         |           |       |           |     |    |    |    |    |     |    |    |    |    |    |     |     |    |    |    |    |     |        |     |     |     |     |     |           |     |     |     |     |     |     |    |    |    |    |    |     |     |    |    |    |    |     |       |     |     |     |     |     |           |     |    |    |    |    |     |    |    |    |    |    |    |     |    |    |    |    |     |       |     |     |     |     |     |       |     |     |     |     |     |      |    |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |      |
|                   | UNY   | 40   | 43      | 44      | 24          | 151     |         |           |       |           |     |    |    |    |    |     |    |    |    |    |    |     |     |    |    |    |    |     |        |     |     |     |     |     |           |     |     |     |     |     |     |    |    |    |    |    |     |     |    |    |    |    |     |       |     |     |     |     |     |           |     |    |    |    |    |     |    |    |    |    |    |    |     |    |    |    |    |     |       |     |     |     |     |     |       |     |     |     |     |     |      |    |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |      |
|                   | Total*  | 185  | 144     | 147     | 156         | 632     |         |           |       |           |     |    |    |    |    |     |    |    |    |    |    |     |     |    |    |    |    |     |        |     |     |     |     |     |           |     |     |     |     |     |     |    |    |    |    |    |     |     |    |    |    |    |     |       |     |     |     |     |     |           |     |    |    |    |    |     |    |    |    |    |    |    |     |    |    |    |    |     |       |     |     |     |     |     |       |     |     |     |     |     |      |    |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |      |
| 2001/2002         | UPI   | 131  | 108     | 107     | 125         | 471     |         |           |       |           |     |    |    |    |    |     |    |    |    |    |    |     |     |    |    |    |    |     |        |     |     |     |     |     |           |     |     |     |     |     |     |    |    |    |    |    |     |     |    |    |    |    |     |       |     |     |     |     |     |           |     |    |    |    |    |     |    |    |    |    |    |    |     |    |    |    |    |     |       |     |     |     |     |     |       |     |     |     |     |     |      |    |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |      |
|                   | UM  | 50   | 91      | 48      | 62          | 251     |         |           |       |           |     |    |    |    |    |     |    |    |    |    |    |     |     |    |    |    |    |     |        |     |     |     |     |     |           |     |     |     |     |     |     |    |    |    |    |    |     |     |    |    |    |    |     |       |     |     |     |     |     |           |     |    |    |    |    |     |    |    |    |    |    |    |     |    |    |    |    |     |       |     |     |     |     |     |       |     |     |     |     |     |      |    |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |      |
|                   | UNY   | 46   | 47      | 41      | 50          | 184     |         |           |       |           |     |    |    |    |    |     |    |    |    |    |    |     |     |    |    |    |    |     |        |     |     |     |     |     |           |     |     |     |     |     |     |    |    |    |    |    |     |     |    |    |    |    |     |       |     |     |     |     |     |           |     |    |    |    |    |     |    |    |    |    |    |    |     |    |    |    |    |     |       |     |     |     |     |     |       |     |     |     |     |     |      |    |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |      |
|                   | Total   | 227  | 246     | 196     | 237         | 906     |         |           |       |           |     |    |    |    |    |     |    |    |    |    |    |     |     |    |    |    |    |     |        |     |     |     |     |     |           |     |     |     |     |     |     |    |    |    |    |    |     |     |    |    |    |    |     |       |     |     |     |     |     |           |     |    |    |    |    |     |    |    |    |    |    |    |     |    |    |    |    |     |       |     |     |     |     |     |       |     |     |     |     |     |      |    |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |      |
| 2002/2003         | UPI   | 67   | 65      | 88      | 89          | 309     |         |           |       |           |     |    |    |    |    |     |    |    |    |    |    |     |     |    |    |    |    |     |        |     |     |     |     |     |           |     |     |     |     |     |     |    |    |    |    |    |     |     |    |    |    |    |     |       |     |     |     |     |     |           |     |    |    |    |    |     |    |    |    |    |    |    |     |    |    |    |    |     |       |     |     |     |     |     |       |     |     |     |     |     |      |    |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |      |
|                   | UM  | 17   | 23      | 24      | 23          | 87      |         |           |       |           |     |    |    |    |    |     |    |    |    |    |    |     |     |    |    |    |    |     |        |     |     |     |     |     |           |     |     |     |     |     |     |    |    |    |    |    |     |     |    |    |    |    |     |       |     |     |     |     |     |           |     |    |    |    |    |     |    |    |    |    |    |    |     |    |    |    |    |     |       |     |     |     |     |     |       |     |     |     |     |     |      |    |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |      |
|                   | UNY   | 43   | 46      | 55      | 45          | 189     |         |           |       |           |     |    |    |    |    |     |    |    |    |    |    |     |     |    |    |    |    |     |        |     |     |     |     |     |           |     |     |     |     |     |     |    |    |    |    |    |     |     |    |    |    |    |     |       |     |     |     |     |     |           |     |    |    |    |    |     |    |    |    |    |    |    |     |    |    |    |    |     |       |     |     |     |     |     |       |     |     |     |     |     |      |    |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |      |
|                   | Total   | 127  | 134     | 167     | 157         | 585     |         |           |       |           |     |    |    |    |    |     |    |    |    |    |    |     |     |    |    |    |    |     |        |     |     |     |     |     |           |     |     |     |     |     |     |    |    |    |    |    |     |     |    |    |    |    |     |       |     |     |     |     |     |           |     |    |    |    |    |     |    |    |    |    |    |    |     |    |    |    |    |     |       |     |     |     |     |     |       |     |     |     |     |     |      |    |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |      |
| Total             | UPI   | 292  | 234     | 283     | 279         | 1088    |         |           |       |           |     |    |    |    |    |     |    |    |    |    |    |     |     |    |    |    |    |     |        |     |     |     |     |     |           |     |     |     |     |     |     |    |    |    |    |    |     |     |    |    |    |    |     |       |     |     |     |     |     |           |     |    |    |    |    |     |    |    |    |    |    |    |     |    |    |    |    |     |       |     |     |     |     |     |       |     |     |     |     |     |      |    |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |      |
|                   | UM  | 158  | 197     | 131     | 176         | 662     |         |           |       |           |     |    |    |    |    |     |    |    |    |    |    |     |     |    |    |    |    |     |        |     |     |     |     |     |           |     |     |     |     |     |     |    |    |    |    |    |     |     |    |    |    |    |     |       |     |     |     |     |     |           |     |    |    |    |    |     |    |    |    |    |    |    |     |    |    |    |    |     |       |     |     |     |     |     |       |     |     |     |     |     |      |    |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |      |
|                   | UNY   | 129  | 136     | 140     | 119         | 524     |         |           |       |           |     |    |    |    |    |     |    |    |    |    |    |     |     |    |    |    |    |     |        |     |     |     |     |     |           |     |     |     |     |     |     |    |    |    |    |    |     |     |    |    |    |    |     |       |     |     |     |     |     |           |     |    |    |    |    |     |    |    |    |    |    |    |     |    |    |    |    |     |       |     |     |     |     |     |       |     |     |     |     |     |      |    |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |      |
|                   | Total   | 579  | 567     | 554     | 574         | 2274    |         |           |       |           |     |    |    |    |    |     |    |    |    |    |    |     |     |    |    |    |    |     |        |     |     |     |     |     |           |     |     |     |     |     |     |    |    |    |    |    |     |     |    |    |    |    |     |       |     |     |     |     |     |           |     |    |    |    |    |     |    |    |    |    |    |    |     |    |    |    |    |     |       |     |     |     |     |     |       |     |     |     |     |     |      |    |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |      |

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Achievement of the Plan

| Narrative Summary   | Verifiable Indicators   | Results*  |           |                           |      |                   |       |     |         |          |          |                   |      |           |           |           |                 |      |         |           |           |                   |      |       |      |       |                   |     |      |     |       |                     |      |      |     |       |             |     |      |     |      |
|---------------------|---|---|-----------|---------------------------|------|-------------------|-------|-----|---------|----------|----------|-------------------|------|-----------|-----------|-----------|-----------------|------|---------|-----------|-----------|-------------------|------|-------|------|-------|-------------------|-----|------|-----|-------|---------------------|------|------|-----|-------|-------------|-----|------|-----|------|
|                     | 3-3 Positive change in perception of the faculty staff, regarding administrative and managerial capability of the target faculties.   | (+) <ul style="list-style-type: none"> <li>The Indonesian counterparts recognize that faculty's managerial capacities have been improved. Followings were some of representative perceptions:                             <ul style="list-style-type: none"> <li>It has been getting easier in helping students in writing mini theses, preparing teaching materials, hand out, preparing research proposals and other academic activities (UPI).</li> <li>Since each room was connected with LAN system, so that faculty members can access each other to share data and information</li> <li>Classroom and Inventory management using computer help the faculty in more efficient operation/utilization of resources. For example, there is less double booking.</li> </ul> </li> </ul>   |           |                           |      |                   |       |     |         |          |          |                   |      |           |           |           |                 |      |         |           |           |                   |      |       |      |       |                   |     |      |     |       |                     |      |      |     |       |             |     |      |     |      |
|                     | 3-4 Number of equipment registered in equipment/facility inventory system together with supplier/provider information at target faculties.<br>3-5 Number of equipment that function.  | (+) <ul style="list-style-type: none"> <li>Targeted faculties have developed inventory that include not only all the equipment provided by the Project, but also others.</li> </ul> <p>Registered number of items (of which function properly)</p> <table border="1"> <thead> <tr> <th></th> <th>Math</th> <th>Phys</th> <th>Bio</th> <th>Chem.</th> </tr> </thead> <tbody> <tr> <td>UPI</td> <td>16 (16)</td> <td>141(141)</td> <td>181(176)</td> <td>400(397)</td> </tr> <tr> <td>UM</td> <td>115 (115)</td> <td>156 (156)</td> <td>295 (295)</td> <td>180 (176)</td> </tr> <tr> <td>UNY</td> <td>66 (66)</td> <td>175 (175)</td> <td>136 (136)</td> <td>190 (190)</td> </tr> </tbody> </table> (-) <ul style="list-style-type: none"> <li>The inventory contain suppliers' name, however contact address of neither supplier nor manufacturers is included.</li> <li>Biology department of each University has two equipment/Kits that are not utilized with its max. function (NMR and Eudrameter)</li> </ul> |           | Math                      | Phys | Bio               | Chem. | UPI | 16 (16) | 141(141) | 181(176) | 400(397)          | UM   | 115 (115) | 156 (156) | 295 (295) | 180 (176)       | UNY  | 66 (66) | 175 (175) | 136 (136) | 190 (190)         |      |       |      |       |                   |     |      |     |       |                     |      |      |     |       |             |     |      |     |      |
|                     | Math  | Phys  | Bio       | Chem.                     |      |                   |       |     |         |          |          |                   |      |           |           |           |                 |      |         |           |           |                   |      |       |      |       |                   |     |      |     |       |                     |      |      |     |       |             |     |      |     |      |
| UPI                 | 16 (16)   | 141(141)  | 181(176)  | 400(397)                  |      |                   |       |     |         |          |          |                   |      |           |           |           |                 |      |         |           |           |                   |      |       |      |       |                   |     |      |     |       |                     |      |      |     |       |             |     |      |     |      |
| UM                  | 115 (115)   | 156 (156)   | 295 (295) | 180 (176)                 |      |                   |       |     |         |          |          |                   |      |           |           |           |                 |      |         |           |           |                   |      |       |      |       |                   |     |      |     |       |                     |      |      |     |       |             |     |      |     |      |
| UNY                 | 66 (66)   | 175 (175)   | 136 (136) | 190 (190)                 |      |                   |       |     |         |          |          |                   |      |           |           |           |                 |      |         |           |           |                   |      |       |      |       |                   |     |      |     |       |                     |      |      |     |       |             |     |      |     |      |
| Inputs              | (Japan)<br>Experts<br>Long-term experts (# if personnel, MM)<br>Chief advisor (science education) (2, 36MM)<br>Coordinator (1-36MM)<br>Mathematics education<br>Chemistry education<br>Science education<br>Physics education<br>Short-term experts<br>Physics education      Chemistry education<br>Biology education      Geology and environment Education<br>Mathematics education      Faculty management<br>Science education | (Japan)<br>In total of 40 Japanese experts have been dispatched, including 8 long-term and 32 short-term. <p>Table: # of Expert dispatched</p> <table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="2">Long + short term experts</th> <th colspan="2">Short term expert</th> </tr> <tr> <th>MM</th> <th>(%)</th> <th>MM</th> <th>(%)</th> </tr> </thead> <tbody> <tr> <td>Science Education</td> <td>31.3</td> <td>12.4%</td> <td>7.0</td> <td>9.8%</td> </tr> <tr> <td>Math. Education</td> <td>30.3</td> <td>12.0%</td> <td>30.3</td> <td>42.3%</td> </tr> <tr> <td>Physics Education</td> <td>31.1</td> <td>12.4%</td> <td>12.8</td> <td>17.9%</td> </tr> <tr> <td>Biology Education</td> <td>9.4</td> <td>3.7%</td> <td>9.4</td> <td>13.1%</td> </tr> <tr> <td>Chemistry Education</td> <td>24.2</td> <td>9.6%</td> <td>9.3</td> <td>13.0%</td> </tr> <tr> <td>Informatics</td> <td>2.3</td> <td>0.9%</td> <td>2.3</td> <td>3.2%</td> </tr> </tbody> </table>                                 |           | Long + short term experts |      | Short term expert |       | MM  | (%)     | MM       | (%)      | Science Education | 31.3 | 12.4%     | 7.0       | 9.8%      | Math. Education | 30.3 | 12.0%   | 30.3      | 42.3%     | Physics Education | 31.1 | 12.4% | 12.8 | 17.9% | Biology Education | 9.4 | 3.7% | 9.4 | 13.1% | Chemistry Education | 24.2 | 9.6% | 9.3 | 13.0% | Informatics | 2.3 | 0.9% | 2.3 | 3.2% |
|                     | Long + short term experts   |   |           | Short term expert         |      |                   |       |     |         |          |          |                   |      |           |           |           |                 |      |         |           |           |                   |      |       |      |       |                   |     |      |     |       |                     |      |      |     |       |             |     |      |     |      |
|                     | MM  | (%)   | MM        | (%)                       |      |                   |       |     |         |          |          |                   |      |           |           |           |                 |      |         |           |           |                   |      |       |      |       |                   |     |      |     |       |                     |      |      |     |       |             |     |      |     |      |
| Science Education   | 31.3  | 12.4%   | 7.0       | 9.8%                      |      |                   |       |     |         |          |          |                   |      |           |           |           |                 |      |         |           |           |                   |      |       |      |       |                   |     |      |     |       |                     |      |      |     |       |             |     |      |     |      |
| Math. Education     | 30.3  | 12.0%   | 30.3      | 42.3%                     |      |                   |       |     |         |          |          |                   |      |           |           |           |                 |      |         |           |           |                   |      |       |      |       |                   |     |      |     |       |                     |      |      |     |       |             |     |      |     |      |
| Physics Education   | 31.1  | 12.4%   | 12.8      | 17.9%                     |      |                   |       |     |         |          |          |                   |      |           |           |           |                 |      |         |           |           |                   |      |       |      |       |                   |     |      |     |       |                     |      |      |     |       |             |     |      |     |      |
| Biology Education   | 9.4   | 3.7%  | 9.4       | 13.1%                     |      |                   |       |     |         |          |          |                   |      |           |           |           |                 |      |         |           |           |                   |      |       |      |       |                   |     |      |     |       |                     |      |      |     |       |             |     |      |     |      |
| Chemistry Education | 24.2  | 9.6%  | 9.3       | 13.0%                     |      |                   |       |     |         |          |          |                   |      |           |           |           |                 |      |         |           |           |                   |      |       |      |       |                   |     |      |     |       |                     |      |      |     |       |             |     |      |     |      |
| Informatics         | 2.3   | 0.9%  | 2.3       | 3.2%                      |      |                   |       |     |         |          |          |                   |      |           |           |           |                 |      |         |           |           |                   |      |       |      |       |                   |     |      |     |       |                     |      |      |     |       |             |     |      |     |      |

Achievement of the Plan

| Narrative Summary                                       | Verifiable Indicators   | Results*  |                    |               |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
|---|---|---|--------------------|---------------|-------------------------------------|-----|--|---------------|---|-------|--------------------------------------|---------|---|-----------|--------------------------------------|--------|----------------------------------|--------------|--------------|---------------|-------------|---------------|--|-----|------------------|---------------------------------|---------------|------------|--------------------|-------------|------------|--------------|-----------------|--|-----------------|--|-------------|-----|-------------|-----|-------------|-----|------|-----|------|------|------|-------|------|-------|---------|------|-------|------|-------|---------|------|-------|------|-------|-----------|------|-------|------|-------|--------------|--------------|---------------|--------------|---------------|
|   | <p>Equipment Training in Japan (approx. 6 persons/year)</p>   | <table border="1"> <tr> <td>Faculty Management</td> <td>0.6</td> <td>0.2%</td> <td>0.6</td> <td>0.8%</td> </tr> <tr> <td>Chief Advisor</td> <td>61.0</td> <td>24.2%</td> <td>N.A.</td> <td>N.A.</td> </tr> <tr> <td>Coordinators</td> <td>61.5</td> <td>24.4%</td> <td>N.A.</td> <td>N.A.</td> </tr> <tr> <td><b>Total</b></td> <td><b>251.7</b></td> <td><b>100.0%</b></td> <td><b>71.7</b></td> <td><b>100.0%</b></td> </tr> </table> <p>Total Local Project Implementation Cost: actualized expense (Japanese Input)*</p> <table border="1"> <tr> <td></td> <td>IDR</td> <td>Converted to JPY</td> </tr> <tr> <td>Total Local Implementation Cost</td> <td>5,364,770,675</td> <td>71,351,450</td> </tr> <tr> <td>Of which Equipment</td> <td>911,068,116</td> <td>12,340,948</td> </tr> </table> <p>* Excluding for JFY 2003/4: Also exclude cost for the Japanese Experts, and equipment procurement.</p> <p>C/P Training in Japan: In total of 35 personnel (excluding plan for FY 2003)</p> <table border="1"> <thead> <tr> <th rowspan="2">Subject Area</th> <th colspan="2">Incl. Long-term</th> <th colspan="2">Excl. Long-term</th> </tr> <tr> <th>(Man-month)</th> <th>(%)</th> <th>(Man-month)</th> <th>(%)</th> </tr> </thead> <tbody> <tr> <td>Math &amp; Sci.</td> <td>1.5</td> <td>0.9%</td> <td>1.5</td> <td>1.2%</td> </tr> <tr> <td>Math</td> <td>30.1</td> <td>18.5%</td> <td>30.1</td> <td>24.8%</td> </tr> <tr> <td>Physics</td> <td>37.8</td> <td>23.2%</td> <td>37.8</td> <td>31.2%</td> </tr> <tr> <td>Biology</td> <td>66.7</td> <td>41.0%</td> <td>25.3</td> <td>20.8%</td> </tr> <tr> <td>Chemistry</td> <td>28.1</td> <td>17.2%</td> <td>28.1</td> <td>23.1%</td> </tr> <tr> <td><b>Total</b></td> <td><b>163.0</b></td> <td><b>100.0%</b></td> <td><b>121.0</b></td> <td><b>100.0%</b></td> </tr> </tbody> </table> | Faculty Management | 0.6           | 0.2%                                | 0.6 | 0.8%                                   | Chief Advisor | 61.0  | 24.2% | N.A.                                 | N.A.    | Coordinators  | 61.5      | 24.4%                                | N.A.   | N.A.                             | <b>Total</b> | <b>251.7</b> | <b>100.0%</b> | <b>71.7</b> | <b>100.0%</b> |  | IDR | Converted to JPY | Total Local Implementation Cost | 5,364,770,675 | 71,351,450 | Of which Equipment | 911,068,116 | 12,340,948 | Subject Area | Incl. Long-term |  | Excl. Long-term |  | (Man-month) | (%) | (Man-month) | (%) | Math & Sci. | 1.5 | 0.9% | 1.5 | 1.2% | Math | 30.1 | 18.5% | 30.1 | 24.8% | Physics | 37.8 | 23.2% | 37.8 | 31.2% | Biology | 66.7 | 41.0% | 25.3 | 20.8% | Chemistry | 28.1 | 17.2% | 28.1 | 23.1% | <b>Total</b> | <b>163.0</b> | <b>100.0%</b> | <b>121.0</b> | <b>100.0%</b> |
| Faculty Management                                      | 0.6   | 0.2%  | 0.6                | 0.8%          |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| Chief Advisor   | 61.0  | 24.2%   | N.A.               | N.A.          |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| Coordinators  | 61.5  | 24.4%   | N.A.               | N.A.          |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| <b>Total</b>  | <b>251.7</b>  | <b>100.0%</b>   | <b>71.7</b>        | <b>100.0%</b> |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
|   | IDR   | Converted to JPY  |                    |               |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| Total Local Implementation Cost                         | 5,364,770,675   | 71,351,450  |                    |               |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| Of which Equipment                                      | 911,068,116   | 12,340,948  |                    |               |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| Subject Area  | Incl. Long-term   |   | Excl. Long-term    |               |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
|   | (Man-month)   | (%)   | (Man-month)        | (%)           |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| Math & Sci.   | 1.5   | 0.9%  | 1.5                | 1.2%          |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| Math  | 30.1  | 18.5%   | 30.1               | 24.8%         |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| Physics   | 37.8  | 23.2%   | 37.8               | 31.2%         |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| Biology   | 66.7  | 41.0%   | 25.3               | 20.8%         |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| Chemistry   | 28.1  | 17.2%   | 28.1               | 23.1%         |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| <b>Total</b>  | <b>163.0</b>  | <b>100.0%</b>   | <b>121.0</b>       | <b>100.0%</b> |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
|   | <p>(Indonesia)<br/>Counterparts<br/>Facility<br/>Maintenance and management expenses</p> <p>Equipment<br/>Purchasing expenses<br/>Installation expenses<br/>Maintenance and management expenses<br/>Consumable supply expenses</p> <p>Local costs<br/>Expenses for seminars committee and conferences<br/>Local traveling expenses<br/>Consumable supply expenses<br/>Communication and transportation expenses</p> | <p>(Indonesia)<br/>In total of 77 counterpart personnel are assigned officially.<br/>In addition, each department nominated lecturers in accordance with the required skills and knowledge for activities</p> <p>Indonesian Counterpart Budget Rp.,000</p> <table border="1"> <thead> <tr> <th>Counterpart Budget</th> <th>IFY 1998-2003</th> </tr> </thead> <tbody> <tr> <td><b>1. For Technical Cooperation</b></td> <td></td> </tr> <tr> <td>a. Piloting and Exchange of Experience</td> <td>234,970</td> </tr> <tr> <td>b. Meeting (Task Team, WGC, Steering, JCC, and Textbook</td> <td></td> </tr> <tr> <td>c. Activities (Workshop and Seminar)</td> <td>500,505</td> </tr> <tr> <td>d. Outcome Development (Equipment inventory, Teaching</td> <td>1,133,518</td> </tr> <tr> <td>e. C/P Training &amp; Technical Exchange</td> <td>66,600</td> </tr> <tr> <td>f. Contact (Student and Teacher)</td> <td>85,754</td> </tr> </tbody> </table>   | Counterpart Budget | IFY 1998-2003 | <b>1. For Technical Cooperation</b> |     | a. Piloting and Exchange of Experience | 234,970       | b. Meeting (Task Team, WGC, Steering, JCC, and Textbook |       | c. Activities (Workshop and Seminar) | 500,505 | d. Outcome Development (Equipment inventory, Teaching | 1,133,518 | e. C/P Training & Technical Exchange | 66,600 | f. Contact (Student and Teacher) | 85,754       |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| Counterpart Budget                                      | IFY 1998-2003   |   |                    |               |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| <b>1. For Technical Cooperation</b>                     |   |   |                    |               |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| a. Piloting and Exchange of Experience                  | 234,970   |   |                    |               |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| b. Meeting (Task Team, WGC, Steering, JCC, and Textbook |   |   |                    |               |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| c. Activities (Workshop and Seminar)                    | 500,505   |   |                    |               |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| d. Outcome Development (Equipment inventory, Teaching   | 1,133,518   |   |                    |               |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| e. C/P Training & Technical Exchange                    | 66,600  |   |                    |               |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |
| f. Contact (Student and Teacher)                        | 85,754  |   |                    |               |                                     |     |  |               |   |       |                                      |         |   |           |                                      |        |                                  |              |              |               |             |               |  |     |                  |                                 |               |            |                    |             |            |              |                 |  |                 |  |             |     |             |     |             |     |      |     |      |      |      |       |      |       |         |      |       |      |       |         |      |       |      |       |           |      |       |      |       |              |              |               |              |               |

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8

Achievement of the Plan

| Narrative Summary  | Verifiable Indicators  | Results*  |  |
|--|--|---|--|
|  | Purchasing expenses for materials<br>Expenses for research and study<br>Publication expenses<br>Personnel expenses<br>Miscellaneous expenses | f. Contest (Student and Teacher)<br>g. Equipment (Laboratory, Common facilities: AVA; Workshop; Printing; Teaching production; Computer; System information; Electrical work, Mechanical work.)<br><div style="text-align: right;"><b>Sub total</b></div> | <div style="text-align: right;">85,754</div> <div style="text-align: right;">140,000</div> <div style="text-align: right;">2,981,584</div> |
|  |  | <b>2. As Grant Fund Subsidization</b>   | <div style="text-align: right;">1,739,087</div>  |
|  |  | <b>Total Counterpart Budget</b>   | <div style="text-align: right;">4,720,671</div>  |
| Total Counterpart Budget (%) to Total Faculty Budget 5.00% |  |   |  |

\* Detailed information on verifiable indicators and inputs are attached to the Appendices.

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IMPLEMENTATION PROCESS  
IMPLEMENTATION PROCESS

| Items                            | Evaluation Criteria                                  | Results   |
|----------------------------------|--|---|
| Overall progress of the Project  | 1. Were Project activities implemented as scheduled? | (+)<br><ul style="list-style-type: none"> <li>Most of the Project activities have been <u>implemented as planned</u>, while <u>minor discrepancies</u> from the original plan are observed. In general, the Project has been smoothly implemented driven by firm and consistent commitment of the targeted 3 Universities, with moral and financial support by the Directorate General of Higher Education, Ministry of National Education, Republic of Indonesia.</li> </ul> (-)<br><ul style="list-style-type: none"> <li>Particularly, <u>delay in common textbook provision</u> is noteworthy. The delay should be recovered as much as possible within the remaining period of the Project.</li> </ul> |
| Monitoring of project activities | 1. Monitoring system                                 | (+)<br><ul style="list-style-type: none"> <li><u>Periodical meetings</u> of the Working Group attached to each Department monitors day-to-day basis progress of each activity at respective department. Frequency varies by department, from once a week to a month.</li> <li><u>Inter-departmental Task Team</u> meeting monitor the progress of the Project activity. Frequency varied by faculties: from once a month to a Semester.</li> <li><u>Annual Joint Coordination Committee</u> meeting monitor overall progress.</li> </ul>  |
|                                  | 2. Revision of PDM                                   | <u>Original PDM Ver.2 &gt; PDM Ver.2:</u><br><ul style="list-style-type: none"> <li>Grouping of the Project Activities were re-organized</li> <li>Verifiable indicators of the Outputs were re-determined to be more clearly associated with the Output of the Project</li> </ul> <u>PDM Ver2 &gt; PDMe</u><br><ul style="list-style-type: none"> <li>Some of the Verifiable Indicators have been re-determined.</li> </ul>   |

IMPLEMENTATION PROCESS

| Items   | Evaluation Criteria   | Results   |
|---|---|---|
|   | 3. Response to un-expected changes in the Assumption set              | <p><u>Termination of the subsidization program for for-degree in-service course</u></p> <p>(-)</p> <ul style="list-style-type: none"> <li>From 2000, there are no graduates from for-degree in-service course. This dues to that Indonesian government terminated subsidization for in-service teachers.</li> </ul> <p>(+)</p> <ul style="list-style-type: none"> <li>Targeted faculties shifted its focus in in-service training from for-degree to non-degree courses, through out-reaching to primary and secondary school in each region (e.g., seminar, workshop, open campus, etc.).</li> </ul> <p><u>Education Decentralization / School Based Management</u></p> <p>(+) (-)</p> <ul style="list-style-type: none"> <li>Authorities, duties and responsibility regarding operation of the basic education is decentralized to regency (Kota/Kabupaten) government.</li> </ul> <p>(+)</p> <ul style="list-style-type: none"> <li>Autonomy of school (primary and secondary) makes university-school collaboration much easier. Individual school can make decision by itself</li> </ul> |
| Relationship b/w the Japanese experts and Indonesian counterparts | 1. Communication b/w the Japanese experts and Indonesian counterparts | <p>(+)</p> <ul style="list-style-type: none"> <li>Communication b/w the Japanese experts and Indonesian counterparts in general is good. Majority of counter part feel there were sufficient communication.</li> </ul> <p>(-)</p> <ul style="list-style-type: none"> <li>It is felt by the Indonesian Counterparts that assignment period allocated for Japanese Short-term Experts were not sufficient and this sometimes hindered sufficient knowledge exchanges. They expect period of visitation to one university should at least a week to ten days, instaad of just a few (2-3) days.</li> </ul>   |
| Involvement of beneficiaries                                      | 1. Commitment of the beneficiaries and motive                         | <p>(+)</p> <ul style="list-style-type: none"> <li>Indonesian Counterpart has been committed to the project with a very self-determined and positive attitude.</li> <li>They (both Indonesian counterparts and pilot school teachers) consider putting new methodologies of education into practice is an urgent and crucial for quality improvement of Indonesian education.</li> <li>They face the introduction of the Competency-based Curriculum scheduled in 2004. They find the Project is helpful to put the new curriculum into practice</li> <li>The Outcomes (e.g., textbook, teaching guide, teaching material, etc) of the Project directly benefit day-to-day classroom activities at both targeted universities and pilot schools. It seems that this direct link b/w the Outcomes and the need is a strong factor that inspired beneficiaries' commitment.</li> </ul>   |

IMPLEMENTATION PROCESS

| Items  | Evaluation Criteria  | Results  |
|--|--|--|
| Executing organization                                       | 1. Is project executing organization functioned smoothly?  | (+)<br><ul style="list-style-type: none"> <li>Project implementation organization (inter-departmental Task Teams and departmental Work Groups) has facilitated a smoother and systemized communication among personnel concerned.</li> <li>This <u>Cross-dimensional design contributed</u> to revitalize the faculties operation.</li> <li><u>Workload of some activities was shared among the targeted university</u> (e.g., Common Text Book development). This fostered a <u>sense of collaboration and competition</u> with a good balance among the targeted university.</li> <li>Targeted universities reshuffled counterpart personnel after the Mid-Term Evaluation. This was effective to refresh the Project Implementation organization.</li> </ul>  |
| Ownership of the Indonesian government/executing institution | 1. Participation and involvement of DGHE MONE<br>2. Indonesian counterpart fund Appropriateness of assignment of counterpart personnel | (+)<br><ul style="list-style-type: none"> <li>DGHE of MONE provided the <u>counterpart fund</u> for the Project (in total of Rp. 4,720 Mil. over the 5 years)</li> <li>DGHE of MONE appreciated the overall performance of the Project, and has decided to continue financial support for the targeted university to maintain activities derived from the Project</li> <li>In total of <u>77 counterpart</u> personnel are assigned officially. In addition, each department nominated lecturers in accordance with the required skills and knowledge for activities. <u>Such flexibility in mobilizing "anonymous" counterpart works</u> very well.</li> </ul> (-)<br><ul style="list-style-type: none"> <li>DGPSE of MONE has not been informed Project progress since the Mid-Term Evaluation. The Projects' links to the Directorate should be reinsured during the remaining period.</li> </ul> |
| Linkage/liaison with other project/program                   | 1. Collaboration with other ODA System of Japan  | (+)<br><ul style="list-style-type: none"> <li>Three Junior Expert assigned to secondary schools in Bandung areas involved to workshop on experiment in Mathematics and Science education.</li> <li>The workshop has been welcomed. Counterpart consider <u>collaboration with Japanese teachers</u> is very interesting and <u>effective</u>.</li> </ul>   |
| Collaboration/cooperation w/ other donor                     | 1. Collaboration with other donor-assisted project   | (+)<br><ul style="list-style-type: none"> <li>Targeted universities utilize outcomes of the Project to other donor-assisted project, where applicable; e.g., some of the Outcomes of the Project has been introduced to German-supported SEQIP that promote student-centered learning at primary level.</li> </ul>   |

2

RELEVANCE

| Relevance : Is the project relevant to local needs? Relevant to Japanese ODA policies?  |  |
|---|--|
| Criteria  | Results  |
| Are "Super Goal", "Overall Goal" "Project Purpose", and "Output" relevant and consistent with Indonesian policy on teacher development? | (+)<br><ul style="list-style-type: none"> <li>Quality improvement of teachers is one of prioritized area in the National Policy (GBHN 1999-2004) determined by the National Assembly, and the Proenas (National Development Plan 2000-2004)</li> <li>Given that Indonesia is attempting to achieve a universal provision of <u>9-year basic education</u> in the first decade of this century, social needs for providing qualified teacher is found to be very firm.</li> <li><u>The project directly address to the social needs</u> for basic education in Indonesia</li> </ul> |
| Are projects activities consistent and relevant to the "competency based curriculum" scheduled in 2004?                                 | (+)<br><ul style="list-style-type: none"> <li>The project has promoted a shift from <u>lecture-oriented, teacher-centered, outcome-oriented, and passive learning education, to experiment-introduced, student-centered, process-oriented, and active learning education.</u></li> <li>Such shift is very much consistent with the Competency-based Curriculum</li> </ul>  |
| Is the project relevant to Japanese ODA policies?   | (+)<br><ul style="list-style-type: none"> <li>The latest country strategy of JICA (JICA (2000) Country Assistance Strategy for Indonesia addresses that quality improvement of teacher is one of 5 prioritized area for Japanese assistance in basic education.</li> </ul>   |

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EFFECTIVENESS

| Effectiveness: Output => Project Purposes/ Are project output effective to meet the project purpose? Does it effective to actualize expected effects?   |  |
|---|--|
| Evaluation Criteria   | Results  |
| <p>Reasonableness of the extent of Project purpose achievement (Contribution of the output in meeting project purpose):</p> <p>Examine if graduates are more competitive to be able to improve teaching and learning at school.</p> | <p><u>Number of Graduates (pre-service)</u><br/>(+)</p> <ul style="list-style-type: none"> <li>• Number of student graduated from the targeted faculties counts <u>more than 2,200 since 2000/01</u></li> </ul> <p>(+) (-)</p> <ul style="list-style-type: none"> <li>• It worth noting that there is a decline in the number graduates. This is mainly due to separation of courses into pure mathematics and science, and education of mathematics and science.</li> </ul> <p><u>Number of Pre-service graduates who become primary/secondary teachers</u></p> <ul style="list-style-type: none"> <li>• It is reasonable to assume that a <u>majority of graduates become teachers</u></li> <li>• In year 2001, 93.1% of graduates became teachers at primary, junior &amp; senior secondary schools, mostly at state schools (UPI),</li> <li>• Approximately 80-90% of UNY FMIPA Graduates became teachers (UNY)</li> </ul> <p><u>Number of Graduates (in-service)</u></p> <ul style="list-style-type: none"> <li>• During 2000/1 – 2002/3, there is <u>no student in for-degree in-service courses</u> due to termination of government subsidization program for in-service teachers.</li> </ul> <p><u>Competitiveness of pre-service students</u></p> <ul style="list-style-type: none"> <li>• They complete courses <u>in a shorter period with a better GPA.</u></li> <li>• <u>Skills for the new curriculum are taught at school, and through the piloting, are very effective to improve teaching and learning at school.</u></li> </ul> |
| <p>Casual relationship / correlation between Output and Project Purpose</p>   | <p><u>Project Purpose: "Targeted faculties at 3 universities foster graduates that can improve lectures at school"</u><br/>(+)</p> <ul style="list-style-type: none"> <li>• <u>Better competitive with appropriate skill is a necessary condition for school to improve teaching and learning.</u></li> </ul>  |

AS

Effectiveness: Output => Project Purposes/ Are project output effective to meet the project purpose? Does it effective to actualize expected effects?

| Evaluation Criteria  | Results  |
|--|--|
| Positive/negative affects of the Important Assumptions to project implementation | <p>At least following drastic changes have been observed regarding education system in Indonesia during the Project Period.</p> <p>(+)</p> <p><u>Education Decentralization / School Based Management</u></p> <ul style="list-style-type: none"> <li>• Authorities, duties and responsibility regarding operation of the basic education is decentralized to regency (Kota/Kabupaten) government</li> <li>• Autonomy of school (primary and secondary) makes university-school collaboration much easier. Individual school can make decision by itself</li> </ul> <p><u>Competency-based Curriculum</u></p> <ul style="list-style-type: none"> <li>• The Indonesian government plans to introduce the Competency-based Curriculum from 2004</li> <li>• Methodologies introduced by the Project are consistent with the new curriculum</li> <li>• Many primary/secondary teachers consider that the Project Outcomes will be helpful for them to put the new curriculum in to practice.</li> </ul> <p>(+ -)</p> <p><u>Reform of University System</u></p> <ul style="list-style-type: none"> <li>• Institutional status of universities will be changed from a governmental status to a quasi governmental one</li> <li>• No-significant effect has been observed, as none of the targeted faculties still maintain the governmental status</li> </ul> <p><u>Discontinuation of Governmental Support for Degree Program for In-service Teachers</u></p> <ul style="list-style-type: none"> <li>• It is not possible for Project to provide for-degree in-service program.</li> <li>• Targeted university shift their focus from for-degree to non-degree in-service courses</li> </ul> |

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EFFICIENCY

| Efficiency Input => Output / Is the project implemented efficiently? (Reasonable output is achieved (both quantitatively and qualitatively) compared to actual input?) |   |
|--|---|
| Criteria   | Result  |
| Comparison b/w appropriateness /reasonableness of achievement of project purpose and input   | <p>(+)</p> <ul style="list-style-type: none"> <li>• It is reasonable to assume that the <u>Project Purpose is going to be achieved by the end of Project period.</u></li> <li>• <u>Project Outcomes and the Piloting have been appreciated by school as a effective resources</u> to improve Math and Sci. education at primary and secondary schools.</li> <li>• Graduates are becoming <u>more competitive</u>. GPA is increased in most of faculties while length of study is shortened.</li> <li>• More <u>number of schools collaborating in the piloting</u> than expected.</li> <li>• <u>Numbers of the Outcomes (exceeds 200 titles</u> in totaling three university) and its utilization supported a comprehensive quality betterment of the targeted faculties</li> <li>• Response to a question "Comparing total inputs from both Indonesian and Japanese sides and project outcomes, how do you assess overall efficiency of the project?" (Total response: 72): "Very Efficient" 32 (44%) / "Efficient" 37 (51%) / "Not so efficient" 3 (4%)</li> </ul>  |
| Efficiency in utilization of input   | <p>(+)</p> <ul style="list-style-type: none"> <li>• <u>Almost all the equipment (except for few items) has been utilized at classroom or laboratory activities.</u></li> <li>• There are <u>two equipment/Kits that are not utilized</u> with its optimal function at each university (NMR and Eudrometer)</li> <li>• Majority of the developed <u>Outcomes (e.g., textbook, teaching guide, experiment guide, etc – in total of 210 titles/items) are utilized.</u> Feedback from the students has been referred in revisions.</li> <li>• <u>Equipment inventory</u> contributed for a more efficient equipment operation and management. It saves time for locating and tracking current situation of equipment.</li> <li>• <u>LAN</u> contributed for a more optimal utilization of classroom. There is less misinformation or double booking of classrooms/laboratories compared to before.</li> </ul> <p>(-)</p> <ul style="list-style-type: none"> <li>• <u>Development of common textbook, which are scheduled in JFY 2001/2 and 2002/3, are still on progress.</u> It seems that there is a miscommunication between the Task Team C and the Project Implementation Unit; the former wait for budget approval of the latter on external reviewer cost since December 2002, while the latter await for completion of external review. Despite this, faculties already started to deliver the draft textbook to students for their use.</li> <li>• <u>Some counterparts hesitated to press their colleague</u> to submit draft document of the textbook.</li> </ul> |

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| Efficiency Input => Output / Is the project implemented efficiently? (Reasonable output is achieved (both quantitatively and qualitatively) compared to actual input?) |  |
|--|--|
| Criteria   | Result   |
| Appropriateness of quantity, quality and timing of the input made  | <p>(+)</p> <ul style="list-style-type: none"> <li>In general, quantity, quality and timing the Japanese Experts, Equipment, C/P Training, etc, are considered as <u>appropriate</u>.</li> </ul> <p>Yet following are noteworthy</p> <p>(-) (+)</p> <ul style="list-style-type: none"> <li>Counterparts feel that there is a very <u>limited number of Japanese Experts have been dispatched in biology field as of April 2003.</u></li> </ul> <p>(-)</p> <ul style="list-style-type: none"> <li><u>Less Japanese experts specialized in subject education.</u> Majority of the experts are majored in "pure" science and mathematics</li> <li>Indonesian Counterparts felt that assignment period allocated for Japanese Short-term Experts were not sufficient. They expect period of visitation to one university should <u>at least a week to ten days, instead of just a few (2-3) days.</u></li> <li><u>Timing of the short-term expert sometime was not appropriate.</u> Some time they visited the targeted faculties during semester break.</li> <li>UPI Biology department have sent only one C/P trainee to Japan, while other Biology departments is going to at least 3-4 C/P trainees.</li> </ul> |
| Efficiency of implementation/ working model employed   | <p>(+)</p> <ul style="list-style-type: none"> <li>In general key Activities of the Project have been implemented efficiently (if not "very efficiently"), according to the Counterparts.</li> <li>The project executing organization (combination of the Task Teams and Work Group) has been effective to facilitate well-focused actions among personnel, and contributed for an efficient implementation.</li> </ul>   |
| Constraints on input-output path   | <p>(+)</p> <ul style="list-style-type: none"> <li>There have been no particular constraints that hindered for the Inputs to produce the Outputs.</li> </ul>  |

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IMPACT

| Impact  | Impact of the Project Purpose to the Overall Goal, Project Purpose to outside of the Project boundary (Is there any (in-direct)synergy effect?) |   |
|---|---|---|
| Evaluation Criteria                               | Results   |   |
| Impact of the Project Purpose to the Overall Goal | (+)   | <ul style="list-style-type: none"> <li>• Positive impacts are observed through Project implementation at two layers: <u>impact to universities and (pilot) schools</u> (primary and secondary school).</li> <li>• The Project shares the <u>Common Textbooks among 9 educational universities (ex-IKIP)</u> in addition to the three-targeted Universities.</li> <li>• In addition, various project outcomes, other than the Common Textbooks, also have been shared with teacher development faculties at many universities (at least 18 universities) <u>though this is not originally planned</u>.</li> <li>• These shared outcomes of the Project have been greatly appreciated by non-targeted universities as good references for these universities in reforming their syllabi, textbook, etc.</li> <li>• <u>The National Seminar on Mathematics and Science Education is very effective</u> to share the benefit of the Project among Universities</li> <li>• Both faculty lecturer and school teachers are very positive and encouraged to employ methodologies introduced by the Project</li> <li>• Response to a question (Q. 20 Do you think teachers (at FMIPA, primary, and secondary school) are going to accept and accommodate the "children-centered" teaching method, the "observation- and experiment-based teaching"?) indicate that both faculty and school are very positive to learn and employ the methodologies (counterparts perception).</li> </ul> |

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| Impact of the Project Purpose to the Overall Goal, Project Purpose to outside of the Project boundary (Is there any (in-direct) synergy effect?) |  |
|--|--|
| Evaluation Criteria  | Results  |
| Impact (negative/positive) – technical aspects:<br>Is a synergy effect to non-target group anticipated?  | <p><u>Synergy</u></p> <p>(+)</p> <ul style="list-style-type: none"> <li>• The Piloting has a great potential to be replicated to other school. In total of 21 schools (2002/3) have collaborated in the Piloting. <u>Piloting can be institutionalized as a new form of an in-service teacher training.</u></li> <li>• The piloting activities welcomed by schools to put new ideas in teaching and learning of mathematics and science subjects in to practices.</li> <li>• Assessment reports of the Piloting activities indicate that <u>methodologies introduced through IMSTEP does improve teaching and learning process at school.</u></li> <li>• There are <u>many primary and secondary schools desires and wait to participate in the Piloting.</u></li> <li>• Piloting initiated/revitalized <u>links between targeted faculties and primary and secondary schools</u> of respective region, which is indispensable for the educational faculties to maintain their curriculum relevance to the actual situations, and for schools to be provided with chance to practice new methodologies.</li> <li>• Number of <u>schools and other universities visit the targeted faculties</u> have been increased sharply. It's been increased by 2-5 times. Typically, they visit the campuses for laboratory activities, observations, open-campus activities, etc.               <ul style="list-style-type: none"> <li>- Approximately students from 20 SLTP and SMU in West Java Province have visited UPI for observation and laboratory work since 2000/1 (UPI)</li> <li>- Dinas P&amp;K Kota Malang and other surrounding Kabupaten has sent more than 4,800 students of SMU and SLTP since the Mid-Term Evaluation period (UM)</li> <li>- Several Kabupaten in West Java has sent teachers from SLTP and SMU for them learn laboratory works practices</li> <li>- Association of Private Christian school invited UNY counterpart to provide seminar on new methodologies in teaching and learning</li> </ul> </li> <li>• Several counterparts have been <u>invited by MONE in preparing the National Competency-Based Curriculum document.</u></li> <li>• Being as a "pioneer" in curriculum reform, <u>targeted faculties is "one step ahead" of other faculties at respective university.</u> They are asked to submit by University Management to submit proposal for university curriculum changes for the Competency- Based curriculum scheduled in 2004.</li> </ul> <p>(+) (-)</p> <ul style="list-style-type: none"> <li>• Information is not made available to the Evaluation to confirm if non-targeted ex-IKIP universities have started to similar activities to what the Project has been implementing.</li> </ul> <p><u>Observed constraints</u></p> <ul style="list-style-type: none"> <li>• Limited budget for printing the Outcomes and organizing events</li> <li>• Number of personnel at faculty is not enough to replicate the "piloting" as an institutionalized in-service training program in respective region.</li> <li>• There are <u>uncertainties in local government policies and strategy regarding In-service training.</u> Authorities, duties and responsibilities needs to be determined.</li> </ul> |

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SUSTAINABILITY

| Sustainability Will benefits of project be sustained? |  |
|---|--|
| Criteria  | Results  |
| Policy/governmental support                           | <p>(+)</p> <ul style="list-style-type: none"> <li>• <u>DGHE has decided to continue financial support</u> for the targeted university to maintain activities derived from the Project</li> <li>• There is <u>high potentiality for the Piloted activities to be replicated</u> - Many primary and secondary schools have inquired the targeted Universities if they can participate in the Piloting activities. Though there is no "official" waiting list is made, following are good indication of potentiality of replicating the Piloting               <ul style="list-style-type: none"> <li>- At UPI, 12 schools invited for the workshop on Piloting (3rd week of March 2003) expressed their willingness to participate</li> <li>- Being interested to the Project activities, more than 10 secondary schools have visited UPI from Jakarta.</li> <li>- Number of piloted schools at UM are 6 and 18 for 2001/2 and 2002/3 respectively. They still receive numbers of inquiries from interested schools</li> <li>- Number of piloted schools at UNY are 22 for , yet there are many schools shows their willingness to participate.</li> </ul> <p>(The number of piloting school indicated above are based upon the interview, and they are slightly different from those indicated in the "Report on piloting activities FY 2002/2003" prepared by the Counterpart.)</p> </li> </ul> <p>(-)</p> <ul style="list-style-type: none"> <li>• <u>Institutional framework for in-service training implementation (Authorities, duties, and responsibilities) has not been clearly determined in the decentralized system education management, while there are many potential players at regional levels (e.g., Dinas, Educational Universities, BPPG, MGMP, Mayors, Local Assambly, etc.)</u></li> </ul> <p>Source: Interviews and Questionnaire</p> |
| Institutional capacity                                | <p><u>Institutional (Faculties)</u></p> <ul style="list-style-type: none"> <li>• <u>Commitment of the targeted faculties is very firm.</u> Managements of the targeted faculties believe that the Project is very fruitful and its activities worth continue.</li> <li>• The targeted faculties management and counterparts consider that they will <u>maintain essential functions of Task Team and Working Group.</u> They find out the organizations have been very effectively working.</li> <li>• Targeted faculties indicated that, "Group of Faculty Improvement", which is a permanent task force for continuous improvement of faculty education, would take over majority of the Project activities, except for the Piloting.</li> <li>• Piloting will be continued in a similar organizational and administrative manner as carried out during the Project</li> </ul> <p>(+) (-)</p> <ul style="list-style-type: none"> <li>• <u>Detailed action plan should be prepared</u> during the remaining period of the Project for continuation of the project e.g., the Piloting, textbook development, etc., for remained Subject Courses at each departments/faculties</li> </ul> <p><u>Leader / Agent of change (Faculties)</u></p> <p>(+)</p> <ul style="list-style-type: none"> <li>• Majority of the counterparts consider they have <u>"self-determined leaders/promoters to continue project activities."</u> Out of 68 respondents, 53 replied they already have such personnel</li> </ul>   |

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| Sustainability Will benefits of project be sustained?                              |   |
|--|---|
| Criteria   | Results   |
| Technical sustainability – relevance of new teaching technique and executing model | <p>(+)</p> <ul style="list-style-type: none"> <li>• Equipped with knowledge and experience, <u>counterparts gained confidence</u> to continue the Piloting other Project activities.</li> <li>• Counterparts used to have knowledge on the methodologies introduced by the Project with insufficient experiences. <u>The Project provides them opportunities to put their knowledge into practices.</u></li> <li>• Counterparts have a reasonably critical perception on the extent of change so far achieved.               <p>Some of interviewed counterparts critically pointed out not all the lecturer have accepted educational methodologies introduced by the Project and it would be very hard for such people to change.</p> <p>Also they recognize that <u>coverage of completed Project Outcomes</u> (e.g. textbook, teaching guide, experimental guideline, manual) is still limited compared to a full line-up of the taught course and equipment. Each <u>department has approximately 30-50 taught "Subject Courses"</u> while not all of them have been entirely covered by the project Outcomes.</p> </li> </ul>   |
| Financial / Institutional support  | <p>(+) Governmental support</p> <ul style="list-style-type: none"> <li>• <u>DGHE already pledged</u> to continue financial support for the targeted universities to continue activities derived from the Project</li> <li>• <u>All the targeted faculties have strong intention to allocate budget</u> to continue activities</li> <li>• Some counterparts have experienced in <u>fundraising</u> during the Project. This includes production of teaching material/teaching-aid equipment, sales of textbook, fee income from organizing and providing seminar lectures, etc. Such counterparts have intention to use raised fund to continue the activities.</li> <li>• DGPSE has a clear understanding that the <u>Directorate is primarily responsible body at central government in supervising in-service teacher training.</u></li> </ul> <p>(+) (-)</p> <ul style="list-style-type: none"> <li>• Intention of DGPSE MONE is unclear regarding their support to the targeted faculties</li> </ul> <p>(-)</p> <ul style="list-style-type: none"> <li>• There is no <u>reference model or guideline for Dinas P&amp;K Kabupaten/Province in organizing in-service teacher training.</u> They are primarily responsible for the training in the decentralized era.</li> </ul> |

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| Sustainability Will benefits of project be sustained? |   |
|---|---|
| Criteria  | Results   |
| Socio/environmental                                   | <p>(+)</p> <ul style="list-style-type: none"><li>• No significant social or environmental thread has detected</li></ul> <p>(-)</p> <ul style="list-style-type: none"><li>• Given that the magnitude of Indonesian financial support in the post-Pilot period, University would not be able to afford piloting or seminar/workshops for in-service training purpose in <u>remote and less educationally developed area</u>.</li></ul> <p><u>Education Decentralization / School Based Management</u></p> <p>(+)</p> <ul style="list-style-type: none"><li>• Authorities, duties and responsibility regarding operation of the basic education is decentralized to regency (Kota/Kabupaten) government</li><li>• <u>Autonomy of school</u> (primary and secondary) makes university-school collaboration much easier. Individual school can make decision by itself.</li></ul> <p>(-)</p> <ul style="list-style-type: none"><li>• There has been no <u>reference implementation model or guideline</u> for in-service teacher development made available to Provincial/District educational stakeholder that may involve.</li></ul> |

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