

THE INSTRUCTIONAL MATERIAL DEVELOPMENT CELL (IMDC)

**IMPROVING THE QUALITY OF EDUCATION
IN THE NORTHWEST FRONTIER PROVINCE**

MARCH 1994

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BACKGROUND

The PED Program put the implementation of an effective instructional system at the core of quality reform. Central to this system was the development of improved instructional materials for classroom use. This development was expected to be a step by step process that included:

- identification of the conditions of teaching/learning in NWFP classrooms where materials would be placed;
- development of teaching/learning materials that met the conditions of NWFP, fit Pakistan's curriculum objectives, and were educationally sound;
- field-testing materials in experimental schools to ensure they met the objectives set for them, and modifying them until they did;
- creation of integrated training, supervision and assessment systems to support the use of materials in the schools.

GATHERING BASIC INFORMATION

In 1991 in NWFP, the first "solution-oriented" studies were conducted to prepare for development of an improved primary program. From initial visits to schools it was clear that two major conditions contributed to the poor quality of instruction. The first was the existence of a large class of kindergarten children who were neither officially recognized with resources nor provided materials specifically directed at their age level. The second condition was the predominance of multi-grade schools in NWFP that made it difficult for teachers to teach with materials and methods designed primarily for single class situations. It had also been clearly documented in BRIDGES studies of 1989 that supervisors were not providing the necessary support for teachers, nor adequately monitoring teaching/learning in the classrooms. If an improved instructional system were to be implemented in NWFP it would require a district supervisory staff trained to support teachers and feedback information to improve new programs and materials. This supervisory staff would also be key in providing grassroots information that ultimately could be used in the districts for planning better use of supervisory time, teacher inservice training, and the allocation of teachers and classroom resources. Thus in addition to gathering information about conditions in schools for program developers, it seemed appropriate to use the classroom studies to train district staff in skills they would need to implement an effective instructional system.

The Kachi and multi-class studies were conducted in September 1991 using male and female Assistant Sub-divisional Officers (ASDEOs) from every district of NWFP. The ASDEOs were trained to fill out classroom proforma based on ones previously used for BRIDGES studies. It was the first time most of the ASDEOs had spent time in classrooms observing rather than "inspecting" the education program. The data were collected in the space of a week in approximately 64 schools (in each study) selected randomly within 10 kilometers from the Sub-divisional Officer's (SDEO) office.

There were a number of study findings relating to instructional materials development (described in more detail in the reports of the studies). Among the findings were that no instructional materials were specifically designed for the Kachi children and it was customary for instruction to consist of the memorization and recitation of alphabets and numbers. Other resources were also not officially provided to these classes though the students constituted roughly a quarter of the primary enrollment and consumed about a quarter of the teachers' efforts. The Kachi class was usually the largest class in a school with enrollments of commonly 50 to 100 students. The classes rarely had any instructional aids other than a blackboard. Efforts to improve instruction in this class and the other early primary classes would affect learning for the bulk of the children enrolled in primary schools.

The multi-grade study suggested further constraints to the teaching environment. Teacher-dependent materials made it difficult to assign independent work to students, causing teachers to fall back on memorization as an easy way to deal with the problem. The teachers were also not knowledgeable in the subject content matter as evidenced in their low graduation (division) scores and the numerous mistakes observed in classes. Multi-classes showed large variations in the numbers and ages of students and, like the Kachi classes, were deficient in instructional aids, materials and classroom facilities. Supervision was infrequent and not usually related to instructional support. It was concluded that the education program could be improved in both types of classes with instructional materials that addressed the most important needs of these classrooms, specifically, improving student skills, and making the materials both user-friendly and less teacher-dependent.

ESTABLISHMENT OF AN INSTRUCTIONAL MATERIALS CELL

In October 1991, an Instructional Materials Development Cell (IMDC) was established in the Directorate of Primary Education in Peshawar. The staff was recruited from promising young primary school teachers with high (BA, BSc, or higher) academic qualifications and at least 5 years teaching experience at the primary level. Out of 50 candidates who appeared at a preliminary workshop to test their suitability, 13 became subject specialists and researchers for the Cell. Primary school teachers were chosen because they were familiar with conditions in the classrooms, and with students and teachers in the field. The aim of the Cell was to develop instructional materials and the associated teachers' guides for the main academic subjects--math, science, Urdu and Pashto in Kachi through Class Five.

PREPARING INSTRUCTIONAL MATERIALS

In 1991 the staff began writing the Kachi materials. Under the supervision of a curriculum specialist provided by PED, they were trained to write the materials following Pakistani curriculum objectives which, in the case of the Kachi materials, were beginning first grade objectives, and to write them according to general education criteria related to scope, sequence, conceptual complexity and the developmental level of children. Evaluation sections were distributed throughout the books to assist the teachers in knowing how well the children were absorbing the intended skills. Attractive illustrations were prepared for the materials showing local details and containing a balance between pictures of male and female figures. A decision was taken to produce the books in black and white, except for lesson units on color, in order to keep the cost of the books low while still adding considerably more pages than previous books. When the Kachi textbooks in Urdu, Pashto, and math/science were completed they were checked for accuracy by experts in the subject matter. The Kachi books were then produced in experimental editions, with languages books divided into two volumes for the full school year and the math/science book in one volume.

Accompanying the textbook and also written by the IMDC staff was a teachers' guide with simple but complete instructions on exactly how to teach each lesson. The lesson format used in the guides was based on a six step process, found in a 1989/90 BRIDGES study in Pakistan to be associated with higher student achievement: review, focusing on a topic, clear presentation with examples, guided practice, independent practice and homework (except at the kindergarten level). Teachers were trained in this format and knew they could expect it with every lesson. Providing these detailed teaching instructions was intended to help teachers move away from an instruction based primarily on memorization.

INTRODUCING THE MATERIALS AND BUILDING SUPPORT SYSTEMS

When the Kachi textbooks and guides were ready for experimental trial, field-testing began. In the first trial of 248 schools in 3 districts, the IMDC staff spent about a week in each district training the teachers and supervisors (male and female ASDEOs and LCs) in how to use the student textbooks and teachers' guides. The training consisted of helping them understand the "effective teaching practices" method used in each lesson of the teachers' guide, explaining the main concepts that were included in the students' books, and giving them practice in enough lessons to feel comfortable with the method format. In their initial use of the new materials, each teacher was assigned a single Kachi subject, math/science, Urdu or Pashto.

Efficient teacher training. With 50,000 teachers in NWFP, one concern of the developers was to find ways to introduce new materials in as cost-effective way as possible. The task was especially difficult because the methods for teaching subject content were very different from previous methods of instruction. The single format lesson with detailed instructions for teachers was one means by which training was simplified. With this format a minimal teacher training could be reduced to learning the single format. Another problem was the small size of the IMDC staff who could not train all the teachers in all the districts. An experiment was therefore conducted in the first cycle of the evaluation to determine whether district staff might be trained to introduce new materials as effectively as the IMDC developers. In a paired school design, some teachers and their supervisors

were trained for three days by IMDC staff in the use of the new materials. The supervisors in turn trained a new teacher in a school near that of the already trained teacher. Later the achievement scores of the students of both kinds of teacher were compared to see if the difference in training program made a difference in student learning. It did not, and thereafter the IMDC felt justified in relying more heavily on the supervisors when new materials were introduced in later cycles and in more districts.

Supervisor role. In the training, supervisors and teachers were organized in a chain of accountability for student learning. The teacher taught the students, the LC supervised and supported the teacher, the ASDEO was responsible for training the teacher and supervising the work of the LCs and the sub-divisional officer (SDEO) assumed overall responsibility for the sub-district or tehsil. Supervisors were assigned a schedule for visiting the experimental schools on a weekly basis to fill in observation proforma about the use of the new materials. The visits provided a structured opportunity for supportive interaction between supervisors and teachers--an important training objective, while the proforma provided field information about the materials, as well as evidence that supervisors' visits took place. Supervisors who proved to be effective, as evidenced in student results and the support they gave to teachers, were designated master trainers to introduce materials in new tehsils or districts, and to train their own teachers in new materials. After one or two field-testing cycles in their districts under the supervision of IMDC staff, these master trainers were called to Peshawar for training in the next cycles of new materials and asked to train other supervisors and teachers in their districts. Pakki (first grade) and English materials were introduced through the master trainers in this way. IMDC continued to test a sample of classes in each district to see if the materials were being introduced and supported properly.

Standards for the materials. The IMDC staff set general objectives and standards for the materials. The three main objectives were: 1) to adequately teach the skills required by the curriculum 2), to interest the children, and 3) to be used easily by teachers. The standards set for the materials included, for skills--that more than half of the classes in each district would get 75% or more average scores and each schooling context, urban, rural, girls, boys, large classes, small classes, multi-classes and single-classes would produce essentially the same results so that no environment would be disadvantaged by using the new materials. The objectives of student interest and the ease of teacher use also met standards determined by observing student engagement during the use of the materials and by interviewing teachers. The materials consistently met very high standards for student interest and teacher suitability which suggests either that the materials were very well received or that the indicators were not discriminating enough. With a few exceptions, that were mostly corrected with teacher retraining, the materials also met the high achievement standards for student skill levels.

Testing and feedback. Six weeks after the training and at periodic intervals thereafter, the IMDC staff returned to test the students in experimental schools. The tests constructed by IMDC staff consisted of items similar to those in evaluation sections of the new materials. If the teacher followed the teacher guide and taught the lessons as indicated, the children could accomplish the test easily. It became immediately clear during the testing whether the children had been taught the new materials or not. If all the students of a class appeared to have difficulty on the test (and other classes had high

scores), then the teacher would go again for retraining by the master trainers. If many children had difficulty with certain test items, these parts of the books and teachers' guides were reviewed and improved by IMDC staff. In initial stages of the evaluation information from achievement tests, student engagement proforma, interview forms and supervisor observation forms were entered into computers, analyzed and fed back to the IMDC developers who modified not only the materials but also their training programs. The results were also produced as tables containing supervisors' names, schools' names, teachers' names and students' results in the form of a class average. The class average constituted a performance score for supervisors and teachers that was fed back to them and discussed.

When the materials reached final draft form after field testing they were reviewed by a committee from the Curriculum Wing in Islamabad, who approved them with minor changes for full dissemination to all of NWFP. The IMDC staff revised the materials in line with the Committee's recommendations and they are now waiting publication by the Textbook Board.

FIELD TESTING PHASES

The field testing process described above was repeated with twice yearly introductions of materials in new and old districts. There were three phases initially for each set of materials: experimental, pilot and extension. (At present there are only two, the "intensive" phase where new introductions of materials are made and the "extensive" phase where materials are extended to the rest of the districts).

Experimental phase. In the first "experimental" phase beginning in April 1992, Kachi textbooks and teachers' guides were introduced in the three districts, Bannu, Swat and Chitral, that expressed strong interest in trying the materials. Chitral served as a special case because the closure of roads from September to June prevents easy contact with Peshawar during the winter months. It was decided to see if supervisors and district officers, after one IMDC training session in the summer, could introduce the materials on their own, without the continuous monitoring by the IMDC staff (the following summer the IMDC staff again visited Chitral for testing). Altogether the materials were tested in 248 classes, including subsets of urban and rural, male and female, multi-class and single class schools: Math/science (127 classes), Urdu (82) and Pashto (39). With the exception of a few classes the materials produced student achievement results above the standard during this phase. These experimental classes continued to receive materials in sequence (with Volume 2 of Urdu and Pashto to complete the Kachi books, followed by Pakki materials). Teachers began with one subject and then were cross-trained in another subject in subsequent introductions of materials. Classes which started with Pashto in Kachi class were also eventually given the Urdu Kachi materials during their Pakki year, at which time, transference from Pashto hastened the process of learning Urdu.

Pilot phase. In the second "pilot" phase starting in September 1992 the same Kachi materials were introduced in four new districts--Mardan, Kohat, Dir and Mansehra. The total new classes were 239: math/science (118), Urdu (53) and Pashto (68). Again in April 1993, materials were introduced in an additional four pilot districts--Peshawar, DIKhan, Nowshera, Abbottabad, and Karak in 187 new classes. As in the experimental phases, once the materials were introduced, they were provided to the districts in sequence and teachers were cross-trained in new subject matters, including also Urdu if

the teacher started first in Pashto. The IMDC came regularly to train teachers and supervisors, to test students and, increasingly over time, to train supervisors to take over more of the testing.

Extension phase. In the third or "extension" phase, Kachi materials were introduced to offshoot districts by the master trainers from their parent districts with minimal involvement of the IMDC. Thus in November 1992, materials were introduced into 20 math and 20 Urdu classrooms of Lakki district by Bannu staff and into 16 math/science and 18 Pashto classrooms of Buner by Swat supervisors. The extension phase continued in the next cycle with cross-training in new subjects and introductions of the materials for the first time in new districts: Swabi by Mardan supervisors, and Tank by Bannu supervisors.

This extension phase completed the introduction of materials to all the districts except Charsadda, which is under the Pak-German project, and Malakand which was the UNICEF experimental district. Eventually Malakand asked for the math materials and were trained by the IMDC in this subject only. Each district is currently involved in an on-going process of using the new materials, feeding back information and being held accountable for student learning. Because the IMDC worked with SDEOs in most tehsils within the districts,¹ this has meant that as tehsils have been upgraded to districts, as was the case when Battigram split off from Mansehra, the IMDC materials and training have already reached the new districts.

Future field testing. Field testing has now taken place in more than 750 schools in NWFP (576 boys' and 182 girls' schools). The large number of schools was a consequence of efforts to build the skills of a broad range of district staff to support the new materials. The large numbers however put enormous pressure on the IMDC, and in February 1994 a plan was devised to bring the testing better in line with the future scope and capacities of the IMDC. In the next rounds of materials' introductions, the 750 schools will be divided into two groups, a small sample of 8 schools in each of 8 districts, to be intensively followed by IMDC staff, and the rest given new materials and training but with monitoring turned over completely to supervisors in the local districts. Student achievement data will be brought by the supervisors to EMIS-trained district computer operators to enter and prepare tables of class scores (teacher performance scores) for the supervisors. A workshop will be held in the Center in late June 1994 for the SDEOs and the ASDEOs to help them analyze their scores and plan teacher retraining, supervisory visits, and perhaps the reassignments of teachers. At that time they will receive training in a new testing/monitoring handbook that has been prepared by the IMDC/CBB staff.

By dividing the sample, the plan recognizes two rationales for field use of the materials--to improve the materials and their associated training, and to build strong support for the materials by holding teachers and supervisors accountable for student learning. The smaller sample will provide information for the IMDC to improve materials, while the larger sample will start a process of

¹ An exception was the district of Dir where due to a lack of supervisors, IMDC was unable to set up the support system needed for the materials in any but the district capital.

continuous monitoring to make the primary education system as a whole perform better.

PRESENT STATUS OF CLASSROOM MATERIALS

By April 1994 the IMDC had completed and tested Kachi and Pakki materials and had completed the development of Class Two materials. Before the end of the PED TA the Class Two materials will be in the field and Class Three materials will be prepared for testing. By going into the field themselves the developers have been able to see at first hand how their materials were being used and where they needed to be modified. Initial testing validated the approach used in the materials and made it possible to concentrate on refinements in later cycles.

The IMDC materials are presently sparking a great deal of interest in the Federal Curriculum Wing in Islamabad where there have been suggestions that the IMDC materials be used in Federal schools. Similarly Islamabad is looking into revising the PTC curriculum to, among other changes, add practical training of the kind that will support teachers use of innovative materials like those developed by the IMDC.

EXPANDING AND SPECIALIZING THE FUNCTIONS OF THE IMDC

In the lengthy process of developing and field testing the new instructional materials, the IMDC soon began to outgrow the capacity of the 12 (one dropped out) member staff to carry on all the activities.

Up until this time IMDC staff had served as developers, trainers, researchers, and testers. For short periods during school holidays, the staff was augmented by teachers and supervisors who, because of outstanding performance in their districts, had been invited to visit Peshawar and assist the IMDC staff in writing training units for teachers. These temporary staff members proved useful but a more sustained effort needed to be made to establish a teacher support unit within the IMDC.

To cope with the demands for teacher support programs and to develop a new English program (see below), the IMDC invited the Curriculum Bureau to open a branch office (CBB) on its premises in June of 1993. Four positions were approved for the CBB. With these new positions, it was possible for the staff to develop specialized skills that until then had been covered by many staff members. Of the new CBB staff, one now specializes in English program development, one in materials-specific teacher training, one in testing and one in evaluation. At the same time two members of the IMDC staff were trained to become the core of an evaluation unit charged with supervising, coding, entering and analyzing data brought from the field.

INCREASING TEACHER COMPETENCY

It had become apparent during the field testing that the new materials might produce even better results if teachers received training in classroom methods, management techniques and subject concepts needed to teach at the primary level. Therefore the superior teachers and supervisors invited to spend their school holidays in the IMDC were given a set of the management problems that had been observed in the classrooms and were asked along with one CBB staff member to build inservice

and preservice training units to help teachers solve these problems. The problems included such issues as how to seat large numbers of children to improve the conditions of instruction, how to use simple audio-visual materials, how to teach young children beginning math and languages, how to teach effectively in multi-class situations, etc. The teachers and supervisors also assisted the regular staff in developing teacher support materials that included alphabet and number friezes and plastic blocks² for younger children, topographical maps, a school library consisting of 150 reading passages organized into 3 learning levels, and supplementary math materials for classes 1 through 5. These materials all have accompanying instructions to help a teacher use them in normal classroom instruction.

About this time, also, the results of a study of teacher subject content knowledge conducted as part of PED revealed glaring deficiencies in teacher understanding of primary subjects. To correct this deficiency, the CBB staff, assisted by the visiting ASDEOs, prepared teacher training units in beginning math/science and beginning reading based on the IMDC Kachi materials, separate units on math concepts found in the rest of the primary curriculum, and units on Urdu and Pashto language development including reading, writing, speaking and comprehension. As the interactive radio program (IRI) described below developed, a unit on English as a second language was also prepared.

General subject content and methods training. These subject content units were introduced into the GCETS in November 1993. In the beginning of the school year, the entering PTC students in the 18 working GCETs were given a pre-test in the basic primary subjects--math, science, Urdu and Pashto. At the end of the test their instructors were trained in IMDC/CBB subject content units and primary instructional materials and were asked to incorporate them in their teaching during the PTC course. The new math and language units were based on the revised curriculum objectives in language developed, with PED assistance, in the Curriculum Wing of the Ministry of Education in Islamabad.

The PTC pretest scores reinforced the results from earlier tests of teachers' and students' content knowledge that math and science were especially weak. In follow-up visits to the GCETs in February 1994 to motivate instructors to use the subject materials, CBB personnel presented the pre-test scores to instructors and principals, discussed with them how they were using the units and administered a short quiz to the students in math and science to demonstrate some of the weak areas. A third visit in the spring of 1994 which was timed to precede the student practice teaching period provided training for the GCET instructors in the new classroom management units and IMDC supplementary reading and math materials, blocks and friezes for primary classes that were designed to keep children busy while teachers work with other groups or classes. The training was attended by ASDEOs and LCs from the local area who would eventually be training teachers in these new support materials. In June of 1994 the CBB staff again visited the GCETs to administer a posttest to the same students to see if their content knowledge scores had improved by the end of the year of PTC training. The results will be communicated to the GCETs instructors in a workshop in fall 1994 to prepare them to

² The plastic blocks were developed independently by one of these superior teachers, and IMDC helped in producing them on a large scale.

take over the pre and post testing of students.

ENGLISH (IRI) PROGRAM

In the fall of 1992, the Minister of Education asked PED to develop an English language program for the primary level. Soon thereafter in November, a small field study was conducted in 11 classes of 5 schools of the Peshawar area using an Interactive Radio Program designed for Kenya and rerecorded using Pakistani voices (a decision made by the Pakistanis). The purpose of the study was to test the suitability of using an Interactive Radio Instruction Program in NWFP. The study indicated that changes needed to be made before the IRI program could be successfully adapted for use in Pakistan. Most significant in terms of developing the program were three points, that music would have to be removed, that the program could not assume English competency in primary school teachers, and that the radio lessons were more effective when used with older primary children.

As a result of this trial, it was decided to produce three levels of English, for Classes Three, Four, and Five. Each level would include radio lessons, student workbooks and teachers' guides. A complete level would consist of 120 lessons, one 20 minute lesson per day with 10 minutes of workbook time for reading and writing practice after the radio lesson. The lessons were to be broadcast by Radio Pakistan on days when schools with varying holiday schedules were all open simultaneously. The teachers' guide would translate the new vocabulary and word structures for each lesson into Urdu and prepare the teacher for any actions she or he might need to take before or during the lesson. In addition an alphabet and numbers workbook for Class 2 was developed to prepare children for reading and writing before they were formally introduced to the three levels of the radio program.

The IRI work in the IMDC was supervised by the Curriculum Bureau Branch staff: one prepared the scripts based on a revised set of curriculum objectives while another prepared the teachers' guides and supervised the development of workbooks by IMDC staff. The lessons were prerecorded in the studios of Radio Pakistan with the help of two producers especially assigned to the job. The staff of the broadcasting station were trained under the supervision of an expert provided by PED. The lessons were recorded on cassettes, sets of which were provided to schools in areas where reception was bad.

When the 30 lessons were ready in draft, they were tried again in a small group of schools in the Peshawar area, and again revised over the summer holidays. Among the revisions recommended during this trial were even greater simplification of teachers' instructions in the radio lesson, an easier to understand teachers' guide, and an improved workbook. A set of 10 15 minute IRI training programs for teachers covering the first 30 student lessons were also developed and recorded.

When Level One was finally finished, the program was introduced to a larger sample of 300 schools in all the districts and many of the sub-districts of NWFP. Each school received a radio, two sets of batteries, the teachers' guide, student workbooks, and sometimes cassettes of the lessons when radio reception was poor. Master trainers were given training in Peshawar and asked to train supervisors and experimental teachers in their districts. IMDC staff administered achievement tests twice yearly in the same way that IMDC materials were tested. To simplify this procedure IRI was introduced in

a subset of IMDC experimental schools.

Radio Pakistan began broadcasting the daily lessons in mid-September 1993. Student lessons were timed to coincide with the end of the school break so the teacher's program could be broadcast before the lesson and during the break. Thus, the teacher program was broadcast at 10:45 for 15 minutes; there was 5 minutes of news and the IRI lesson began at 11:05 and continued until 11:25 after which there was a 10 minute workbook practice organized by the teacher.

The program was well received in the schools as well as among education officials both at the provincial and federal levels. The results of the first testing have also been high in most schools. The Federal Curriculum Wing is now talking about writing new English curriculum based on the IRI lessons and possibly extending the program to all of Pakistan. If Pakistan Broadcasting Corporation in Islamabad broadcasts the programs to the whole country, this will help resolve the problem of poor reception in some areas of NWFP because of the stronger capacities of the federal radio facilities.

By the time the PED Program is finished, three levels of English will be completed. In September 1994 Levels One and Two will be broadcast, the first level to all schools in NWFP and the second level for use by the 300 experimental schools who have completed Level One.

TESTING CELL

The IMDC/CBB has helped the National Education Assessment Program (NEAP) develop test items for Urdu and Pashtu in Classes Three and Five, and has provided a location and logistic support in the form of testers, coders, and data entry persons for the annual achievement testing.

WORKSHOPS

Many of the IMDC's activities have started with a workshop to develop the skills of those who were to be participating in the activity. The Center expects each workshop to contribute to the objective of implementing a more effective instructional program and most have some follow-up activity to ensure the impact. Among the workshops in which the PED consultants and IMDC staff have participated are the following:

Curriculum writers. Volunteers were recruited from BA and BSc primary school teachers with five years teaching experience. They came together to analyze the national curriculum and derive instructional objectives for Classes Kachi through Three of the primary level. From these volunteers, the ones with the best potential were recruited to form the IMDC staff.

Curriculum objectives. With the IMDC of Balochistan, and at the request of the Curriculum Wing Islamabad, the NWFP IMDC has developed improved instructional objectives derived from existing national objectives for subjects in Kachi, Pakki, Class Two through Class Five. This is the first time instructional objectives have existed for the Kachi class.

Annotated teachers' guides. A workshop was given for the Textbook Board in how to develop teachers' editions of student textbooks. Attending were also other donors, specifically the Pak-Germans, who assisted in training the participants.

Formative evaluation. A workshop in the formative evaluation of Textbook Board materials was given to TB, IMDC and UNICEF PCRCP staff from the Curriculum Bureau.

Testing. A workshop was given in the Curriculum Wing to launch the NEAP testing program. A second workshop was held in NWFP to train the Provincial Curriculum Bureau and share materials.

Supplementary materials development. In cooperation with the Textbook Board, writers prepared supplementary reading materials for primary classes.

SUMMARY

In less than 3 years, an IMDC with the associated CBB has been established and the staff trained in the skills required to put in place a quality primary program for NWFP. To summarize, the major accomplishments of the IMDC and the CBB include:

- o instructional materials for Kachi, Pakki, Second and Third classes including student texts, teachers' guides, and instructional aids,
- o supplementary teacher support materials in reading and math, for classroom use
- o preservice and inservice teacher training units in practical classroom management and subject content skills,
- o materials-specific training of teachers and supervisors in 21 districts and 750 schools,
- o assessment and monitoring systems to ensure continuous improvement of materials and the accountability of responsible staff
- o development of a 3 year interactive radio program

The IMDC and CBB functions have been integrated to focus all efforts on improving student learning. It will be important to continue this supportive link between the components of materials' development, assessment, supervision and training. IMDC's policy has been that innovations are tentative until they have been tested under real conditions in limited experiments, or until new programs appear that fit the requirements of the education system better. The IMDC is now equipped to handle most of the R, D and E functions that are implied by this approach. However, the IMDC is still a fragile institution, requiring dedicated leadership, certain policy changes, more staff, and

guaranteed access to resources before its position and functions will be secure within the Directorate of Primary Education.

ANNEX A

SUSTAINING THE WORK OF THE IMDC

Actions required to sustain the work of the IMDC and the CBB.

Routine IMDC, CBB functions. The IMDC and CBB staff have been able to make a significant impact on teaching in over 750 primary schools in NWFP and in 18 GCETs because of their frequent visits to check on experimental materials. The process has been a logical one of providing training, monitoring and testing. It is important to continue the training and testing cycles or the teachers are likely to revert to the old methods of rote learning which are easier and require less of their direct attention. Another annex details the cycle of activities that occur routinely throughout the year.

IMDC positions. At present there are seven Grade 11 positions sanctioned for the IMDC (12 people have been trained; the remaining 5 are still detailed and do not have permanent positions). The seven Grade 11 positions should remain and be filled in the future by trainees who will receive training in instructional materials development. The seven staff members presently occupying the Grade 11 posts who now have considerable experience should be upgraded to Grade 16. An additional seven posts therefore need to be sanctioned at Grade 16. Without this arrangement two things will happen: 1) the present skilled staff will be promoted out of the IMDC and into the secondary level where their skills will be lost, and they will be replaced by a whole new set of untrained staff, and 2) there will be no routine way to train newcomers under the supervision of experienced materials developers.

CBB positions. Currently there are 4 members of the Curriculum Bureau in Abbottabad who are detailed to the Center. They work against Abbottabad posts and therefore are penalized because they do not receive Peshawar allowances. They are presently working on IRI materials, and in the Testing and Evaluation Cells, and they make regular training visits to the GCETs. Their posts need to be shifted permanently to Peshawar, preferably with an additional 2 posts, and with all the appropriate allowances.

Testing and Evaluation Cells. Presently there are Testing and Evaluation Cells staffed by two members of the CBB and two members of the IMDC, and using IMDC staff in the field. They assist one another when needed. Somewhere within the primary directorate, either in the Testing Cell, EMIS or IMDC there needs to be a government post for an analyst/statistician who can analyze the data coming in from the field. The E and T Cells in the IMDC need to be equipped with computers of the appropriate specifications (the computers used now are rented). The field work of the IMDC/CBB staff requires transportation and resources for TADA and a budget for the production of experimental materials, teacher support materials, and assessment materials.

Interactive radio. The three levels of IRI for primary English will be completed by the time PED consultants leave. We had planned to develop radio programs to improve math and Urdu skills

in primary classes. Programs similar to IRI could be produced in half hour lessons in these two subjects to supplement the lessons children get in class, and possibly as a basic course for out-of-school children. Programs would be broadcast mornings and afternoons for these two groups and workbooks would be for sale in the market. If community schools with less qualified teachers are started, these programs could provide a core curriculum.

Career ladder. The entire primary career ladder needs to be reviewed for difficulties that make it impossible to build on officers skills and retain them within the primary system. Attached is a paper making some suggestions for changes in the career ladder. A person who chooses to remain in a specialty where he or she is trained should be able to be promoted and remain within the primary structure. We will lose IMDC staff, as well as some of the ASDEOs we have trained in the field if the present system remains. Over time a number of inequities in the career structure have developed that a thorough review and revision could correct. This is probably the subject that generates the largest number of complaints in the field.

Book dissemination. A stumbling block in the effort to improve instructional materials is the difficulty in getting new textbooks published. The writing of primary textbooks was previously contracted out to writers who were not well versed in the educational needs of young children. The Textbook Board, a semi-autonomous organization, published and distributed the books without testing or quality controls. Now that books are being developed within the Primary Directorate, the Textbook Board is making it difficult to publish the new materials even though they have been approved by education authorities. A high level decision should be taken about who has the authority to decide which textbooks should be disseminated to schools. The IMDC has gone through the process that is required for new textbooks to be adopted but still can not get its books into the districts.

Policy changes. A number of policy changes have been recommended over the years to increase enrollments and improve the quality of education. Very few of them have been implemented, and the same problems and inequities continue to exist. These policies relate mainly to teacher recruitment, distribution, allowances and leaves. A number of papers have been written on the recommended changes. One of particular importance to the IMDC involves the two schedules found in NWFP for the school year, which make it difficult to plan book distributions, training, and testing.

ANNEX B

ON-GOING ACTIVITIES OF THE CENTER (IMDC and CBB)

Background. The Center's activities are settling into a routine that should continue if the efforts of the last 3 years are to retain their present shape. The activities include the development and testing of primary school materials, policy studies, a radio program for English instruction, the development and testing of teacher training materials, assessment programs for Classes Three and Five, support for PTC and inservice training, and a program for monitoring and planning supervision of instruction in the district.

Many of the Center's activities are tied to the school year which is in session on different schedules in "winter" and "summer" areas of NWFP. The terms "winter" and "summer" refer to the times when the longest school holiday is taken. Thus the northern areas (Hilly and Mountainous areas) are winter districts, and the southern areas and the Peshawar area (Plains Areas) are summer districts. Complicating the issue is the fact that the school year begins at 2 different times in NWFP. Winter areas begin around March and summer areas around April. Despite numerous memos recommending that the school year in all areas start in September when all the students are in school, officials have been unwilling to make this change. A change would make it possible to regularize the publication and distribution of textbooks and training for the introductions of new programs. It would also make it possible for the English program, which must broadcast for the entire province, to fit the school year better.

Activities and their yearly schedules

Product development. A regular cycle exists for the production of instructional materials. It consists of the development of a draft book and teachers' guide, training of experimental teachers and their supervisors in the use of the materials, experimental use of the materials in classrooms, testing student performance after a period of use, retraining teachers whose students do not perform well, and revising materials where necessary. The IMDC has produced textbooks and accompanying guides for the main subjects in Kachi, Pakki and Class Two. They are beginning development of materials for Class Three.

Product testing in the field. There are two main purposes for the testing: 1) to provide feedback that improves the materials and focuses training until they meet standards before disseminating them to all schools, and 2) to motivate the users to teach to exam content and ultimately holding them responsible for student learning. The IMDC has tested Kachi and Pakki materials and are currently beginning the testing of Class Two materials.

Experimental cycle. The cycle for training teachers and supervisors in the new materials is timed to coincide with the return to school after the major holidays. Thus training in the use of the new materials occurs twice a year: in March as a retraining for winter area staff coming back from their long holiday and introductory training for summer area staff, and in September as retraining for

summer area staff returning from holiday, and as introductory training for winter area staff. Similarly, testing occurs in all areas twice yearly, once in December just before the main holiday for winter areas, and once in May before the main holiday for summer areas.

The master trainers from all the districts (sometimes divided into groups from the north and south) come to the Center in March and September and receive training in how to use the new materials and what they must do to supervise the teachers who will be using them. They are expected to train the other supervisors and the experimental teachers in their own districts when they return. In discussions in Peshawar they develop a plan for how this will be accomplished. They return to the districts and implement the plan. In May and December, the supervisors assist the IMDC staff with the two testing visits, and the results are fed back to Peshawar where they are entered, analyzed and fed back to the supervisors and teachers in the form of results and retraining. In the future, this monitoring function of testing, entering data into computers, analyzing results and retraining teachers will take place in the districts (EMIS has already trained district staff in Rbase), while the formative function of improving the materials will be carried out with information collected from a small sample of schools in experimental districts. The teachers from these schools will receive the same training as the larger set of teachers but will be tested directly by IMDC staff.

English program. The English program follows the same procedure as for IMDC materials but because it must be broadcast simultaneously to all areas in NWFP, the beginning of each English level starts in September, and is tested in December and May at the same time as the IMDC materials. Eventually the monitoring and materials' improvement functions will also be divided as with the IMDC materials into separate district and Center activities, and English will be treated thereafter as a normal subject for training and monitoring purposes.

NEAP program. The third and fifth grade exams based on existing book content are conducted at the end of each school year in winter and summer areas, by district staff and brought to the Center for entry into the computer, analysis and feedback to the districts. These functions will ultimately be turned over to the districts, and results forwarded to the Center for further analysis and use in planning teacher training programs.

GCET activities. Presently, PTC students in the training colleges are given a pretest at the beginning of the school year (anywhere between October and November when the enrollment is complete), and training units and instruction in their use are provided in subject content knowledge and classroom management. CBB staff visit the colleges in February to report the pretest results, conduct a short quiz, and discuss how the units are being used in the PTC training. This motivational visit is followed in March or April, just before student practice teaching, to encourage the use of IMDC supplementary support materials and classroom management training units. In June the CBB staff returns again to conduct a post test of the graduating PTC students' subject knowledge.

ANNEX C

SCHEDULE OF ACTIVITIES BY MONTH FOR 1994

February

GCET motivational trip to report pre-test results

March

Contact Chitral GCET about pre-test results, remind them of post-test dates, and invite them to join Swat group in April for supplementary materials training.

IRI retraining for resumption of broadcasts in April (stress on workbooks, supervisor observation proforma): location IMDC Peshawar.

IMDC training in Pakki materials-refresher for northern districts; introductions in southern groups. ASDEO master trainers in groups (South, Northeast, Northwest, and Peshawar), 2 days each in IMDC.

NEAP testing in 20 tehsils in Classes Three and Five: visits to 14 districts by CBB staff to inform DEC offices (male and female) about testing procedures. Delivery of materials.

Distribution of IRI, IMDC experimental materials to all districts.

April

NEAP: entry and analysis of December winter district results

IRI: English National Objectives Curriculum Workshop, 4 days, IMDC

NEAP data entering/cleaning of summer results in EMIS

GCET visits before practice teaching to provide training in teacher support materials and classroom management units to GCET instructors and ASDEOs/LCs. Chitral to Swat.

Training in supplementary teacher support material for all master trainer ASDEOs in 4 groups, 2 days each at IMDC

Distribution of supplementary materials to the districts

May

NEAP feedback to DEOs, DEOA, SDEOs, ASDEOs and LCc of December results

IMDC staff to the US, mid May.

IMDC testing in Kachi, Pakki, and IRI; 2 day training of ASDEO master trainers from 13 extensive districts to test and fill in "monitoring results" proformas (for workshop in June)--in two groups at IMDC. Three two-person CBB teams to 8 intensive sites (first South and then North)--two days each, to train in testing and to conduct selected IRI and Pakki tests--mid to end May. All except sample Pakki and IRI tests entered in districts.

Finalize and print the testing/monitoring manual for supervisors

June

GCET post test in subject content in 18 GCETs (Chitral?)

Workshop on IMDC May test results processed in the districts, training in the testing/monitoring manual; Master trainers in 4 groups, 2 days each; at IMDC.

July

Product development: Class Three materials, Science unit

Review tt units with GCET instructors and CB

August

Product development

Begin IMDC and IRI training (see September)

September

IMDC training in Pakki and Class Two materials-introductions for northern districts; refresher in southern groups. ASDEO master trainers in groups (South, Northeast, Northwest, and Peshawar), 2 days each in IMDC

Start of IRI programs mid-September (Levels One and Two)

IRI training-refresher for Level I and introduction for Level 2. Master trainers in groups, 2 days each in IMDC.

GCETs: report post-test results, training in conducting pre and post tests, and use of subject content units.

Distribution of IMDC, IRI materials and radios.

October

GCET pretests conducted by GCETs

November

GCET workshop to help with analysis of pretests

December

IMDC testing in Kachi, Pakki, Two and IRI before middle of the month

NEAP testing in winter districts