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Final Report on Bilingual Education

By Carolyn J. Benson

Sida

SWEDISH INTERNATIONAL DEVELOPMENT COOPERATION AGENCY

Department for Democracy and Social Development, DESO
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Results of the external evaluation of the Experiment in Bilingual Schooling in Mozambique (PEBIMO) and some results from bilingual adult literacy experimentation

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April 2001

Translation and adaptation of the original document written in Portuguese, submitted in May 1997 to the National Institute for Educational Development (INDE) in Maputo, Mozambique.

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Contents

Foreword

The majority of students in Mozambique do not have Portuguese as their mother tongue. There are some twenty different indigenous languages spoken in the country.

An experiment in Bilingual Schooling started in two provinces in Mozambique in 1992, to test the potential of using bilingual education to improve the quality of basic education. The students learned to read and write in their mother tongue, and Portuguese was taught as a foreign or second language.

The purpose of the present evaluation was to make recommendations to the Ministry of Education in Mozambique to adopt bilingual education within the national educational system. An independent consultant, PhD Carolyn J Benson, made the evaluation and the results were shared with the Ministry of Education in Mozambique, as well as with other national educational institutions.

Sida's Policy "Education for All, a Human Right and Basic Need" has a strong focus on a rights based perspective. Enhancing bilingual or multilingual learning is one of its priority concerns. Sida is supporting Intercultural Bilingual Education in several of its partner countries, as part of education reforms.

Sida Education Division is pleased to make this report available in the series of Education Division Documents. It is our hope that experiences from this project will contribute more widely to an understanding of the basic need for bilingual education, often as a crucial component of the right to education for all.

We would like to thank Carol Benson for her valuable contribution through this evaluation and for the translation of the report from Portuguese into English.

Views expressed in the report do not necessarily reflect the views of Sida or the Government of Mozambique.

Stockholm in June 2001

Agneta Lind
Head of Education Division

GUIDE TO ABBREVIATIONS

CFPP	*Centro de Formação de Professores Primários* Primary Teacher Training Center
DDE	*Direcção Distrital de Educação (MINED)* District education directorate (Ministry of Education)
DEB	*Departamento de Ensino Bilingue* Bilingual Education Department (proposed)
DPE	*Direcção Provincial de Educação (MINED)* Provincial Education Directorate (Ministry of Education)
EP1	*Ensino primário do 1º grau* Lower level primary education (grades 1 through 5)
EP2	*Ensino primário do 2º grau* Upper level primary education (grades 6 and 7)
GEPE	*Gabinete Técnico de Gestão de Projectos Educacionais (MINED)* Office for Management of Education Projects (Ministry of Education)
IAP	*Instituto para a Aperfeiçoamento de Professores* Institute for Teacher Improvement (inservice training)
INDE	*Instituto Nacional do Desenvolvimento da Educação* National Institute of Educational Development
L1	First language; mother tongue
L2	Second language; official language, Portuguese
MINED	*Ministério de Educação* Ministry of Education
NELIMO	*Núcleo de Estudo de Línguas Moçambicanas* Center for the Study of Mozambican Languages
PEBIMO	*Uma Experiência de Escolarização Bilingue em Moçambique* Experimental Project in Bilingual Schooling in Mozambique
Sida	*Styrelsen för internationellt utvecklingssamarbete* Swedish International Development Authority
SIL	Summer Institute of Linguistics/International Linguistics Society
SNE	*Sistema Nacional do Ensino* National System of Education; current system
UEM	*Universidade Eduardo Mondlane, Maputo* Eduardo Mondlane University, Maputo
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations International Children's Educational Fund

Executive Summary

The project known as PEBIMO (*Uma Experiência de Escolarização Bilingue em Moçambique*, or Experiment in Bilingual Schooling in Mozambique) was designed to test the potential of bilingual schooling to improve the quality of basic education in Mozambique, recognizing that Portuguese is not the mother tongue of the majority of Mozambican students. For years, studies worldwide have demonstrated the benefits of using the mother tongue to teach beginning literacy (reading and writing) and teaching the official language as a second or foreign language. Nevertheless, it was deemed necessary to test a model of bilingual education in the Mozambican context. The PEBIMO project began in 1992 with the introduction of bilingual schooling in eight grade 1 classes, four each in the provinces of Tete (with speakers of Nyanja) and Gaza (with speakers of Changana). At the time of this investigation in 1996, experimental students were studying at the grade 4 level. The task of the investigator was to evaluate the project and make recommendations to the Ministry of Education regarding the short-term and long-term possibilities for implementing bilingual programs in Mozambique.

The evaluation applied instruments that were both qualitative (involving participant observation in the project, interviews with personnel, and classroom observations) and quantitative (using statistics from the project and student test scores). Results were mixed, due mainly to difficulties experienced by the project in applying an appropriate model of bilingual education. Teachers, school directors, and parents/guardians demonstrated their satisfaction with the project because students were able to read and write in both languages. If we are to judge by raw test scores, the majority of bilingual students have not yet reached the same level of Portuguese language competence as grade 4 students in the regular education system (SNE); however, the latter do not represent a fair "control" group for a number of reasons. Even so, the more advanced bilingual students have already reached comparable levels, which seems to indicate that most PEBIMO students will be able to reach comparable or higher levels with further development of oral Portuguese, since they can transfer the literacy skills they have acquired in their mother tongues to the second language. An even more encouraging result is that parents have reported that their children who attend bilingual classes are more motivated, take more initiative at home, and help their siblings with their studies. This suggests that use of the mother tongue contributes to higher self-confidence and better school performance.

The principal short-term recommendation for PEBIMO is for bilingual teachers to work more intensively with students in the second language, concentrating on oral communication skills, while continuing to develop literacy skills in the mother tongue, to facilitate the transition to Portuguese as the medium of instruction in grade 6. The mid- to long-term recommendation for the Ministry of Education is to give serious attention to gradual expansion of bilingual education to zones which are linguistically homogeneous: in the provinces of Tete and Gaza in the near future, with revised methods and materials, and when practicable in other provinces which express an interest. In the latter case it will be necessary to produce materials in new languages which meet the conditions for educational use. This implies decentralization of the educational system, transfer of many responsibilities to the provincial education directorates, and training of INDE personnel who will serve as technical advisors to bilingual programs throughout the country.

CHAPTER 1

Introduction

1.1 Experimentation in primary bilingual education

In response to both worldwide calls to improve the quality of primary education and efforts of the Mozambican government to meet the educational and linguistic needs of its citizens, the Experimental Project in Bilingual Schooling in Mozambique or PEBIMO was initiated in 1990 and will continue through 1998. This report aims to evaluate the situation and discuss the project in terms of how it functions, its objectives, what has been accomplished in relation to the objectives, difficulties and possible mistakes, and perspectives for the future.

The linguistic situation which characterizes Mozambican primary schooling is the following: the typical child enters school at age seven with no knowledge of the language of instruction. The child's mother tongue is one of more than 20 distinct languages of the country, and he or she has normally had very little contact with Portuguese, the official language of the country. The proportion of the general population which speaks Portuguese as a mother tongue is estimated to be more or less two percent.

Further, the educational system today is not yet accessible to all Mozambicans,[1] and is characterized by a high rate of wastage due to failure, repetition, and dropout. One of the principal tasks of INDE, the National Institute of Educational Development, is to seek solutions based on systematic research throughout the country. Each research study, whether pedagogical, sociolinguistic, or psychological, looks for the reasons behind the problems and determines how to develop an educational system which responds better to the needs of the society. Now that INDE has been given the responsibility for overseeing the curriculum reform, each study must also contribute to development of a curriculum which is appropriate for primary schooling.

Many specialists believe that among all the difficulties encountered by the national education system, known as SNE, the language of instruction is most to blame for school wastage. While there are undoubtedly a number of variables in school wastage, the language hypothesis is quite feasible considering that language influences many dimensions of teaching which in turn affect the student's experience, for example:

- General communication between teacher and student, teacher and parent, and student and peers;
- Ability of the student to understand that what can be expressed orally can also be expressed in writing;
- Ability of the student to understand (and the teacher to explain) new concepts in content area instruction.

How would it impact the curriculum if we attempted to change the linguistic situation in school? The alternative discussed here, which already functions in various parts of the world, is utilization of the first language of the student to teach initial

[1] According to the Ministry of Education (MINED), the gross rate of admission to lower primary education (EP1) was 75 percent in 1996 (Juvane, 1996, p. 2).

literacy (reading and writing) and academic subjects. Given adequate conditions, bilingual education functions well in this way, and in addition facilitates student learning of the second language (Portuguese, in this case) through oral and later written methods. The goal of the PEBIMO project has been to pilot this type of teaching to see if it can have a positive impact on the Mozambican system, i.e. if it can improve passing rates as well as the quality of primary teaching. During the process of experimentation, new materials have been developed in the mother tongue as well as in Portuguese, contributing to the national curriculum development process.

This report on the investigation and evaluation of the project reflects the efforts of many people associated with INDE in general and the project in particular. It has been written in response to a specific request made by INDE to this author, a specialist in bilingual education, to provide technical input during the experimentation and make recommendations for the future.[2] Because the Ministry of Education depends on INDE to make recommendations regarding curriculum development, this experiment has a great deal of potential influence on the future of primary education in Mozambique.

1.2 Experimentation in bilingual adult literacy

Work in the field of adult literacy in Mozambique has gone on in the same linguistic context as the education of children. Literacy learners traditionally received instruction in Portuguese, a language which was not widely known. This created a situation much like that in the primary schools in that literacy instruction was not very successful, the difference being that in nonformal education it was more difficult to determine the reasons for lack of success or dropout.

Re-considering the choice of the language of literacy, a project known as *Educação Bilingue de Mulheres*, or Bilingual Education of Women, began in 1990 in an effort to improve the effectiveness of adult literacy, especially among women. The coordinating office at INDE has directed project activities and provided resources for various literacy courses in the mother tongue. Some materials were developed in Portuguese as a Second Language and piloted in the province of Beira in 1994; unfortunately, the current project has no classes in Portuguese transition as yet, so it has not been evaluated to any extent as part of this study. However, this report contains a brief description of the degree to which Mozambican languages are being used in women's literacy to inform the discussions about primary bilingual education and planning for the future.[3]

1.3 This investigation

The investigation discussed in this report was conducted as an external evaluation of bilingual education in Mozambique. It was undertaken between July 1996 and January 1997; the consultant remained until the end of March to participate in the inservice training of teachers and INDE technicians and to facilitate two seminars for the

[2] The author is grateful for the cooperation of all project personnel, and wishes to recognize the efforts of the coordinator, Celeste Matavele, technicians Dinis Machaul and Samima Patel, and researcher Marcelo Soverano for their assistance in carrying out this evaluation. Soverano has been doing a case study in Gaza, and the central team has gathered information on student testing periodically throughout the project; while this document uses some of their data, responsibility for any omission or error lies with the author.

[3] The author would like to thank the coordinator of the project, Maria Teresa Veloso, for the time and energy she spent in describing the project and demonstrating the methods and materials used.

dissemination of information regarding results of the evaluation. The results and conclusions in this report reflect as much as possible the themes which have been discussed in those seminars.

Perhaps an ideal way to evaluate a bilingual education experiment would be to integrate an element of continuous evaluation into the project design which would function from the beginning of the project and inform project operations. In this way the project could have corrected its mistakes or changed certain conditions by responding immediately when the need arose. Unfortunately, this was not the case overall. This evaluation began when the experimental students were in grade 4, their penultimate year of bilingual schooling. This meant that the results could only inform actual project operation through the end of 1997.

The consultant was contracted by INDE within the curriculum development program[4] to investigate the state of bilingual education in Mozambique and make recommendations to the Ministry regarding possible measures to be taken to improve basic education. The objectives of the consultancy were to carry out the following:

1. Evaluate the design (model) of bilingual education used by PEBIMO in terms of the international literature.
2. Investigate and evaluate project operation at all levels.
3. Investigate and evaluate the design and implementation of the project.
4. Evaluate the school performance of students in the project as compared to students in SNE.
5. Make recommendations for short-term actions (before the end of the experiment) and long-term measures which promote bilingual education in Mozambique.

This report represents all of the work done in the context of this investigative consultancy.

1.4 Evaluation and interpretation of results

An educational experiment is important for many reasons. It is used to implement an innovation on a small scale. Throughout the process, the innovation is evaluated and results are measured in terms of the desired goals. The nature of experimentation is to make errors or experience problems and to learn from them.

Some errors are unavoidable because we do not have enough information to predict them; in the case of this project, organizers supposed that they would be able to develop materials within a certain period of time, and then found that the time was not sufficient. Other errors are avoidable, one example being the poor conception of the bilingual model to be piloted due to failure to consult available information or involve specialists. Some problems are completely unpredictable because they involve unfavorable conditions which arise and may influence results of the experiment; this happened when some students developed learning problems which might or might not have been related to the innovation. Finally, there are difficulties due to forces outside the control of the experiment, as when teachers' involvement in registering

[4] The author is grateful for the intellectual support of the Director of INDE, Miguel Buendia, and technicians from various departments who participated in the investigation, in particular Glória Manhiça from Mathematics and Francisco Januário from Natural Sciences. Christopher Stroud of Stockholm University provided valuable advice. The work would not have been possible without the financial support of Sida, represented in Maputo by Anna Grahm. The author was introduced to the project by Gustave Callewaert and Mikael Palme.

voters for national elections resulted in less classroom teaching time. These problems are not easy to address; however, each error or difficulty has provided us with more information about implementing the bilingual innovation.

Correct interpretation of the information gathered through the investigation is very important. An educational innovation does not have to demonstrate the best results in the world to be valuable. The experiment must be evaluated with care to avoid the too-easy solution of throwing out the innovation just because it does not have perfect results from the beginning or within a short period of time (the length of most donor-funded projects). Focusing only on the problems or errors can impede advances, and expecting definitive results can slow the improvement of educational quality. To learn and benefit from this experiment, it is essential to understand first what the inputs were to the project; second, the process of the project; third, the context in which the project functioned; and fourth, the results of the project. An adequate evaluation will describe each aspect of the project and provide the most educated judgements about the problems as well as the successes. Only then can we make informed decisions about how to proceed, either with more experimentation or with wider implementation of the innovation.

For these reasons, the author requests that the reader review this document in its entirety and make cautious interpretations of the results. This document discusses some negative findings and other quite positive ones. International experience has already demonstrated that bilingual schooling is capable of resolving many educational difficulties in multilingual societies. What is important here is to learn how bilingual schooling can function in Mozambique to improve the quality of primary education.

CHAPTER 2

Description of the Bilingual Projects

2.1 Background

According to interviews and documents on file at INDE, some important events preceded experimentation with Mozambican languages in teaching. Although there had been bilingual schooling for some time in neighboring countries, there is no indication of any official interest in Mozambique until relatively recent years. However, it is quite possible that grassroots-level interest arose much earlier with translation of the Bible into the mother tongues at local churches, or with training of migrant miners from Mozambique who learned to read and write in Bantu languages in South Africa. Mozambican radio may have played an important role in awareness of the importance of national languages, since these languages have long been used in programs aimed at regional populations. At any rate, interest at the national level seems to have arisen with the development of Mozambican languages as subjects of study at the University.

Although Mozambican linguists have been trained outside the country for a number of years, it was only in 1989 that Eduardo Mondlane University (UEM) in Maputo began to produce *licenciados*, or university graduates, in the field of linguistics. The Center for the Study of Mozambican Languages had already been created within the Faculty of Letters at UEM by 1978. NELIMO still serves today as the main institution for development of Bantu languages in Mozambique, mainly in the areas of sociolinguistic investigation and orthographic standardization.

Ten years after its founding, in August 1988, NELIMO (in cooperation with INDE and the Ministry of Culture) promoted *the Iº Seminário sobre a Padronização da Ortografia de Línguas Moçambicanas*, or First Seminar for Orthographic Standardization of Mozambican Languages. The report from this seminar, which was published the following year, proposed norms for the writing of Mozambican languages, described orthographies for 13 of the 20 or more languages that were determined to exist in the country, and reviewed what linguists knew at that time about each language. Since there had not been a lot of other work done in the field, this publication has served up to present as a resource for authors of materials written in each mother tongue (known as the first language or L1). This means that participants in the first seminar constructed the basis for utilization of Mozambican languages in teaching. In addition, they recommended the initiation of pilot projects in teaching the L1.

In November 1989, the *Iº Seminário sobre Educação Bilingue*, or First Seminar on Bilingual Education, took place, and in August 1990 there was a second seminar on the same theme. These seminars were organized by INDE and the International Linguistics Society (SIL), and brought in representatives of NELIMO, the Ministry of Education (MINED), the *Instituto para o Aperfeiçoamento de Professores*, or Institute for Teacher Improvement (IAP), the Pedagogical University, Radio Mozambique, and other interested organizations. At the end of the first seminar, NELIMO presented a written proposal, and INDE an alternative proposal, for a project which would introduce local languages in primary schooling at the lower level (EP1), covering grades 1 through 5. Both groups proposed a linguistic survey regarding the languages to be used, inservice training of bilingual teachers, and a practical experimental study

of primary school students. The possibilities for bilingual schooling in Mozambique were discussed, and the seminar ended with a set of well-developed resolutions regarding the measures to be taken. Many of the resolutions appear to have been influenced by the worldwide literature discussed in the next chapter.

2.2 The PEBIMO project

2.2.1 Nature of the experimentation

The Experimental Project in Bilingual Schooling in Mozambique (PEBIMO) had as its central objective to evaluate the effectiveness of a bilingual program in basic education. This program began with literacy and instruction in the mother tongue of the child (either Nyanja or Changana) with later transition to instruction in Portuguese. The assumption of project organizers was that "literacy in the mother tongue brings about better results than literacy in the second language" (Cabral et al., 1990, my translation), and that students could learn academic subjects better if the medium of instruction were their own language.

PEBIMO adopted a transitional model, where the student is taught simultaneously to read and write in the mother tongue and to speak the target language, in this case Portuguese, so that abilities gained in the L1 can later be transferred to the second language (L2). In this model, which is problematic and will be discussed further below, the medium of instruction in the first three grades is the L1; in the third year reading and writing in Portuguese is introduced, and the language of instruction becomes Portuguese by the end of that year.

The central team was formed at INDE in 1990 to guide the project with financial support from the World Bank and UNDP. With the aim of improving the quality of primary education, the World Bank financed reproduction of materials and field visits; UNDP financed technical assistance. GEPE, an office of MINED responsible for the management of education projects, administered the funds.

In 1991 the central PEBIMO team did a sociolinguistic survey of the communities where experimental classes would function. The group visited neighboring countries (Malawi, Zimbabwe, and South Africa) to gather materials and information about how their bilingual programs functioned. The group began with preparation of materials, inservice training of teachers and local coordinators, and community awareness campaigns in 1992. The selection of personnel was done competitively at the provincial level by holding meetings where interested teachers were asked to demonstrate both their interest and their writing ability in the mother tongue. The teachers and local coordinators who were selected were trained at the beginning of the 1993 school year.

In 1993 the experience was put into practice, with four grade 1 classes in three schools in the province of Tete (with speakers of Nyanja) and another four grade 1 classes in two schools in the province of Gaza (with speakers of Changana).[5] These two languages were chosen because they had already been studied by linguists and were relatively well developed in terms of their writing systems. Another advantage is that neighboring countries already used them in teaching and in principle could support their use in Mozambican schools.

[5] Project planners had originally chosen Nyanja in Tete and Ndau in Sofala. The choice of Nyanja caused no problem, but it became apparent that it would not be politically feasible to introduce Ndau in Sofala without also introducing Sena, the other principal language of the province. For this reason planners decided to move from Sofala to Gaza and experiment with speakers of Changana.

2.2.2 Experimental design

The project was designed to function with the following personnel:

1. A team of two or three pedagogical technicians at INDE to supervise project operations, including the training of local personnel, elaboration and distribution of materials, technical monitoring of the experiment, and experimental activities overall.
2. A coordinator in each Provincial Education Directorate (DPE), who was responsible for supervision of the schools and bilingual teachers, distribution of materials, and communication with the central team. The coordinator also helped to provide pedagogical assistance.
3. A group of three or four teachers in each province, selected from among the volunteers who could already write their mother tongues and had experience as teachers in the national system (SNE).
4. An assistant investigator in each province, with experience in primary teaching in SNE, who was responsible for attending experimental classes, sharing positive experiences with other teachers, gathering linguistic data, and helping to pilot the materials.
5. Classes of at least 45 students, two classes per school, four per province, of students speaking Changana or Nyanja as their mother tongues and having no prior exposure to Portuguese.

As mentioned above, the experimental bilingual model (see the first model in Appendix A) begins with the teaching of initial literacy in the mother tongue, and introduces Portuguese orally in the final trimester of grade 2. The L1 serves as the medium of instruction for all subject areas until the end of grade 3, when students transition to Portuguese. The L1 remains a subject of study throughout grades 4 and 5, while subject area instruction continues in Portuguese.

Materials were to be elaborated during the year preceding the year in which they would be needed, which meant that when the students were in grade 1 the central team was supervising elaboration of the grade 2 books. Regarding the bilingual teachers, each school year was to begin with a training seminar lasting two weeks which would prepare teachers to teach the next grade level. Training was to include elements of L1 linguistics and give information about the materials and subjects to be taught during the upcoming year. Throughout each year the school directors were to monitor daily teaching, and the provincial coordinators were to visit, supervise, gather information and statistics, give advice, and provide a link between the central team in Maputo and activities in the field.

The central team planned to visit the field twice per year. The first visit would take place during the first semester to observe classes and offer ideas about teaching, while the second would take place during the second semester to pilot materials developed for the coming school year.

2.2.3 Actual functioning of the experiment

When the author arrived to begin the investigation, the central team consisted of one coordinator, two technicians, and one technician who was shared between PEBIMO and the bilingual women's literacy project. There was also a linguistics student from UEM who was researching and assisting the PEBIMO project. At the provincial level, there was one coordinator in each province; unfortunately, the coordinator in Tete

had accepted a political position which occupied most of his time, and it was not possible for him to carry out all of his responsibilities with respect to the bilingual teachers in his province.

In the province of Tete, due to logistical difficulties related to the civil war and large-scale migration, the four classes had to be spread over three schools instead of the two that were planned. Two classes were established in Angónia, 250 km from the provincial capital city of Tete; a third class functioned in Zóbuè, 126 km from the city; and the fourth functioned in Moatize, 20 km from the city. This situation resulted in isolation of the bilingual teachers at the latter two schools and made the work of the provincial coordinator more difficult. In Gaza, the logistics were easier because both schools were located in Inhamissa, just outside the provincial capital city of Xai-Xai and close to the DPE.

Because the project was initiated after the beginning of the school year, specifically in March 1993 instead of in February, the school directors were forced to reconstitute the grade 1 classes to accommodate PEBIMO. In both provinces the result was the same: having known their students for two or three weeks, SNE teachers gave students they did not want to the bilingual classes. This also meant that not all of the parents or guardians were well informed regarding the experiment in which their children were about to participate.

Another event which affected the experiment was the national election which took place during the second year of the experiment in 1994, precisely during the period in which oral Portuguese was to be introduced to students. Students missed many classes because their teachers were involved in the process of registering voters. This time was never recuperated, which meant there was a delay in introducing the L2.

Elaboration of the materials took more time than planned because this also took place in conditions which were less than ideal. On one hand, the central team had difficulties contracting people who had experience in writing texts for students, and on the other hand there were few people who spoke the local varieties of the languages in which PEBIMO worked. Since these were the first materials to be developed, there were no models, and the authors were not given enough time to do their work. The resulting materials were not of consistent quality, but they were consistently late, arriving between 2 and 4 months after the beginning of each school year.

The experiment had no strategy to help students who could not meet the requirements for passing to the next grade, i.e. the students who would normally repeat a grade. The original idea was that the teachers and the students would pass through the five primary grades together, attending each successive year until 1997, when they would complete grade 5. In practice, first year repeaters were able to go to grade 1 SNE; while they were unfortunately lost to the experiment, they were not hurt by moving to SNE. However, grade 2 repeaters could not go to grade 2 SNE because they had not yet learned any Portuguese, and it would have been unfair to force them to go back to grade 1 SNE. In the end the bilingual teachers were obliged to give extra classes called *aulas de recuperação*, or recuperation classes, to help the students who would have repeated grades to keep up with the others.

The PEBIMO project did not have a clear procedure for evaluating the experiment, though the central team did request teachers' comments during the annual training seminars and field visits (at least twice per year). In addition, year-end tests were given to PEBIMO students every year; unfortunately, no comparison or "control" groups from SNE were arranged. These year-end tests from grades 1 to 3 sat in

the project office in Maputo waiting to be corrected at some future date.

In spite all of these difficulties encountered by the project, participants in the process were quite excited and positive about bilingual education, and the investigation demonstrated that they had reason to be so. The results are discussed in Chapter 5, and the recommendations for improvement and implementation in Chapters 6 and 7.

2.2.4 Future of the experiment

At the time of this writing, during the 1997 school year, experimental students are in grade 5. It is the final year in which teachers trained by the project will be with the students, because after this year students will go into SNE classes if they continue to grade 6. The project has financing until 1998 to allow for two years of evaluation and discussion regarding the future of bilingual education in the country.

2.3 Projects in bilingual adult literacy

2.3.1 Nature of the experimentation

Based on the recommendations of the First Seminar for Orthographic Standardization of Mozambican Languages, INDE decided to initiate an experiment in adult literacy, with the technical assistance of two linguists from NELIMO and SIL. National adult literacy campaigns in Portuguese had been relatively ineffective, especially with women, and it was thought that the linguistic factor was at least partially responsible.

In the 1990–1995 plan of cooperation between MINED and UNICEF, there was a proposal for a project in Adult Education whose objective was to introduce pilot experiences in functional literacy in the mother tongues, later moving on to the teaching of Portuguese as a second language (speaking and literacy). As an educational research institute, INDE was given the responsibility of developing these experiments in women's literacy. From 1994 on, INDE had to look for financing from various sources to continue this work.

INDE identified the following objectives for experimental projects:

- Production of curriculum, methods, and materials for literacy in three mother tongues.
- Production of curriculum and materials for teaching Portuguese as a second language.
- Reproduction and distribution of materials to women in the three regions.
- Generation of post-experimental recommendations regarding measures to be taken to improve the effectiveness of literacy programs in rural parts of Mozambique.

As the objectives show, the experimentation was intended to encompass three projects in women's literacy in three different regions. The languages selected were Makua, in northern Mozambique; Sena, in the central part of the country; and Changana, in the southern region. In response to a request from the provincial governor of Sofala, the Ndau language was also adopted. 1990 marked the preparatory phase for the first bilingual experiment in Sena-Portuguese; in 1991 preparations for the Changana-Portuguese project began, and the others followed.

2.3.2 Experimental design

Responsibility for coordinating the projects rested with an INDE team of one or sometimes two people, but various linguists and pedagogical technicians were contracted to develop or correct the materials. The tasks of the INDE team were to train authors to write in their own languages, facilitate the elaboration of literacy materials, participate in the preservice or inservice training of literacy teachers, and monitor experimentation in the bilingual education of adults. The design was decentralized in terms of personnel training and collaboration with the DPEs, as well as training trainers and local literacy teachers. A local team was formed for each of the languages, and this team produced the curriculum guides for mother tongue literacy, as well as ensuring the suitability of the language used in the materials, which meant field testing the materials and providing pedagogical supervision.

2.3.3 Actual functioning and results of experimentation

The bilingual Sena-Portuguese program. The Sena-Portuguese program was piloted between August 1991 and May 1994 in three classes of approximately 30 women in Beira and Dondo in the province of Sofala. Other classes were created by local initiative in the same communities and served more than 71 adults. In September 1993, Portuguese as a second language was introduced. Unfortunately, when the financing for this experimentation ended in 1994, the project also ended without any final evaluation or review of the materials.[6]

This was the only complete bilingual program which could be piloted under the project financed by UNICEF. It was very ambitious, and it later became evident that it was not possible to make participants literate in both languages within the 18 months allocated. The process of developing mother tongue materials in cooperation with local linguists took a great deal of time, and elaboration of the Portuguese materials lagged behind due to the technicians' lack of experience in second language teaching methodology.

Nevertheless, the project succeeded in elaborating and systematically piloting materials in Sena, and distributed 20 titles to the experimental classes including books in Sena literacy, mathematics, Portuguese, and post-literacy texts to practice reading skills. In a mid-term evaluation done from 1992 to 1993, 49 women participants were interviewed; of them, 96 percent felt that the bilingual program met their needs better than literacy in Portuguese only (Cabral, 1995:70). The experiment showed that the women learned to read and write more easily in their mother tongue and that the L1 "facilitated learning of Portuguese" (*Grupo de Educação Bilingue*, 1996:5, my translation). At the end of the experiment they had reached adequate levels of literacy in the L1 and had learned at least a little Portuguese. Participants were asking for more reading materials written in the L1, which is a good indication of both their level of interest and the literacy skills they had developed.

The Changana-Portuguese bilingual program. Experimentation with the Changana program began in 1993 in the province of Gaza, was interrupted due to lack of resources, and was re-initiated in 1997 in Macia, Nhabanga, and Aldeia da Barragem with the financial support of the Netherlands Embassy. The introduction of Portuguese as a second language, both oral and written, was planned for 1998. The materials written in Changana are being piloted at this writing, and the INDE team intends

[6] At the time of this writing, INDE is reviewing and re-editing these materials with other financing, working whenever members of the technical team are not engaged in other activities.

to edit books for the teaching of Portuguese as a second language that will serve bilingual programs in all of the Mozambican languages.

Experimentation in other languages. The preparation of materials in Makua and Ndau began in 1992, and literacy books in Makua, Ndau, and Nyanja were edited in 1995. It has not yet been possible to pilot these materials due to lack of resources at INDE, but they are available to any project which responds to local initiatives in the provinces where these languages are spoken.

The principal difficulties confronting this work are:

- Development of materials in languages which are not yet completely standardized.
- Lack of technical assistance in second language teaching methodologies and in transitioning from the L1 to Portuguese.
- Lack of both human resources and consistent financing at INDE.
- Literacy teachers' low levels of general education and knowledge of Portuguese.

Despite these difficulties, the work has had some successful results:

- Production and systematic piloting of materials in a number of Mozambican languages.
- Training of local literacy promoters and subsequent decentralization of tasks.
- Promotion of various training seminars for literacy promoters in Sena and Changana.
- Provision of technical support to local initiatives by DPEs, NGOs, and churches.
- Satisfaction on the part of participants.

Having experimented since 1991 means that the INDE team can now provide invaluable resources in adult bilingual literacy, supporting new initiatives and sharing lessons learned. The team has a great deal of experience in materials development and has proposed a series of strategies (Veloso, 1994a & b) which could benefit future endeavors in other languages.

2.3.4 Future of bilingual adult literacy

Work in the area of bilingual literacy of women continues with the institutional support of INDE and with occasional financing from various donors. The team working in bilingual literacy at INDE is growing, and now consists of two full-time technicians and three part-time ones. In addition to the projects discussed above, when there is time to collaborate with local linguists, the team pilots and improves materials written in Ndau, Makua, and Makonde. A new project will begin shortly to develop and pilot materials in Nyanja, employing two more part-time technicians.

When the team is able to find donors to cover the costs, INDE sends materials to the communities which request them. The team also maintains contact with various agencies and organizations and continues to offer technical support to any local initiatives in adult literacy in the mother tongues. There is a need to develop greater capacity in terms of human resources, both at INDE and in the provinces, to be able to carry out bilingual literacy programs in other languages. Nevertheless, the understandings gained from experimentation thus far contribute to this evaluation and influence the recommendations presented in the final two chapters of this document.

CHAPTER 3

Concepts from the Literature on Bilingual Education

3.1 Introduction

Bilingual education essentially means teaching in two languages. Each language has a set of different functions: the mother tongue (L1) serves as the language of beginning literacy (reading and writing) and as the initial medium for content area instruction; the other language (L2) is taught as a second or foreign language orally before being introduced into other areas of teaching. Often the L2 is known as the "target" language because it is the official language of the country and the language upon which future schooling of the student depends. When the student has gained sufficient L1 skills (oral and written) and L2 skills (oral), the L2 also becomes a language of literacy; this process of transferring literacy skills from the L1 to the L2 is called "transition."

The wide range of bilingual programs which exist worldwide are a product of different linguistic, social, and political situations. Each country or region has different educational needs, but the central question is how best to educate a child who speaks a language different from the official language of the school. In general, there are two linguistic contexts in which bilingual education functions. One is a "monolingual" context, where linguistic minority groups (indigenous or immigrant) exist in a majority language milieu; this is a characteristic of many countries in Europe and the Americas. The other is a "multilingual" context, where various linguistic majority or minority groups coexist; this is a characteristic of many African countries. Inevitably, language policy as well as teaching in each context reflect the differing power relations between these groups.

For this reason, the historical development of the field of bilingual education covers much more than psychological and pedagogical studies. Overall, international literature in the field has a persuasive tone, which takes into account that despite clear evidence of the pedagogical advantages of bilingual education, there are other considerations which are practical, political, and even simply emotional. This chapter provides a brief review of the directions taken in the literature on bilingual education up to present, and how they are related to the context of primary bilingual schooling in Mozambique.

3.2 The case for initial literacy in the mother tongue

Long ago, specialists recognized the importance of the L1 as an instructional language in school, as attested by this statement by UNESCO in 1953:

> It is axiomatic that the best medium for teaching a child is his mother tongue. Psychologically, it is the system of meaningful signs that in his mind works automatically for expression and understanding. Educationally, he learns more quickly through it than through an unfamiliar linguistic medium (p.11).

The UNESCO document continues that the mother tongue should be used for as many years as possible. More recently, scholars have promoted the importance of the L1 not simply as a vehicle for learning and developing literacy skills but also as a means for the school to gain access to and "valorize" or appreciate the value of all of the child's knowledge and experiences. The principal arguments in favor of bilingual schooling are discussed in the following sections.

3.2.1 Use of the L1 for pedagogical and cognitive reasons

Specialists generally agree that teaching initial literacy in the L1 makes the most cognitive sense (see the literature review in Williams & Snipper, 1990). The student easily makes the connection between sound and letter (phoneme and grapheme) if the language has meaning to him or her. In addition, there is a great deal of evidence that development of linguistic and conceptual proficiency in the L1 results in high performance levels in the L2. This concept, known as Common Underlying Proficiency (Cummins, 1986, 1987, 1988), means that the abilities developed in the L1 are automatically transferred to the L2 within the mind of the student. The minimal condition for this transference is oral understanding of the L2.

It could be argued that the main objective of schooling is the optimal development of the linguistic means for the student to develop academic and cognitive skills. Cummins (1980) proposes the Threshold Hypothesis which connects linguistic abilities to cognition. Cummins says that many aspects of bilingualism positively influence cognitive development, but only after the child has gained a minimum level of competence in the L2. If the child does not reach this minimal level of bilingualism, he or she may experience negative effects. When Lambert (1983) wrote of "subtractive bilingualism," and Skutnabb-Kangas & Toukomaa (1976) of "semi-lingualism," they noted that superficial fluency in the L2 is a facade; if children do not learn the second language to a sufficient degree, they will have difficulty in processing new academic concepts taught to them in school. The work of Krashen (1987) shows that older children with more advanced abilities in the L1 have a tendency to acquire cognitive abilities in the L2 much faster than other students. For this reason, "maintenance" of the L1, or continuing L1 study even after transition to the L2, will continue to contribute to development of the second language (Cummins, 1980; Ramirez et al., 1991).

What does this mean for a bilingual program? The ideal model would include such elements as the following:

- Teach beginning literacy in the L1.
- Teach other subjects initially in the L1.
- Teach the L2 systematically as a second or foreign language, beginning with the development of oral communication.
- Make the transition from L1 to L2 literacy after strong development of the L1 over at least four or five years of schooling.
- Continue teaching the L1 and supporting content area instruction in the L1 following transition to L2 literacy. (See the second model in Appendix A.)

3.2.2 Use of the L1 for reasons of culture and identity

Anthropologists as well as linguists have long recognized the relationship between language and culture. The meaning of this connection was expressed very well by Sapir and Whorf in the 1950's. They say that the world of the individual is organized by his or her linguistic system:

> We cut nature up, organize it into concepts, and ascribe significances as we do, largely because we are parties to an agreement to organize it in this way – an agreement that holds through our speech community and is codified in the patterns of our language (Whorf, 1956:212).

The argument for use of the L1 in school is often an argument against what happens in many countries when the language of the school and the language of the student

are not the same. The acute "discontinuity" between home and school – the culture shock – which happens when the school uses an unknown language is well documented in the educational literature (by Brown, 1986; Hymes, 1972; and Ogbu, 1982, among others). A well-known scholar from Niger has provided elegant testimony to the results of this discontinuity:

> …schools which bear no relationship to their surroundings, schools which are cut off from the life of the country and of society, unproductive schools which only train pupils for the civil service, [and] schools which destroy national cultural values and personality and produce men who are foreigners in their own society (Moumouni, 1975:65).

Specialists explain that the schools described by Moumouni exist when the language and culture of the home are not acknowledged by the school. A concrete example of this is the content of school textbooks. When books are written in an unfamiliar language, they also bring unfamiliar cultural notions. Modiano (1973) described the discontinuity between the rural experience of her Mexican students and the urban themes reflected in their reading books, such as fuzzy teddy bears and mail carriers. According to a Nigerian specialist, ignoring the language and culture of the student has resulted in programs "with only marginal success at teaching anything except self-depreciation" (Okonkwo, 1983:377).

Clearly a better alternative is for the school to use the mother tongue, the "language of the heart," which represents the familiar home culture, traditional values, and experiences of the child. According to the sociolinguistic literature, a good teacher functions as a cultural mediator, using his or her understanding of the language and culture of the community to motivate the students and help them to understand the second language and culture represented by the school (Modiano, 1973; Philips, 1983). One group of specialists promotes school use of participant structures which are known in the community (see the review of work by Erickson, Cazden, Au & Jordan, and Heath in Tharp & Gallimore, 1989). They show that student performance may be improved when familiar communication processes are incorporated into the classroom.

What does this mean for a bilingual program? The following would be some ideal strategies:

- Give the student's mother tongue positive status in the classroom, so that it is seen as a resource and not a problem.
- Make facilities, textbooks, methodology, and curriculum relevant to the linguistic and cultural needs of the student.

3.2.3 Use of the L1 as an individual and human right

In the last few decades, many post-colonial countries have experienced an awakening or recognition of their subordination to colonial countries and cultures. There is a growing pride and new "valorization" of indigenous traditions. A number of Africanization initiatives, such as Nyerere's program in Tanzania known as Education for Self-Reliance, have attempted to bridge the gap between school and daily life and eliminate elitism in the school.

The mother tongue, as a personal and social instrument, plays a central role in this perspective. The preservation and even development of the L1, the language with which the individual identifies, is seen as a human right without regard to the size of

the linguistic group. At the UNESCO Conference of Addis Ababa in 1961, in discussions about how to combat social inequality in places where schools are for the elite and teachers possess all of the power, the following was recommended:

> African educational authorities should revise and reform the content of education in the area of curricula, text-books and methods, so as to take account of the African environment, child development, cultural heritage and the demands of technological progress and economic development, especially industrialization (in Yoloye, 1986:150).

We have already discussed the consequences of using an unfamiliar language in school, which can cause self-deprecation and threaten the identity of the person. Another difficulty is in comprehending academic subjects. Content area instruction in an unfamiliar language prohibits the child's access to the information needed to study or even to live. This is why many say that use of the mother tongue is a basic individual right (for a review of the arguments see Skutnabb-Kangas, 1990).

The argument about rights has political implications, of course. As Cummins (1986) notes, incorporation of the languages and cultures of minority groups or those with less power into the educational system concedes status and power to those groups. It is unlikely that those who already have access to the prestige language will want to share their status with others. The powerful may agree with school use of the L1, but solely for the purpose of maintaining certain groups' subordinate positions, as was done in southern African countries during apartheid regimes; for indigenous groups this meant continued lack of access to prestige languages. It could be said that the individual has the right to learn in the L1, but must also have access to all of the knowledge of the society; if this means that the individual needs an L2 to gain this knowledge, then he or she has the right to be taught the second language as well.

Linguists promote the right of each language to exist and to be spoken, studied, and developed. Those who value the maintenance of indigenous linguistic and cultural resources propose a later transition to the L2 in school and maintenance of the L1 through continual study of the language as a subject discipline. This proposal receives a great deal of support from pedagogical specialists because, as noted above, studies have demonstrated the advantages of L1 development for L2 learning. In her extensive review of the literature, Saville-Troike finds overwhelming evidence that "minority group students who have maintained cultural ties are more likely to succeed academically than those who have left their cultural ties" (1978:12).

What does this mean for bilingual programs? Based on the literature, the following would be proposed:

- The nation's political realities should be considered in developing a bilingual school program.
- The program should include L1 study as a subject for as many years as possible.
- Transition to L2 literacy and instruction should be gradual and late, that is after 4 or 5 years, to reap the benefits of L1 development.

3.3 Typical arguments against bilingual education, and responses

As we have already mentioned, although there is clear evidence of the pedagogical advantages of bilingual schooling, arguments against it often reflect different considerations. Unfortunately, while there are some valid elements in objections to bilingual education, there are also elements of ignorance, prejudice, and misinterpretation of the available information. To clarify a number of key concepts, this section reviews the typical arguments against bilingual education.

3.3.1 "Students need to learn the official language"

One argument against bilingual education refers to the status of the official language. The official language is usually considered to be the language of national unity, international communication, reading and writing and expressing modern concepts and thoughts. In contrast, the local languages are seen as languages of the communities and traditional cultures, without written form, and supposedly without value to national society. Parents and guardians want their children to learn the official language so that they will have better employment opportunities.

While it may be true that the official language allows people with different mother tongues to communicate with each other, this is only possible for those who have access to L2 instruction. In addition, imposition of a single language has never created unity; on the contrary, it has caused many difficulties, as seen in the example of the historic imposition of Afrikaans in South Africa and Namibia.

It may also be true that the official language facilitates international communication. The few people who attain high levels of formal schooling may be able to use the L2 for further studies outside the country; however, they may also need to learn other foreign languages depending on where they go. If the majority of the population does not yet attain more than 3 years of basic schooling, the most useful language for them may not be the official language; in this case the mother tongue or another local language is clearly more appropriate.

It is true that many local languages do not have a fully standardized written form. However, like all human languages, they can express the thoughts of their speakers, and are capable of expressing any concept that people understand from their experience. If an idea comes from the outside, the concept may be foreign, and may require that a traditional term be given a new meaning or that a term be borrowed from another language. All of the world's languages use these strategies to develop and change according to the needs of their speakers.

It may be true that in schools where there are not many speakers of a certain language or where there is a mixture of languages, the most practical solution is to explicitly teach an L2 so that it can be used as a medium of instruction. However, the best second language is not necessarily the official language; it may be a widely-spoken lingua franca, like Hausa in northern Nigeria or Wolof in Senegal. It may be preferable to use another African language rather than a colonial one, because it has more in common with the mother tongue and home culture of the student, and is useful in the daily life of the student (Benson, 1994). It should be noted that many Africans are multilingual and often speak African languages as both L1 and L2.

Probably the strongest case against the "official language" argument is a pedagogical one. That is, bilingual education does not impede learning of the official language; on the contrary, the student with a high level of competence in the mother tongue will learn the L2 better, as well as subsequent languages. In the bilingual

system, students may not begin writing the official language until late in their primary schooling, but they start learning to speak from the beginning, and when they transfer skills from the L1 to the L2 they will have more chance of succeeding in school.

3.3.2 "Not all studies demonstrate the superiority of bilingual education"

Another argument against bilingual schooling is that not all studies prove that use of the L1 works best. In fact, there are a number of project descriptions where bilingual students do not have better school performance than other students (Bamgbose, 1976).

Even so, after decades of study and experimentation, there is a great deal of evidence that bilingual schooling has better results than schooling in a second language when the bilingual model has the characteristics described above, for example development of the L1 for 4 or 5 years before complete transition to the L2 (Cummins, 1987). This means that non-accepted models, i.e. models which are not based on the research and theories of specialists, do not always have good results. In addition, it can be noted that projects which fail have a lot in common with each other; for example, minority language programs are often less successful than high-prestige immersion ones (Fishman, 1976), probably due to social factors. Characteristics such as these are difficult to control in an experiment but can easily influence the results. Fortunately, many studies of bilingual schooling which describe difficulties are able to identify the causes and make recommendations about how to avoid such difficulties in future applications. For example, in cases where students have difficulty in transitioning to the L2, investigators have discovered that the situation can be remediated with reinforcement and development of proficiency in the L1 (Swain, 1980, 1981; Singh, 1988). The other part of the solution would be better teaching of the second language; for instance, when language specialists Hyltenstam and Stroud gave advice about improving EP1 in Mozambique, they noted that many bilingual programs failed to allow sufficient time for oral development of the L2 (1993:110–111).

In general, however, bilingual education works, as demonstrated by studies in countries as diverse as Canada (Cummins, 1987; Mackey, 1972; Macnamara, 1966), Mexico (Heath, 1972; Modiano, 1973), Sweden (Skutnabb-Kangas, 1981), India (Pattanayak, 1981, 1986), the United States (Krashen, 1987; Ramirez et al., 1991), Peru (Montoya, 1990), and Nigeria (Orata, 1953; Fafunwa et al., 1989). For specialists today, the relevant argument is not IF use of the mother tongue can improve teaching, but HOW the mother tongue can be used in each context to optimize learning.

3.3.3 "It costs too much to provide bilingual education"

Those who employ this argument claim that it is not practical to offer bilingual programs because of the high costs involved in developing local languages, elaborating and producing materials, training teachers, and monitoring work in the field. They feel it is better to maintain the existing educational system and avoid these expenses.

It is true that implementation of bilingual education, like implementation of any educational innovation, presents a number of challenges, including costs, especially in a country with limited economic resources. However, if the objective is to improve the quality of primary schooling, the preservice and inservice training of teachers is one of the unavoidable costs, no matter what the innovation. When a country already has teacher training institutions, the only thing lacking is to introduce the new linguistic and pedagogical material for teaching the L1 and L2.

Admittedly, textbook production can be expensive. Fortunately, we have examples from some countries which have succeeded in producing their own materials in local languages, the most notable example being Nigeria. The Rivers Readers Project in Nigeria was designed to provide mother tongue materials for literacy and primary school teaching in more than 20 languages or dialects in the region. This project has demonstrated that with groups of academics and teachers working in teams and supported by basic standardized books, the cost is more reasonable than previously imagined (Armstrong, 1968).

3.4 Experimentation in Africa

It can be said that multilingual African countries have every reason to pilot and implement bilingual education systems, but not all have engaged in such experimentation. In general, Portuguese colonial influence in Mozambique, as in other former colonies, was oriented toward assimilation. The Portuguese language and culture were thus imposed on society and especially on schools.

Post-colonial nations with French influence are faced with a similar situation in terms of the French language in school; only in relatively recent times have they considered the possibility of using local languages in school. The exceptions are Benin, whose educational reform of 1975 emphasized instruction in national languages (Yoloye, 1986); Togo, where the Ewe, Kabiye, Mossi, Yoruba, and Somba languages are used in the early primary years and are taught as subjects (Bamgbose, 1976; Williamson, 1985); and Senegal where, according to the educational reform of 1981, it was decided to provide mother tongue instruction in the early primary years in Wolof, Pulaar, Serer, and Diola, with eventual introduction of French at the secondary level (Richmond, 1983).

Some former British colonies seem to have made more progress in the area of local language instruction. The stance of the British favored separate development rather than assimilation, and historically encouraged use of African languages in schooling. Ironically, South Africa and other nations once under apartheid regimes have gained the most experience in bilingual education; there, bilingual schooling proponents must now struggle to keep bilingual programs from being thrown out along with repressive political practices. Other countries, including Malawi, Zimbabwe, Botswana, Kenya, and Tanzania, have long histories involving educational language policies which support local language use.

Nigeria is the country which has contributed most to the discussion of bilingual programs, due mainly to its many diverse languages and the innovative projects it has undertaken. With 11 principal languages and over 350 languages spoken in all, the Nigerian situation is not simple; nevertheless, the education policy demands that "principally the mother tongue or language of the immediate community" be used in the first three years of primary schooling (Williamson, 1985:24). The Primary Education Improvement Project which began in 1971 has contributed greatly to our knowledge of curriculum development, teacher training, and improved mother tongue materials (Bamgbose, 1984). The largest and best-documented bilingual project in Africa up to present, the Six-Year (Yoruba Medium) Primary Project, began in the 1970's and was studied by scholars at the University of Ife; today about 15 schools continue to demonstrate the effectiveness of Yoruba as language of instruction for the full six years of primary school (Fafunwa et al., 1989; Dutcher, 1982). We have al-

ready mentioned the Rivers Readers Project, which has produced reading books for students and teachers in 20 languages, as well as language orthographies, and has demonstrated "how much can be done…in terms of production of literacy materials for relatively small school populations" (Williamson, 1985:11, 24). Unfortunately, the national education policy, reviewed in 1981, only supports use of the local language in the first three years of schooling (Elugbe in Légère, 1996).

An ideal language policy might cover all of the motivations for bilingual education to be implemented. Namibia provides one model that has many important elements. According to two official documents of the Ministry of Education in Namibia as described in Legère (1996), the following are some fundamental understandings:

- All national languages will receive equal treatment without regard to the number of speakers or the degree to which a language has been developed in written form.
- Linguistic policies must consider the costs of implementation, in particular the financial cost.
- Language is the means for transmitting culture and cultural identity.
- For pedagogical reasons, it is ideal for students to learn through their own languages, especially during the early years of schooling when they acquire basic skills in reading, writing, and concept formation.
- At the end of grade 7, students must have a level of proficiency in English, the official language, which is sufficient for them to continue their formal education or to participate effectively in society.
- Language policy must promote and develop unity in society.

This type of language policy discusses the importance of the mother tongue for pedagogical reasons as well as for reasons of culture and identity. It also refers to individual rights when it speaks of the equality of national languages, while at the same time it recognizes the need for students to learn the official language. It mentions practical considerations such as costs and the promotion of national unity; unfortunately, it does not explain exactly how to put all of these ideas into practice. Another danger is the comment about students' languages being used in the "early years," without specifying the period during which the mother tongue should be developed.

According to my reading of the literature, this latter theme is representative of the state of bilingual education in many parts of the world and especially in Africa. Many countries are developing their educational systems with policies which recognize the value of the mother tongue but fail to specify the means by which bilingual schooling will be systematically implemented. This is the context in which we investigate the PEBIMO experiment, and determine what lessons can be learned and how they will facilitate the application of bilingual schooling to the Mozambican education system.

CHAPTER 4

Methodology of the Investigation

4.1 Objectives of the investigation

The author was contracted in July 1996 to investigate the state of bilingual education in Mozambique, evaluate what had been done, and recommend some measures to be taken by INDE and the Ministry of Education. The evaluation was intended to include both of the INDE projects which used indigenous languages, specifically the primary bilingual education project known as PEBIMO and the experimental programs in bilingual literacy for adult women. Since none of the women's literacy programs had functioning L2 or transition classes during my stay, this study did not deal with them in any detailed way. Even so, some aspects of the literacy programs will inform this discussion, especially with regard to possibilities for the future.

According to the terms of reference approved by INDE, the consultant's tasks were the following:

1. Evaluate the bilingual model used by PEBIMO with regard to the international literature.
2. Investigate and evaluate the design and implementation of the project.
3. Investigate and evaluate the functioning of the project (all aspects).
4. Evaluate the school performance of bilingual students in comparison to those of the national system (SNE).
5. Make short-term and long-term recommendations concerning bilingual programs.

The study of PEBIMO was formative in that it took place during the penultimate year of its operation in lower primary (EP1), when the students were in grade 4. For this reason the results of the analysis were meant to contribute to some short-term recommendations regarding improvement of the immediate situation in which the experiment functioned, as well as to long-term recommendations regarding perspectives for future experimentation and/or implementation of bilingual education in SNE.

4.2 Description of the methodology

An external evaluation, i.e. an evaluation done by someone from the outside, offers both advantages and disadvantages. The principle advantage is the objectivity of the evaluator; since the person has no prior knowledge of the project he or she studies it without preconception. This also means, however, that the evaluator must depend to a large extent on the information and perspectives of the participants to correctly understand the situation. This is why the principle method for this investigation was participant observation. By participating in the activities of the central team at INDE, my intention was to exchange information and experiences which would contribute both to the investigation and to building the capacity of the participants to analyze and undertake actions themselves that would improve the project.

As a bilingual education consultant, the author could participate actively in the functioning of the project, even to the extent that technical support could be provided as needed. At least one preconception should be acknowledged here: the author is convinced that, given certain conditions such as the linguistic homogeneity of the class, bilingual education functions better than teaching in a second language. The consultancy was interpreted as including an analysis of the conditions under which PEBIMO functioned in the two provinces. The intent was to investigate to what degree changes could be recommended to optimize the conditions under which bilingual education operated, in terms of both the project and the national system of the future. The advantage of participating actively, like any member of the technical team, is that the investigator could experience all of the difficulties as well as the successes of the experiment in the same way as the PEBIMO team did.

Activities during the initial or exploratory phase included:

- Getting to know project personnel
- Analyzing the objectives of the PEBIMO project
- Consulting the archives for reports, statistics, and other data
- Participating in the daily operation of the project
- Examining the didactic materials
- Exploring language attitudes and the state of educational language policy

Along with the activities listed above, the team studied the project in terms of the teaching process, generating data that was fundamentally qualitative, as well as its products, generating mostly quantitative data. Collaboration with the technicians of the central team, as well as with Marcelo Soverano, who was researching the project for his thesis in applied linguistics, served to enrich this evaluation, and hopefully it resulted in a certain degree of capacity building for INDE technicians in the areas of bilingual education and educational research.

Three instruments were used to generate data:

- Classroom observation forms for observations in both PEBIMO and SNE classrooms
- Interview protocols for talks with personnel from the experiment
- Final tests in grade 4 subjects for testing of students in both programs

The next section describes the development and application of these three instruments in more detail. (For a schedule of activities over the 7 months of the evaluation, see Appendix B.)

4.3 Specific instruments

4.3.1 Classroom observations

Along with members of the central team, the author observed 44 classes in Tete and Gaza during the months of July and August 1996. Most were experimental classes (PEBIMO), and the rest were comparison classes (SNE) in the same schools. The official PEBIMO classroom observation form was used, which permitted the

notation and description of various categories of activities: time, didactic function of the lesson, teacher and student activities, methods/techniques, lesson contents, and additional observations. I wanted to learn whether there were differences between students in the two types of schooling, in general and specifically in the areas of:

- Nature of student participation and interaction with the teacher
- Duration of teacher monologues
- Regulatory discourse (discipline, logistics)
- Opportunities for students to ask questions
- Level of teacher awareness of student ability

This table indicates the number and type of observations made:

Subject discipline	PEBIMO classes	SNE classes
Mother tongue (L1)	5	(Non-existent)
Portuguese (L2)	10	3
Recuperation classes (L1 & L2)	4	(Non-existent)
Mathematics	11	3
Natural Sciences	2	1
History	5	0
Total	**37**	**7**

In addition to the above, Soverano did 20 observations in the province of Gaza for his study. He characterized interactions between students and teachers every third minute of the class. Using all of the available data for this analysis, we tried to quantify the results of the 64 classes we observed in total by using the number of minutes of duration of each activity, but we were not able to categorize and quantify the diverse classroom activities to our satisfaction. However, we discovered that there were a number of salient differences between the two types of schooling that could easily be described. This is why our results consist of descriptions of the classroom observations rather than quantitative data.

4.3.2 Personnel interviews

With the support of Samima Patel from the central team, the author interviewed PEBIMO project personnel in July and August 1996. Participants were asked about their literacy skills and experience working in the L1, their opinions of the successes and problems of bilingual education, parent attitudes, and recommendations for the future, among other aspects. We wanted to learn from the experiences of people working in the field regarding how the project functioned and the results obtained up to that point. Field personnel could also provide important information about parent perceptions. (See the interview protocol in Appendix C.)

We were able to interview all 18 of the field personnel of the PEBIMO project:

8 bilingual teachers
5 school directors
3 local language investigators
2 provincial coordinators

For his study, Soverano spoke with the same personnel in Gaza, as well as with 34 parents or guardians of PEBIMO students. This data is added to our own in the qualitative review of responses presented in Chapter 5.

4.3.3 Student tests

At INDE we developed written tests in Portuguese, mathematics, and natural sciences with questions and instructions in Portuguese. These tests were based on the curriculum for grade 4 SNE because they were to be applied in experimental classes which had already transitioned to Portuguese, as well as in comparison classes from SNE. We piloted the first version of each test on a class of 60 grade 4 Changana-speaking students in the community of Zimpeto, just outside Maputo, and made corrections based on the results of those SNE students.[7]

We wanted to obtain data on oral ability in Portuguese but did not have time to interview all of the students. Our solution was to request that each teacher give us the names of their five "best" and five "worst" students in terms of Portuguese language ability. Soverano did a blind testing of those students, i.e. he was not told which students had been designated best or worst. He spoke with each student individually and elicited some tasks, such as description of a series of pictures and reading of a text. (See Appendix D for all of the tests administered.)

In October and November of 1996, the central team monitored test administration, and Soverano did the explanations in Portuguese for each class. The objectives of the written tests were to:

1. Measure and compare PEBIMO and SNE student performance at the end of grade 4.
2. Compare student levels of oral and written Portuguese in PEBIMO and SNE to judge the success of the transition made by bilingual students.
3. Compare PEBIMO and SNE student performance on the mathematics test, which was relatively free of language, with that on the natural sciences test, which required a great deal of language ability, to see if understanding would be better among students who learned in their mother tongue.
4. Cross-reference test results with final grades given by the teachers to see which teachers have the greatest understanding of their students' abilities. (This objective was not met due to problems in gathering data on final grades for all students tested.)

The final written tests in the three subject areas were administered to the following students:

Province	PEBIMO	SNE	Total
TETE	69	88	157
GAZA	100	85	185
Total	169	173	342

Individual oral Portuguese tests were administered to the following students:

Province	PEBIMO (No. classes)		SNE (No. classes)		Total (No. classes)	
TETE	37	(4)	20	(2)	57	(6)
GAZA	34	(4)	13	(2)	47	(6)
Total	71	(8)	33	(4)	104	(12)

[7] The main changes made were to simplify the way questions were asked, and to include more contents in the subjects of mathematics and natural sciences.

The test results are presented in average raw scores. For each test, there is a percent value that each student earned on the test (of a total of 100%), the averages by class (separated also by gender), and the averages by province (separated by type of schooling, i.e. PEBIMO or SNE). These results are presented in Chapter 5.

4.4 Difficulty of comparison between PEBIMO and SNE

The general idea of experimentation is to compare the results of an educational innovation with the results of a "normal" or status quo treatment. Normally a control group would be identified which would not have contact with the innovation. In this case there are two types of schooling: bilingual education with initial literacy in the mother tongue, as piloted in PEBIMO classes, and "normal" education, with initial literacy in the second language, as done in SNE classes. The main difficulty in making comparisons lies in how to find classes whose only difference is presence of absence of the innovation. Unfortunately, we have encountered many variables besides the language of beginning literacy; among others, they are teachers' experience and training, material and pedagogical resources, teacher-student ratio, and proportion of repeaters in the class.

There are certain characteristics of the PEBIMO project which would seem to favor the bilingual students:

1. *Characteristics of the teachers*. Because they were specially selected for the project, the majority of PEBIMO teachers were qualified teachers, meaning that they had gone through teacher training programs, and had solid teaching experience. The eight bilingual teachers had an average of 17 years of teaching experience from grades 1 through 4 (in Tete) or 1 through 5 (in Gaza). Unlike SNE teachers of whom only 75 percent are qualified (MINED, 1996a & b), all PEBIMO teachers had training of the type "4th plus 4" or "6th plus 1" (in Tete and Gaza) or even "6th plus 3" (in Gaza only).[8] The type of support these teachers received on a daily basis was similar to that received by SNE teachers because they all worked in the same schools with the same school directors and pedagogical technicians. However, PEBIMO teachers received an extra inservice training of two weeks per year, as well as special monitoring which consisted of various visits by the provincial PEBIMO coordinator and at least two visits per year by members of the central team.
2. *Provision of didactic materials.* PEBIMO students received all of their textbooks free of charge and were offered additional school materials such as pencils and notebooks by the project. The project provided these materials to prevent dropout due to lack of resources on the part of the families, since the objective was to retain the highest number of students in the experiment. SNE students received only a few textbooks which MINED happened to supply in 1996.
3. *Attention to students.* The project did everything possible to retain students in experimental classes, even going to their homes to ask why students had been absent or to explain to parents the importance of having their children participate in the experiment. Since there was no provision for repeaters, as mentioned above in section 2.2.3, students who had difficulties could attend recuperation classes,

[8] In each type of teacher training, the first part (4th, for example) indicates the highest primary grade level attained; the second part (for example, plus 4) indicates the number of years of subsequent training the person received at a Primary Teacher Training Center (CFPP).

which in principle gave them extra help, especially in Portuguese language skills. Even so, by grade 4 the PEBIMO classes had diminished in number because there were no new students to be added each year, and the average ratio of students per teacher was 21, much less than the average of 43 in the SNE "control" classes.

From the beginning, we were aware of the existence of these conditions, as well as others which negatively influenced our ability to compare grade 4 PEBIMO classes with grade 4 SNE. These conditions did not have much influence on our observations, which depended more on teacher behavior, nor on the interviews, which did not include SNE personnel. However, they had a great deal to do with student test results, since they involved the selection or treatment of students.

The following conditions would seem to disfavor the bilingual students:

1. *Initial selection of PEBIMO classes.* Because of an initial delay in getting bilingual teachers out to the field for the first year of the experiment, there were no classes waiting for them at their schools. Instead of composing experimental classes through random selection, the school directors allowed SNE teachers to choose students who they did not want in their own classes to compose the PEBIMO classes.
2. *There was no provision for repeating grades in PEBIMO.* The grade 4 SNE classes already had a high percentage of students who had repeated grades, but as discussed above none of the existing PEBIMO students had repeated a grade.[9] As a result SNE students in the comparison classes were older and had received more years of instruction in Portuguese and other subject disciplines.
3. *Differences in exposure to the Portuguese language.* We can not deny the fact that teaching in the L1 takes time in the school day. Because experimental students had one school subject more than SNE students, they had fewer hours to study the other subjects, including Portuguese. The average time spent learning Portuguese in the grade 4 experimental classes was six lessons per week; in SNE the number of lessons was approximately double. In addition, PEBIMO students effectively had only two years of Portuguese language development, in contrast to at least four years in SNE.[10]

Despite these unfavorable conditions, we decided to test both PEBIMO and SNE students in the Tete and Gaza schools and analyze the differences, with the goal of identifying students' difficulties as well as possible benefits of bilingual schooling. The results are discussed in Chapter 5, along with an explanation of what we would do differently the next time.

[9] As noted in Chapter 2, all of the students passed to the next grade each year from grade 2 on because there were no bilingual classes for them to repeat classes in. The same eight PEBIMO teachers followed their students through primary grades 1 to 5.

[10] Also as noted in Chapter 2, according to the PEBIMO model Portuguese should have been introduced at the end of grade 2; however, an interruption in the 1994 school year due to the national elections caused a delay in the oral introduction of Portuguese.

CHAPTER 5

Results of the Investigation

5.1 Introduction

The data or results of the investigation appear in various forms, among others in impressions, numbers, descriptions, and anecdotes. With the objective of gaining a complete view of the experiment so that it can be improved, we will consider four aspects:

- The INPUT or resources put into the program
- The PROCESS of program development
- The OUTPUT or results of the program
- The CONTEXT in which the program has been developed

It is necessary to consider the input into the bilingual schooling program, as well as the activities undertaken throughout the process, to get an understanding of the conditions which have influenced the experiment in some way. The results provide evidence for judging the relative value of the different inputs and activities. Finally, we must understand the actual context in which the program is piloted, to determine whether future applications require any special adaptations.

Each aspect of the experiment has various characteristics to be considered in measuring the effectiveness of the innovation. For this evaluation, the following characteristics appear salient:

Coordination and functioning of the PEBIMO project (INPUT and PROCESS)

Planning and preparation of the innovation

Administration and management of the project

Materials development

Professional training of the teachers

Quality of the schooling provided (OUTPUT)

Retention and school success

Girls' participation

Methodology and classroom interaction

Linguistic achievement of students

Achievement in other subject areas

Affective domain of students

Awareness about bilingual education (CONTEXT)

Attitudes of the community

Attitudes of officials

Type of student produced

In each of the following sections we will discuss the pertinent results. To view the results organized by evaluative instrument, see Appendix E for classroom observations, Appendix F for interviews, Appendix G for the oral Portuguese tests, and Appendix H for the written tests in Portuguese, mathematics, and natural sciences.

5.2 Coordination of the PEBIMO project

5.2.1 Planning and preparation of the innovation

As discussed in Chapter 2, the PEBIMO experiment grew out of initiatives at INDE, NELIMO, and SIL to pilot bilingual education with beginning literacy in the mother tongue in lower primary education (EP1). The proposed plan for the experiment was developed by three pedagogical technicians at INDE (Cabral et al., 1990) and remains to this day the central document of the PEBIMO project. This project proposal was most useful during the initial planning phase. It describes the linguistic situation in Mozambique and the resulting high rates of wastage in primary schooling, and it proposes the teaching of initial literacy in Bantu languages as a possible solution to the problem. The document provides a justification of the project based on the literature, a plan of activities, and a preliminary budget.

Unfortunately, this document has not been very useful in specifying and guiding the activities of the experiment throughout its operation. In some cases it included useful suggestions, for example in the section on working methods where there was a recommendation for a thorough study of bilingual education, using sources in the literature and in neighboring countries, before beginning (Cabral et al., 1990:13). There was less orientation given regarding other aspects; for example, it left the design of the model and teaching methods to the central team to be developed over the first couple of years. This criticism is not as much of the document itself as it is of the lack of subsequent documents to specify details of the bilingual innovation. In retrospect, it would have been much better to develop the bilingual curriculum and the overall design before beginning piloting it in the schools. The rest of this section describes the problems which resulted from lack of adequate planning.

The objectives were not clearly defined. According to the 1990 proposal, the general objective was to pilot a bilingual program and see if it would reduce school failure. The document did not explain how the objective would be evaluated; it should have provided some criteria for judging success, though at that time the INDE team was apparently in a better position to study and develop curriculum than to specify project indicators. The proposal included a list of "objectives" which delineated the tasks of the project in general terms; for example, the first item was "to elaborate a curriculum for bilingual education in EP1" (Cabral et al., 1990:12, my translation). The final product which could be expected was:

> ...a collection of data which will permit us to make decisions about the introduction of mother tongues in primary education, as well as about creating and developing our national technical capacity to this effect, along with a collection of bilingual materials in the languages studied (Cabral et al., 1990:4, my translation).

Obviously, the project could have benefited greatly from elaboration of materials prior to when they were needed and according to pre-established curricular objec-

tives, which would form the basis for testing specific objectives for PEBIMO student performance. Unfortunately, these important elements were never developed.

The model of bilingual education adopted was not optimal. According to this evaluation, the model was the principal cause of the difficulties experienced by students in transition, as demonstrated by the tests. The model which was adopted was not based on the theories or earlier experiences discussed in the international literature. Referring to the models (see Appendix A) we can see that the PEBIMO model only began oral development of Portuguese officially at the end of grade 2, and made a quite abrupt transition from the L1 to the L2 in grade 4. A more accepted model would begin oral L2 development from the beginning of grade 1, and would introduce the L2 as a medium of instruction more gradually. As explained in Chapter 3, experts believe that the child requires 4 or 5 years of L1 skills development before transitioning completely to reading and writing in the L2, which he or she does quite readily once there is adequate understanding and communication in the L2.

In choosing the model, PEBIMO organizers apparently failed to consult the available resources, which included literature available from the library or through consultants working at INDE as well as specialists who worked in Mozambique, for example the linguists at UEM or SIL. According to the written reports, specialists had discussed more appropriate models during the two seminars on bilingual education in 1989 and 1990 which preceded initiation of the project. It is not clear how decisions were made after that, but it can be safely assumed that the abrupt transition to Portuguese in grade 3 had more to do with politics than with recommended pedagogical practices.

The teaching methods were not well developed. An important part of the bilingual model is the teaching of Portuguese as a second language. Second language teaching methodology is well developed internationally, but it was not well utilized by the experiment. For example, second language teaching methodology is overwhelmingly communicative, but there was no evidence of development of communicative capacity in the PEBIMO model after the overly brief oral period, which as noted was never carried out as intended at the end of grade 2.

Raw scores on the Portuguese test (see Appendix G) show that grade 4 PEBIMO students were behind SNE students in their linguistic competence in Portuguese; however, there were indications that students could develop the necessary skills with more study of both languages. For a more detailed explanation see section 5.3.4 below on student language proficiency.

5.2.2 Administration and management of the project

In principle, the PEBIMO project was well designed in terms of administration. GEPE was to control the finances provided by the donors (UNDP and World Bank) and monitor project administration. Members of the INDE team, responsible for the technical supervision and operation of the project in the field, were to submit a yearly plan of activities and request funds in advance of these activities. In the field, the two provincial coordinators would monitor the bilingual teachers' activities on a regular basis, observing classes, distributing materials, and maintaining communication between the schools and the central team in Maputo. The project was to fit within the MINED structure as represented by the district and provincial education offices (DDEs and DPEs, respectively). The planned structure appeared quite practicable.

In practice, operations were overly centralized at INDE. The personnel in the field were always waiting for materials, training, follow-up, or incentives provided by the central team. The provincial coordinators at the level of the DPEs did not monitor the activities of the experimental schools as they should have for a number of reasons; according to the coordinators, they themselves lacked incentives and resources like fuel, but there is also evidence that they lacked training and possibly motivation to spend time in the field. By 1996, the connection between PEBIMO and the DPE structures was limited to official visits of the PEBIMO team to the district and provincial directors. Fortunately, the inclusion of school directors in the last two of PEBIMO's yearly training seminars did a great deal to improve day-to-day support of the experimental teachers in their schools.

Those who coordinated PEBIMO had difficulty in planning ahead. From the beginning, the project suffered delays. As noted above, PEBIMO teachers arrived at their schools five weeks after the beginning of the school year in 1992, resulting in the forming of experimental classes by taking students who had been rejected by other teachers. The main complaint of PEBIMO teachers was the late arrival of bilingual materials, which came later each successive year. The central team blamed GEPE for the restrictions it placed on the authors' contractual periods, but there was a certain flexibility built into the project to make adjustments which would have guaranteed
the on-time supply of materials. Prior planning, instead of the "crisis management" approach which characterized the activities of the central team, would have greatly improved the quality of work of everyone from technicians to teachers.

There was no evidence of technical supervision of the project. Neither the donors, GEPE, nor INDE monitored the experiment from a technical perspective. PEBIMO had budgeted for a technical assistant in bilingual education, but no one was ever contracted. There was a small external evaluation done by a specialist contracted by the World Bank in 1994, but the evaluation was more administrative than technical. At the beginning, when the project most needed technical assistance in developing its model and curriculum, there was no technical input provided.

5.2.3 Materials development

The materials have already been discussed in terms of curriculum and management. This section describes the elaboration and quality of the bilingual materials.

To elaborate materials in the L1, it was necessary to work with local authors in the zones where experimental classes would function. Using the orthographies proposed by NELIMO in 1988, along with SNE materials written in Portuguese as a model, the PEBIMO textbooks were developed. The only subject not based on the SNE curriculum was the mother tongue (Changana or Nyanja). For mathematics and natural sciences, the SNE books were simply translated.

PEBIMO succeeded in resolving various linguistic difficulties during elaboration of the materials. It was not easy to arrive at decisions regarding the differences between language varieties, for example, or regarding the most appropriate vocabulary for certain subject areas. Using strategies developed by those working on the bilingual women's literacy projects, though without such systematic testing and editing, PEBIMO succeeded in developing the following materials for students and teachers in Changana and Nyanja:

L1 reading	Grades 1 – 5
Mathematics	Grades 1 – 3
Natural sciences	Grade 3
Story books	Various levels

In addition to these, PEBIMO developed reading materials in Portuguese for grades 2 through 4 and some materials supporting use of SNE textbooks for grade 5. While the number of errors and quality of printing can be criticized, it must be acknowledged that within a relatively short period of time the project succeeded in producing quite a few titles. (See Appendix I for the PEBIMO bibliography.)

PEBIMO materials do not reflect very innovative bilingual methodology. Due to the lack of technical assistance mentioned above, materials for oral skills development and reading in both L1 and L2 failed to use appropriate teaching methodology. Bilingual teachers used basically the same methods that were used in SNE; as we have already mentioned, the L1 was taught in the same way as Portuguese, as if the students could not understand it.

In the L1 reading materials, the approach which was adopted began with the analytic-synthetic method, passing rapidly through the letters of the alphabet and the syllables, and moving as early as grade 2 into texts, the majority of which lacked exercises or analysis. They do not seem to have been based on any curricular framework which would explain what should be taught at each level, and there is no observable developmental sequencing of learning. For example, a simple study of the grade 2 Changana book reveals that the texts vary between 40 and 91 words, and between 7 and 15.5 words per sentence, independent of the order of their presentation in the book (Matavele & Mucavele, 1993, PEBIMO bibliography). This edition, like many of the others, does not allow clear spaces between words; we have seen the result of this in the writing of some grade 4 students, who still have difficulty dividing their sentences into distinct words.

The Portuguese materials provide for an overly brief period of oral skills development and then rely heavily on dialogues. The themes are generally appropriate, but some of the objectives given in the methodological orientations demonstrate lack of understanding of the stages of acquisition of a second language. In the beginning stages, when the child can not do much more than minimally communicate in the language, the instructional orientation directs the teacher to demand that the student:

- Speak loudly and individually
- Construct complete sentences
- Repeat the constructed sentences frequently to memorize them
- Describe the accompanying images freely

(Manhice, 1994d, PEBIMO bibliography, my translation)

Obviously, memorization of sentences does not lead the student to communicate "freely." There are some suggestions for avoiding traditional approaches, for example by avoiding choral reading, speaking clearly, and allowing students to express their ideas, but the teachers' manuals do not explain how the teacher should change his or her practices to implement new approaches. The only exception is the grade 4 Portuguese book, which is the best organized and provides more methodological orientation, though it still fails to observe any realistic sequence of learning (Sengo, Moreno, & Hofisso, 1996a & b, PEBIMO bibliography).

In the SNE materials translated from Portuguese to the L1, including mathematics and natural sciences, occasional adaptations were made to bring in concepts more relevant to the students, and there was some correction of the errors which were found in the SNE materials. If there had been a curricular framework, more adaptation could have been made to the students' reality, making the bilingual curricula much more relevant.

5.2.4 Professional training of the teachers

While teachers are responsible for doing their best, they also have the right to receive training appropriate to their tasks. Apparently the PEBIMO project experienced successes and difficulties on both counts.

The project chose teachers with a great deal of potential, but took away their motivation. The international literature points out the need for a bilingual program to recruit teachers who care about bilingual education and about their local communities (Bamgbose, 1976). The PEBIMO project gathered a group of experienced primary teachers who had already taken the initiative to become literate in their mother tongues, and those who were chosen were judged to be the best qualified and most motivated. Nearly four years later during the interviews, these teachers expressed their satisfaction with bilingual education and the accomplishments of their students. On the other hand, they complained about the lack of resources and incentives, felt they always worked harder than SNE teachers, and demonstrated their lack of motivation to do all of the work that the project required. There is evidence from project reports that the project created these difficulties because it raised teachers' expectations for certain financial benefits that were never given. For example, in 1996 there was a financial "stimulus" given to the bilingual teachers, but it was not enough to fully compensate them for the extra work required beginning in 1994 to teach the recuperation classes. It is true that the project was in a difficult position: on one hand, it wanted to help the teachers, whose normal salaries were very low; but on the other hand, it had the responsibility not to establish precedents that were not sustainable in the future.

The bilingual teachers were trained, but with limitations in time and methodology. The training seminars took place from 1993 to 1997 without exception during the two weeks of vacation which preceded each school year. According to the reports, the training consisted of the following:

- Familiarization with the new materials
- Bilingual education methodology
- L1 orthography (according to NELIMO conventions)
- Classroom use of the L1

At the time of this evaluation, the teachers did not experience many difficulties in L1 writing. In other subjects, they brought their difficulties to the seminars and tried to resolve problems together. It was bilingual methodology which teachers most needed. The students experienced many difficulties related to the transition to Portuguese, and the teachers knew they lacked strategies to help them. As mentioned above, we observed that bilingual teachers were not able to free themselves from traditional methods in the teaching of languages. They read L1 texts before allowing their students to read, as they had done with an unfamiliar language. Instead of using communicative methods for the teaching of Portuguese as a second language to

develop new vocabulary and structures, the tendency was to rely on lecturing and memorization. Teachers were not familiar with bilingual methods which could have facilitated the teaching of subjects like natural sciences, such as the "Preview-Review" method which uses the L1 systematically to present basic concepts before teaching the main lesson in the L2 and then to review concepts and check understanding after the L2 lesson. In the interviews almost all of the teachers recommended more training in the area of language didactics, indicating that the methodology training they had received was insufficient for their needs. The central team complained about teachers' difficulties in adapting to the recommended methodologies, but there was no evidence that second language methods were completely understood even by the teacher trainers. The coordinators, who were to follow the activities of the teachers in the field, along with the school directors in the later years, received the same training as the teachers and were not in a position to offer technical help in the area of bilingual education.

5.3 Quality of education provided

5.3.1 Retention and school success

As discussed above, the main objective of the experimentation was to verify that bilingual education could positively influence the high rate of school wastage experienced by EP1 in Mozambique. This objective is particularly difficult to evaluate because both dropout rates and passing rates involve many variables which were not controlled in the experiment. We do have some school statistics which give positive indications about PEBIMO.

PEBIMO appears to have experienced less dropout. The first difficulty in comparing PEBIMO and SNE is that there are many different factors in school dropout, some of which have no relationship to the change in language of instruction. In the case of PEBIMO, the teachers and school directors put in extra effort to keep students in the project, which was not the case with SNE students. In the province of Gaza retention was good overall, but we have no way to know whether or not bilingual education was the reason; in the province of Tete, the experiment lost many students to dropout, but in this case bilingual education was probably not the reason. The bilingual classrooms in Tete were composed while the war was still going on, and after the war displaced families began to move back to their original homes. In addition, the school in Moatize ended up with a PEBIMO class of only eight students after the CARBOMOC mine where their parents worked was closed. Dropout rates in the two PEBIMO provinces are shown in the following table.

PEBIMO	**Dropout in Tete**	**Dropout in Gaza**
Grade 1	11%	4%
Grade 2	18	11
Grade 3	10	9
Grade 4	15	4
SNE dropout[11]	**13%**	**7%**

[11] For comparison purposes, these are the rates for EP1 (grades 1 through 5) in 1995 according to MINED (1996a:6). Unfortunately, SNE dropout rates were not reported by grade level.

It is apparent from the data that even with difficulties outside the control of the experiment, PEBIMO dropout rates were sometimes better than the average for SNE in each province. As is often the case with longitudinal studies, it is not easy to maintain experimental cohorts over many years. Between grade 1 and the first semester of grade 5 in 1997, PEBIMO lost 52 percent of its students. However, even if some of the remaining 48 percent fail to complete grade 5, this rate is quite positive in comparison to SNE; according to the study done by Martins (1992), only 77 in 1000 (or 7.7 percent) of the students who enter grade 1 complete grade 5.

PEBIMO appears to have had higher passing rates. The second difficulty in evaluating the main objective of the project is that there was no provision for PEBIMO students to repeat a level after grade 1, as explained above. The schools maintained the same students in the experimental classes, and they proceeded through each successive grade level. Fortunately, the teachers recorded which students passed and failed each year, which gives us a rough indication of student school success in the bilingual program; these figures are shown in the next table.

Year	PEBIMO passing rates[12]	SNE passing rates[13]	Difference
Grade 1	74%	55%	+ 19
Grade 2	89	58	+ 31
Grade 3	77	57	+ 20
Grade 4	71	61	+ 10

There is no way to verify the validity of the comparison, but since all of the PEBIMO teachers have many years of experience in SNE classrooms it might be assumed that they have applied the same criteria as they once used to evaluate SNE student school performance. As can be seen, the percentage of PEBIMO students who passed was quite high in grade 2, which was a motivating factor among participants in the experiment. The passing rate dropped quite a bit in grade 4, which can be attributed at least partly to the overly abrupt transition to Portuguese in the PEBIMO curriculum. We might also predict a rising failure rate because the students who have not passed over the years are still in PEBIMO classes, along with those who may have begun to have problems during this school year. However, PEBIMO passing rates are still much better (between 16 and 27 percentage points) than the overall rates for SNE.

5.3.2 Participation of girls

Although this aspect of the investigation was not foreseen, it is important to consider female participation in a discussion of school wastage, since girls are traditionally less likely to complete primary schooling. There are interesting relationships between language and gender which may influence schooling, and we are exploring the possibility that bilingual education has a positive effect on the situation of girls. The assumptions are that the mother tongue is the home language,[14] that girls are more connected to the home than boys, and that use of the home language in school can help girls in some way – through participation, understanding, motivation, self-

[12] These data were presented in the document written for the Third Seminar of Radio Broadcasting in Mozambican Languages (*Grupo de Educação Bilingue*, 1996:3).

[13] For comparison purposes, these are the rates for SNE by grade level in 1995 according to MINED (1996a:11).

[14] It may be noteworthy that the piloting of L1 literacy materials is normally done with the women of the community, as they are judged the conservators of the regional varieties.

confidence—that can be measured. This requires a comparison of PEBIMO and SNE in relation to gender.

Teacher behavior toward girls in PEBIMO was traditional in nature. Referring to the observations, we have no data to distinguish student performance in relation to gender. In general, PEBIMO students participated more than SNE students did in discussions, and we can assume that PEBIMO girls had more opportunities to participate than girls in SNE; however, we have no particular indications of their success. From classroom observations we have the impression that female teachers tend to give more attention to girls than male teachers do, but we did not make specific observations which would evaluate that factor. We know that PEBIMO did not do anything special in terms of making teachers aware of gender issues, so we can assume that their behavior is comparable to that of SNE teachers.

It is possible that more PEBIMO girls survived through grade 4. Since the number of girls was not controlled for in selecting the experimental classes, it is difficult to compare passing rates. However, if we look at age, we find that PEBIMO girls are younger than PEBIMO boys, unlike in SNE where the girls are older. If we assume that girls enter school at the same age as boys, this may mean that more SNE girls are repeaters, but the difference here is not large enough for us to be certain.

Schooling	Average age of girls	Average age of boys	Difference
PEBIMO	10.5 years	11.0 years	Girls – 0.5
SNE	12.2 years	11.9 years	Girls + 0.5

A study could be done of the students who survived in PEBIMO in Tete, using names to distinguish the sexes. The girls who began grade 1 represented only 38 percent of the experimental population, but by grade 4 that proportion had changed to 47 percent. A higher percentage of girls than boys had survived from grades 1 to 4; 47 percent of the girls enrolled in April 1993 were still in the classes we tested at the end of 1996, in contrast to only 36 percent of the boys. We do not have comparable data on the SNE classes, but if we consider the Martins (1992) study mentioned above, where only 7.7 percent of SNE students survive to the end of grade 5, this rate of 47 percent for PEBIMO girls seems significant.

PEBIMO girls may have experienced a linguistic advantage. There is evidence that girls are more successful in language study in general. With the piloting of the Portuguese test in Zimpeto, near Maputo, we found a large difference (12 percentage points) in test scores between girls and boys, while there was no significant difference on the tests of natural sciences or mathematics. Similarly, when we tested the PEBIMO and SNE ("control") students, there was little difference in the latter two disciplines; however, on the Portuguese test, PEBIMO girls scored 4 percentage points higher than PEBIMO boys, and SNE girls scored 2 points higher than SNE boys (see Appendix G for these results by class and gender).

In identifying students with positive or negative performance in Portuguese for the individual oral tests, PEBIMO teachers mentioned more girls in the positive category and fewer girls in the negative one than SNE teachers did. It is therefore possible that bilingual girls benefited from some linguistic advantage even in Portuguese, their L2; of course, we would need more data to establish this conclusively.

Why do we lack more conclusive data? It is possible that the positive effects of using the L1 lack sufficient strength to compensate for the conditions which constant-

ly work against girls in SNE. One good example is the image of the girl in school materials. In a brief analysis of two L1 reading books, we counted the pictures of boys and girls. In both cases, the number of pictures of boys was double that of girls. One of these books also showed double the number of men in relation to the number of women. We can conclude that the bilingual materials did not consciously introduce any innovation in terms of equalizing the position of girls in EP1.

5.3.3 Classroom methodology and interaction

According to our observations, the medium of instruction is a determiner of the level of classroom participation in which students engage. In these terms, the PEBIMO classes can be compared favorably to those of SNE (see Appendix E for a summary of the observations).

There is more interaction between teachers and students in PEBIMO. In general, we found that bilingual students participated much more actively in classroom discussions and were less inhibited in responding to their teachers' questions. Although PEBIMO teachers still lacked effective techniques for stimulating discussion, they succeeded in creating more situations in which students spoke during lessons. Use of the L1 certainly facilitated the dialogue between teachers and students and, at least in some cases we observed, allowed individual students to ask questions and get feedback.

In contrast, SNE students sat silently or gave responses of a few words; they were never observed to initiate interactions with their teachers. The classroom climate was more formal and the process of learning more ritualized. Even though SNE classes are larger than PEBIMO classes overall, the number of students does not in itself explain the great difference in participation between students of the two types of schooling.

When we discussed the results of our observations with the bilingual teachers at the training seminar in January 1997, one female teacher mentioned that it was the first time she had heard such encouraging words about her practice. Apparently, teachers were more accustomed to being criticized when they were observed; even so, in the interviews the teachers expressed satisfaction with the interaction they had achieved in their bilingual classrooms.

The classroom environment is more comfortable in PEBIMO classes. We found that the teacher who uses the L1 has a different attitude toward the student; both teacher and student are comfortable and feel at home. We saw one case where a bilingual teacher had made an error on the blackboard; the students respectfully called his attention to the error, and he corrected it and laughed with the students about it. There is a degree of closeness between the student and the teacher which is not seen in SNE, where the students may converse and laugh, but not with the teacher. One of the bilingual teachers who was closest to his students took the initiative to use their "home" names instead of using their official school names which have little to do with the culture of the home.[15] Such strategies help to diminish the cultural distance between school and home, and may make learning more relevant.

Literature on second language teaching points to the need to create a relaxed climate for learning so that the student is not inhibited. The comfortable and happy environment of PEBIMO seems to influence classroom communication, even when Portuguese is being spoken. Discussions were most animated during L1 classes, but

[15] Upon school entry, Mozambican children are given official Portuguese names, which they often fail to recognize themselves during the early years.

bilingual students also succeeded in expressing themselves in the second language during the lessons we observed.

Some teachers discussed the advantage that use of the mother tongue brings about in preserving cultural values; for example, Gaza students were observed handing in their papers to their teachers using one hand supported by the other, in the manner traditional for showing respect. Apparently, this closer connection between school and home was well received by the parents.

5.3.4 Student language performance

As mentioned above in discussions of the bilingual education model, the written Portuguese test (see Appendix G) showed that PEBIMO students were behind in their linguistic development in Portuguese. On the written test of Portuguese, the average difference was 13 percentage points in favor of SNE students. We know from the literature that adequate development of the L1, combined with a good program of oral development of the L2, results in high levels of competence in both languages. At the end of grade 4, PEBIMO students still had not attained these levels.

PEBIMO students have linguistic difficulties which can be remediated. The written Portuguese test demonstrated deficiencies in the model and methods of the PEBIMO program. Even so, there are indications that students can recuperate lost ground with time, mainly because they are continuing to develop abilities in the L1 and can transfer these abilities to the L2. For example, we have already noted the lack of validity of the comparison (see Chapter 4, section 4.4) due to the following differences between students of the two schooling types:

Characteristic	PEBIMO	SNE	Difference
Average age (in years)	10.7	12.1	+ 1.4 SNE
Years of L2 study	2.25	4	+ 1.75 SNE
Years of L2 medium of instruction	1	4	+ 3 SNE
Hours of L2 study (per week, grade 4)	6	12	+ 6 SNE

Although these differences seem to completely favor SNE, the individual oral tests in Portuguese (see Appendix G) show that the highest achieving students from each system (bilingual and SNE) have almost the same results, and the lowest achievers are also similar in PEBIMO and SNE. This means that the best PEBIMO students are already gaining advantages from bilingual education, because with much less time spent in Portuguese they succeed in speaking and reading at levels comparable to SNE students. With more development in both languages, it is quite possible that PEBIMO students will recover the ground lost by being forced to transition to Portuguese at a non-optimal time in their schooling.

On the tests of dictation in Portuguese (see Appendix G), the average difference was 5 percentage points in favor of SNE students. In this case it appears significant that, despite having much less exposure to Portuguese, PEBIMO students made the same errors as their SNE peers. Many of the bilingual students demonstrated an understanding of phonetic strategies in writing Portuguese words; for example, instead of writing *asseada* [clean] with /ss / they wrote *açeada*, where the /ç / would have the same sound. They seem to have transferred strategies that they learned in their first language to the second and to have learned aspects specific to Portuguese (the letter /ç /, for example, which is not used in the orthography of either L1).

The project tested written L1 competence at the end of each school year, but the tests had still not been corrected at the time of this investigation. Judging by the teachers' statements and by observations of five L1 reading lessons, it appeared that the majority of bilingual students reached satisfactory levels of mother tongue literacy. The parents said that they were pleased that students could write letters to family members and read the Bible in church, all in the L1.

5.3.5 Student performance in other subject areas

The qualitative data indicated that bilingual student performance was good. Almost all of the personnel interviewed felt that PEBIMO students had higher school achievement than SNE students. The teachers said that they saw big differences when they compared bilingual students to the SNE students they had taught in the past. The school directors agreed that PEBIMO students were the most advanced of the students in their schools. It was reported that the parents, who also made informal comparisons between their children (some of whom were in the bilingual program and some in SNE), saw differences in their children's behavior at home and were requesting bilingual education for all of their children. Finally, according to our classroom observations, bilingual children participated more and demonstrated what they learned. They could also re-tell stories without difficulty. All of the qualitative evidence indicated that the experimental students were most successful in school. Whether it was due to realism or idealism, personnel of the experiment did not mention anything that would have warned us of the difficulties the students would encounter with the written tests.[16]

PEBIMO did not have better results than SNE on the three written tests. PEBIMO students in grade 4 failed to reach levels as high as those of grade 4 SNE students on any of the three subjects tested; the average difference varied between 6 and 28 percentage points. (See Appendix H for the results and analysis of the written tests in mathematics, natural sciences, and Portuguese.) When we discussed these results with the teachers and other PEBIMO personnel in January 1997, they were disappointed, but they still believed that their perceptions of the students were more accurate because they saw their students' daily school performance. They agreed that it would be important to confirm their perceptions with solid evidence of the positive performance of their students, and said that the results of the tests they constructed and administered at the end of the year would be better.

When we compensate statistically, PEBIMO compares better with SNE. Knowing that it was not completely fair to compare PEBIMO and SNE test results for the reasons discussed above (particularly the original selection of the student sample and the bilingual model used), we analyzed the differences with the objective of clarifying the difficulties which students had and possible areas in which they benefited from bilingual education. To compensate for the inequality inherent in the student samples, we must consider the test of mathematics, since it was an instrument that was almost free of language. If we consider the average difference between PEBIMO and SNE students on the mathematics test to represent the inherent difference in abilities between PEBIMO and SNE classes, we can see the other test results from a new and possibly more accurate perspective.

[16] One of the school directors in Tete stated in January 1997 that on the final grade 4 tests, which were the same tests for PEBIMO and SNE, bilingual students had the best scores in the school in mathematics and in Portuguese reading and writing. When questioned, this director admitted that SNE students had better results in natural sciences, history, and Portuguese essay-writing. It is possible that school personnel generalized about the most positive results of bilingual schooling and downplayed or failed to recognize any of the difficulties.

As shown in the table below, the average difference in mathematics test results between PEBIMO and SNE in Tete, for example, was 16 percentage points. If we assume that this represents the inherent difference in ability between students in the two programs, we can subtract 16 percentage points from each test result to compensate. The difference in Gaza is 28 points. After compensation, the test results for PEBIMO students look much more positive.

Province	Subject tested	Difference	Compensation for difference PEBIMO-SNE
TETE	Mathematics	+ 16 SNE	16 – 16 = 0 (equal)
	Natural sciences	+ 6 SNE	**6 – 16 = + 10 PEBIMO**
	Portuguese	+ 8 SNE	**8 – 16 = + 8 PEBIMO**
GAZA	Mathematics	+ 28 SNE	28 – 28 = 0 (equal)
	Natural sciences	+ 28 SNE	28 – 28 = 0 (equal)
	Portuguese	+ 25 SNE	**25 – 28 = + 3 PEBIMO**

In terms of raw scores, then, PEBIMO students do not demonstrate the same level of ability as the SNE comparison group. Nevertheless, when we correct for the difference in the levels of the students in the samples, PEBIMO students have made more progress during their schooling. This leads to the following conclusions:

1. Although the PEBIMO students were disadvantaged at the beginning of their schooling, they succeeded in progressing more rapidly than SNE students in the three subjects tested and additionally can read and write in the L1.
2. Given that PEBIMO students will learn more L1 and Portuguese during grade 5, we have reason to believe that they will advance more rapidly in the next year and have better test scores at the end of 1997.

5.3.6 Student affective domain

If we were to select the most important qualitative advantage of bilingual education, it would be the affective domain, or feelings, of the student. It is logical that the student who likes school and likes to learn will have more opportunities for success in school and in life. At the very least, we can not deny the importance of self-confidence to the learning process.

According to all of those interviewed, PEBIMO students are comfortable in the classroom. We have already commented on the happy climate we observed, which even permitted students with difficulties to ask their teachers questions. We also mentioned the consistency of cultural values between the PEBIMO classroom and the home (see section 5.3.3 above).

For the central team, the strongest positive evidence comes from the parents, who have observed differences between their children depending on the type of schooling, and have requested bilingual education for all their children. A number of parents interviewed by Soverano in Gaza said that their children who studied in PEBIMO took more initiative at home and helped their siblings in SNE (even older ones) with homework, which is an indication that PEBIMO students had a very positive attitude toward and were learning from their schooling experience.

5.4 Awareness of bilingual education

5.4.1 Attitudes of the community

The attitudes of parents and guardians were generally positive, according to teachers' reports and parents themselves. To understand the importance of their reaction in 1996, it is important to know about their complaints at the beginning of the project.

Bilingual education was not readily accepted at the beginning due to lack of information. According to those interviewed, parents had doubts at the beginning of the experiment because they did not all receive information about the bilingual program, and their children were selected without their knowledge. (It would have been better for project coordinators to meet with parents to explain and justify the model.) Parents were also worried because Portuguese was not taught in the first year. According to them, the Portuguese language is very important for their children's futures.

There was one case in Gaza where a mother complained a lot when her daughter who was studying in PEBIMO had academic difficulties. The teacher explained that the difficulties did not have anything to do with the type of schooling, but the mother took her daughter out of the PEBIMO class and registered her elsewhere. After a period of time she returned, apologizing and saying that her daughter learned more in bilingual classes.

Parents are now in favor of bilingual education. Those interviewed provided various reasons for supporting bilingual education (see the summary of the interviews in Appendix F). The interviews conducted personally by Soverano in Gaza confirmed that parents were strongly in favor of bilingual schooling. Their main reason was that their children can read and write in the L1 and in Portuguese. They are proud when their children get attention at church because they can read the Bible in the mother tongue. They can also help the family (who formerly had to pay for the service) to write letters to family members who work in the mines in South Africa. It has also been helpful to receive bilingual materials free of charge.

Parents' attitudes are important because they are not easily influenced. They can see the results of their children's schooling and judge whether or not these results are desirable; they can also compare their children who are in the experiment with those in SNE classes. Parents themselves may have had little experience with formal education, but they know what they want for their children. They are capable of understanding the advantages of bilingual schooling and making decisions to improve their children's chances for school success. The PEBIMO classes in Gaza even benefited from the spontaneous creation of a group of PEBIMO parents who were quite active in supporting project activities.

5.4.2 Attitudes of the provincial authorities

During the first field visit to the provinces for this investigation, in July and August 1996, the central team held meetings with the provincial and district education directors. In general, their attitudes toward bilingual schooling were quite positive, even though not all of them had a lot of information about the PEBIMO experiment. The two provincial directors were well informed. They asked us how things were going and what they could do to support the project. Both also demonstrated their personal support of the use of local languages in teaching.

During the second evaluation period at the end of the school year, the central team met with the provincial governor of Tete. He requested data on the results of

the evaluation, and felt that it was not necessary to experiment more. He said it was time to expand primary bilingual education because many people were "already convinced." In a similar meeting with the provincial governor of Gaza at the beginning of 1997, the central team also received support.

The importance of the attitudes of provincial authorities should not be underestimated, because they probably reflect to a great degree popular opinion where they live and work. Many decisions made at the central level could be better informed by the regions where decisions are implemented.

5.4.3 Type of student produced

During this evaluation we discovered various types of information regarding the type of student which is being produced by the PEBIMO experiment. PEBIMO students have some positive characteristics which are different than those found in their SNE peers:

The bilingual student thinks and expresses him/herself in the classroom. According to observations, students participate and make comments in discussions with their teachers. This may be one reason that teachers see their students as being more advanced than those in SNE.

The bilingual student is happy and likes school. According to observations, students are comfortable and happy in PEBIMO classrooms. They enjoy a closeness with the teacher that is not always found in SNE. According to interviews, these students like school and their studies.

The bilingual student takes initiative at home and exhibits high self-esteem. Parents and teachers believe that PEBIMO students are "better" at school and at home than those in SNE. Apparently they perceive certain qualities in the bilingual children that our written tests have not been able to measure.

The bilingual student can read and write in two languages. They may not yet have reached the same levels of Portuguese knowledge that their SNE peers have, but PEBIMO students have functional literacy in Portuguese and high levels of literacy in their mother tongues.

Teachers, parents, and officials in Mozambique will agree that these characteristics are highly desirable. Instead of listening to the teacher's lectures and reproducing the information, the PEBIMO student is more likely to ask a question or make a comment. When we remember that these students were somewhat disadvantaged from the beginning due to difficulties of the project in applying bilingual education in the field, and yet they succeeded in acquiring such positive qualities, we have more evidence that use of the mother tongue in primary schooling is effective in improving educational quality.

5.5 Conclusions

Even if the model, methods, or development of the second language are not changed in 1997, we can predict better performance of PEBIMO students by the end of grade 5, judging merely by the fact that they will have one more year to learn Portuguese and develop their skills in the mother tongue. According to the theories, solid development of both languages will support the students in their complete transition to the official language, which will happen in grade 6.

Retrospectively, if this evaluation could be done again, the recommendation would be to implement some different techniques. The written tests measured "repro-

ductive" school success as the SNE system would have done, and served as a demonstration of this type of knowledge. It would have been better to discover comparative ways to measure or evaluate some of the characteristics which teachers and parents felt were so positive; for example, a number of people said that PEBIMO students were "better," but they could not explain how. During classroom observations we noted that students were more *a vontade*, meaning "at home" or comfortable, but we did not find a systematic way of measuring these characteristics. From a qualitative point of view, we still lack information regarding whether or not bilingual education has reached its objectives through PEBIMO.

Nevertheless, in terms of the future it appears that this evaluation of the PEBIMO experiment has given us an adequate basis to make recommendations. There are many indications of the potential for bilingual schooling to improve EP1 in Mozambique, and quite a bit of evidence that PEBIMO is achieving a number of desired results. The investigation also provides information about practices which can make teaching more effective. The next chapter discusses recommendations for short-term changes, and the final chapter covers recommendations for future implementation of bilingual education in Mozambique.

CHAPTER 6

Recommendations for the Project

6.1 Introduction to the recommendations

To impose a bilingual program on the Mozambican school system at this time (as Malawi did some years ago with the Chichewa language) would not work well because some basic conditions are lacking, including curriculum, community awareness, and training of teaching staff. In the process of piloting school use of the L1 to improve educational quality, the PEBIMO team discovered that these things are necessary. We now have a better idea of how to implement an innovation, and we have information about the steps to follow to be more careful. In our opinion, the first steps should be taken now.

Many of the recommendations presented here came out of the last discussion between this evaluator and participants in the *Seminário de Divulgação* or Informative Seminar, which took place in Inhambane following the inservice training for bilingual teachers in January 1997. These recommendations were discussed at another Informative Seminar at INDE in March 1997, and represent a convergence of opinions regarding the PEBIMO experiment.

6.2 Improvement of the project in the final year (1997)

As the results of the evaluation demonstrate, PEBIMO has experienced various difficulties, which implies that there is a need for adaptation and correction. It is not possible to correct actions taken in the past, but we can learn from them. This section has to do with possible short-term actions to be taken which will maximize the successes of PEBIMO, in particular student achievement.

A decision should be made about students who have not passed and should not be in grade 5. Each school which has PEBIMO classes, with technical support from the central team, needs to resolve the problem of the existence of failed students in the grade 5 experimental classes. It is irresponsible to permit these students to pass to grade 6 without the skills that they need to survive in SNE classrooms, particularly the linguistic skills.

This situation could have been avoided if the project had organized a way for students to repeat grades, and if teachers had been required to complete the teaching of each year's curriculum before starting the next, instead of allowing students to move to the next level without the prerequisite skills. The project has tried to resolve this problem through the recuperation classes, but it has not been possible to remediate skills for all students; some just need to study a little longer, and not necessarily in grade 5. The recommendations are the following:

1. The first step would be for teachers to individually evaluate the skills which these students lack from the basic curriculum and to determine the actual levels at which they are functioning. This was apparently done to some degree in Gaza at the beginning of the 1997 school year when a new fourth class was formed of students with difficulties. This will be more difficult in Tete, where each school must resolve the situation on its own because of the physical distance between schools. It might be possible for students to work part of the day in grade 4 SNE and the other part in grade 5 PEBIMO.

2. The second step is for teachers, school directors, and coordinators to communicate with the parents and explain students' actual levels. If some students are not capable of learning material at the grade 5 level, the project must be honest and assume responsibility for the situation. Apparently the special class in Gaza has been called grade 4 PEBIMO, which better recognizes the actual level of the students.
3. The last step is for the PEBIMO project to consider operating for one more year (in 1998) with this group of students who are behind, to ensure that they get the most from their bilingual schooling and that they have an opportunity to pass to grade 6, as their PEBIMO colleagues will do at the end of 1997. The central team and the schools must take measures to guarantee this continuity, with the support of the provincial directors in allocating the appropriate teachers.

The central team needs to give more intensive and consistent technical support to the field this year. The teachers have expressed the need for better methods for teaching Portuguese as a second language, and we know that PEBIMO students need more linguistic development in both the L1 and the L2. One of the most important functions of the central team is to provide technical support.

The central team could make more efficient use of its time in the field and take advantage of the opportunity to reinforce methods promoted in the latest inservice training seminar as well as new methods which would help develop Portuguese and the L1, contributing to students' linguistic achievement. Instead of spending hours observing classes and then criticizing them, the team could conduct mini-seminars for teachers to discuss specific problems that students are experiencing, offer support materials, and demonstrate possibilities for helping students. Both teachers and students need to be helped and encouraged.

The central team could work more with the provincial PEBIMO coordinators, other technicians at the provincial education offices, and school directors to provide stronger technical monitoring of activities in the field this year. Knowing that this follow-up has been quite weak in the past, this should be remedied now to motivate the teachers during this important year, train provincial staff, and prepare the field for future applications of bilingual primary education in these same provinces.

INDE could work with the Ministry of Education (MINED) to create a special certification plan for bilingual teachers and coordinators, recognizing their hours of inservice training, participation in the development of curricular materials, planning and teaching of extra classes, and years of experience in primary bilingual teaching.

The central team must ensure that there will be places for PEBIMO students in grade 6. If the project has prepared students well, they will be successful on their examinations and will proceed to grade 6 in 1998. If there are no spaces for them in upper primary (EP2), we run the risk of having more students abandon their schooling. INDE needs to work with the provincial directorates to guarantee spots for the PEBIMO students who qualify for grade 6. As noted below, the final evaluation depends a great deal on the future performance of these students.

6.3 Preparation for the final evaluation (1997–98)

Even though the final evaluation is not until 1998, there are some preparatory measures which can be taken now. It is worth preparing evaluation procedures in advance to avoid future lack of information or resources. We can also take advantage of what

we have learned during the evaluation as described in this report. This section includes suggestions for the final evaluation of PEBIMO.

We need to gather personal information about each PEBIMO student. To be able to follow each student who leaves the experiment after this year, and to know something about his or her future achievement in school or work, we need to be able to contact that student. The teachers can request personal information about their students during the 1997 school year which will assist us in gathering data in 1998 and beyond. For example, we will need to know:

- Where does the student live (location of the home)?
- With whom does the student live (parents or guardians)?
- If the student is absent, who will know where she or he is?
- What is the student's plan for the 1998 school year (school, work, other)?

The bilingual teachers can be responsible for updating this information at the end of the school year. This activity will not be difficult for PEBIMO teachers because they generally know the families of their students.

Prepare, pilot, and implement instruments for the final evaluation. Project personnel need to decide which instruments will be used for the final evaluation. The recommendation is to develop some more innovative instruments (as mentioned at the end of Chapter 5) and to focus more on interviews with the participants, especially the students themselves and their families. Some possible questions would include the following:

Student interview:

- What are the languages you speak at home?
- What do you think of bilingual education? Has this been a positive or negative experience? Why?
- What problems did you have? What successes did you have?
- If you could repeat grades 1 through 5, would you do it in SNE or bilingual education? Why?
- How could bilingual schooling be improved?

Parent/guardian interview:

- What are the languages that your child speaks at home?
- How did you feel about bilingual education at the beginning? Have your feelings changed? Why or why not?
- What do you think of bilingual education? Has this been a positive or negative experience? Why?
- What are the reasons for using the mother tongue in primary schooling?
- What are the problems of PEBIMO bilingual schooling? The successes?
- How could bilingual schooling be improved?
- Would you like to have bilingual schooling for other children in your family? Why or why not?

If the team wants to interview students and family members, it is worth taking advantage of their presence and availability during this school year. PEBIMO teachers, investigators, and coordinators are the best people to do the interviewing, and there is no guarantee that they will pertain to the project after this year.

Plan ahead for 1998 activities. A final evaluation has many dimensions. Some possible activities include the following:

Begin 1998 with an evaluative seminar. The project can use the two weeks in January which are normally reserved for teacher training to meet with all personnel and discuss the experiment in detail. Other people who have been involved in the process since its initiation can be invited to provide a more global perspective.

Follow the development of experimental students who are repeating and have remained in the schools in Tete and Gaza. PEBIMO can benefit from the presence of these students to:

- Analyze the difficulties they are having.
- Provide help whenever possible.
- Determine which difficulties could have been avoided during the schooling process.
- Determine which difficulties could have been remediated during the schooling process.

Monitor development of the experimental students who proceed to grade 6. PEBIMO can follow these students during grade 6 and in the future to:

- Observe their classroom performance.
- Speak with their new teachers about their performance.
- Discuss the adjustment to SNE with the individual students and their families.
- Determine whether or not bilingual students are advantaged in relation to other students.

6.4 Preparation for the future (1997–98)

The next chapter discusses the perspectives for future implementation of bilingual education in Mozambique. There are various actions which can be taken now to facilitate the implementation process. This section includes a description of some possible actions.

Generate more awareness and involvement in the communities. The central team at INDE could give more information to the communities, including the results of the evaluations. At this point in the project there is a chance to make Mozambicans more aware at every level, and to develop a national educational language policy. The efforts of NELIMO, SIL, and Radio Mozambique could be coordinated to disseminate information about bilingual education.

Integrate bilingual programs as much as possible into provincial and departmental education offices. The central team could explore which of the provincial and district technicians are most interested in bilingual education and involve them in the process of evaluation, in awareness activities, and in planning for the future. The team could organize seminars or meetings which coincide with provincial or regional activities, involving the Zones of Pedagogical Influence (ZIPs) as well. The technicians involved in adult literacy in local languages should not be forgotten. This type of integration can make bilingual programs more sustainable in the future.

Review and re-edit the mother tongue materials which are already written. The materials written for PEBIMO were piloted before and during the experiment, and the central team knows what needs to be done to correct them. It would be ideal to re-edit these books before this information is lost or forgotten, with the orientation of a bilingual

education specialist who can give advice about bilingual models and methods. This work will contribute a great deal toward the preparation of a curriculum guide or framework which will serve as a basis for development of materials in other languages during the expansion phase. A curriculum guide normally includes the following:

1. Behavioral objectives of the curriculum: What must the student be able to do by the end of each instructional period?
2. Teaching and learning experiences (methods): How will the student be taught?
3. Curricular contents, sequenced by instructional period: What will the student learn during each instructional period?
4. Means of evaluating student learning: How will the student demonstrate what he or she has learned?

Train teachers in methodologies for the teaching of Portuguese as a second language. With or without bilingual education, the educational system needs to recognize that the majority of Mozambican students do not speak Portuguese when they begin school in grade 1. PEBIMO and INDE can support any initiative in inservice or preservice teacher training in language didactics. The teaching of Portuguese as a second or foreign language is an essential element of a bilingual education program, which functions best in zones which are linguistically homogeneous. The teaching of Portuguese as a second language can also function on its own in zones which are linguistically heterogeneous, where it is not yet possible to teach each student in his or her mother tongue.

CHAPTER 7

The Future of Bilingual Education in Mozambique

7.1 Perspectives for the future

Given the overall advantages of bilingual education, the encouraging results of the PEBIMO project, and the potential for bilingual programs to obtain even better results in Mozambique, the recommendation of this study would be to expand bilingual education gradually throughout the country. We already know from the international literature that bilingual education functions more efficiently than submersion in a second or foreign language, depending on certain conditions. Most of these conditions exist in Mozambique, for example, existence of linguistically homogeneous communities, development of the Bantu languages in written form, growing interest in L1 literacy, and growing capacity at MINED to provide technical support to bilingual programs. We have already identified important elements to be considered in the future which were missing in PEBIMO, for example, adoption of an accepted model of bilingual education and more appropriate methods. At the same time, we have identified errors to be avoided in the future, for example, delays in the production and distribution of materials.

At this point in time, MINED has an imperative to improve the quality of basic education through curricular transformation, which has implications for teacher training and elaboration of didactic materials, among other aspects. This appears to be a good time to initiate application of bilingual programs in the field where they are appropriate and in parallel with the other curricular innovations planned. SNE can take immediate advantage of the benefits of using the L1 to improve the teaching in EP1 in communities which are linguistically homogeneous.[17]

Many of the ideas presented here were suggested and discussed at the PEBIMO teacher training seminar in January and at the awareness seminars held to disseminate information about this evaluation in January and March 1997. These ideas may serve as a basis for discussion in planning future actions.

7.2 Guidelines for implementation of a bilingual program

According to the literature in the field of bilingual education, the experience of the author in various bilingual programs, and the results of the PEBIMO project up to now, there are ten general points that should be seriously considered in implementing bilingual schooling. Most of these points are made to clarify aspects of a future program before its initiation; the others are made to guide careful preparation.

1. *Adoption of an appropriate model of bilingual education.* The ideal model would involve four or five years of L1 skills development, accompanied by an intensive program of instruction in oral L2 expression which begins the first day of school, and a late transition to the L2. At times, as in the case of PEBIMO, the transition is done too early because organizers, even while recognizing it is not good pedagogy,

[17] It should be noted that bilingual schooling as discussed here is not easily applicable where there is linguistic diversity in the classroom. There are not yet enough teachers who are trained to write and teach in their mother tongues, nor is there any system for team teaching or alternating teachers by subject discipline or language. The temporary recommendation for linguistically diverse classrooms would be to provide an intensive program of Portuguese as a second or foreign language.

believe that the public will not accept a late transition. On the contrary, we believe that the community will accept the more appropriate model if they are given a good explanation. They will see that the official language is part of the curriculum from the beginning; it is just that the L2 is not used for beginning literacy, but the result will be good literacy skills in the second language as well.

2. *Clear objectives.* The objectives should be clear and designed to be evaluated or measured both during the program and at the end when the students graduate from bilingual schooling. They should permit verification of how the program is functioning as well as identify any problems so that changes can be made to rectify the situation. At the same time, participants should have the flexibility to change the objectives as necessary. For example, PEBIMO had only one goal that could be measured—to reduce school wastage by using the L1—but during the process it was found that the students could not repeat grades because this was not accounted for the initial planning, thus rendering the goal unmeasurable. Interestingly, valorization of the local language and culture, while not a factor in the initial planning, was identified by participants as an important and highly successful aspect of the PEBIMO program.
3. *Information and awareness program for families and communities.* It is essential to meet in advance with the parents or guardians of the students as well as with local community leaders to explain the program which is planned. If possible, bilingual education should be offered as an option for the families; that is, if there are three grade 1 classrooms in the school, one or two could be bilingual depending on how many opt for the program. Another possibility is for the community and school to make the decision, but in this case all participants have to be well informed. In this way, the community will remain involved in their bilingual program from the beginning and will work to make it successful. To begin with, programs can be directed toward communities which have already had PEBIMO classes or adult literacy programs in the mother tongue[18] because, as we have seen in this investigation, there will already be a number of people who recognize the value of a bilingual approach from their own experiences.
4. *Integration of bilingual programs into the structure of the Ministry of Education.* A coherent bilingual education program must function within the national education system. This implies the training of appropriate personnel to develop the curriculum and the didactic materials, and to train and monitor bilingual teachers. PEBIMO functioned as an INDE project in parallel with MINED activities, and even though efforts were made to involve the provincial directorates, the project remained overly centralized at INDE in terms of financial and technical resources. For example, we later learned that it would have been ideal to involve the school directors and the local pedagogical technicians because they were the pedagogical resources in the field. Without this integration into the normal system and its daily educational activities, application of the results of the experiment and future sustainability of bilingual programs may be jeopardized.[19]

[18] It is noteworthy that PEBIMO was more readily supported in zones near Mozambique's border with Malawi, where the national bilingual system is generally accepted.

[19] It is dangerous for an experiment to establish precedents that MINED can not maintain in practice. For example, PEBIMO gave "incentives" to the bilingual teachers as partial compensation for their extra work, which SNE has never done for regular teachers. It might have been better to explore existing incentives at MINED, for example certificates, other training, or change in salary status, which could serve as viable alternatives.

5. *Clear responsibilities.* All tasks should be clear, especially those of the technicians from the provincial directorates who will be involved in the coordination and supervision of bilingual schools. As this investigation of PEBIMO has verified, it is advisable to include school directors and pedagogical directors in the bilingual teacher training and in all planning activities. They should be supportive and have the capacity to establish a favorable working environment in their interactions with teachers and parents.
6. *Development of didactic materials well in advance of when they are needed.* The materials should be developed and piloted in the field ahead of time. The central team of PEBIMO developed materials during each year prior to their use, which could have functioned if personnel had not had other responsibilities. The ideal would be to provide curriculum guides or frameworks and seek authors who are native speakers of the language in question and come from the same zones as the students; this would help avoid difficulties between language varieties. The bilingual women's literacy program has developed various guides for the elaboration of materials. With a certain degree of technical and linguistic support, materials development can be decentralized. In addition, revision and re-edition of existing materials can be done annually.
7. *The most intensive teacher training possible.* Bilingual education methods are overwhelmingly participatory, and teachers need time to learn the concepts, participate in demonstrations, and practice with the assistance of teacher trainers. Teachers do not need long courses in theoretical linguistics nor do they need comparative linguistics regarding L2 errors which result from L1 interference. They do need to concentrate on methods for teaching the L1, along with basic aspects of teaching and learning reading and writing in the L1. They also need to learn methods for teaching a second or foreign language, as mentioned above, and possibly work on their own Portuguese language skills.
8. *Solid plan for monitoring in the field.* Bilingual education supervisors should not spend all their time observing and criticizing classes, but should provide mini-seminars and demonstrations to help teachers develop more participatory teaching styles. Participation seems to improve automatically with use of the L1, but after that initial effect teachers tend to stop developing because they are so accustomed to teaching reading in a foreign language that they use the same techniques (for example, reading a text and asking the students to repeat it). In the L1, this type of activity is neither necessary nor valid.
9. *Detailed plan for evaluation and adaptation of the program as it develops.* There should be detailed plans for both qualitative and quantitative evaluation of student achievement, teacher beliefs and practices, parent involvement, technical assistance, materials, logistics (sequence of activities, distribution of materials, etc.) and other aspects of the project. If a certain aspect is evaluated periodically and found to have problems, it is important to adopt procedures for error correction. There are always unpredictable events, but there are also events which can be controlled, and rather than operating on a crisis management basis there should be a good plan which includes evaluation and adaptation of the program.
10. *Clear plan for utilizing the results of the experiment.* How will the results of the experiment be taken into consideration and put into practice by the Ministry? It is important to establish a structure for evaluating, reporting, and taking action, as well as identifying the particular people (or even better their positions) whose responsibility it is to carry out these functions.

7.3 Application of the guidelines to the Mozambican context

The overall idea is to make the provincial and district directorates (DPEs and DDEs) responsible for the bilingual programs in the appropriate districts, decentralizing the educational process as much as possible. As a part of the central Ministry, INDE can function best by providing technical and pedagogical resources. The following describes a possible structure for such work and the respective responsibilities.

INDE could:

- Train DPE and DDE personnel in the coordination of bilingual programs and in the development of materials in the Bantu languages.
- Provide curricular frameworks or models for the writing of didactic materials.
- Organize and conduct training courses for bilingual teachers, as well as for provincial and district personnel so that they can become trainers themselves.
- Serve as a resource for any province which identifies regions that meet the conditions for implementing bilingual programs (see below).

MINED, specifically the DPEs and to a certain degree the DDEs, could:

- Propose schools/communities which are linguistically homogeneous and can benefit from bilingual schooling.
- Provide information and increase community awareness to ensure that people understand and agree with their participation in a bilingual education program.
- Coordinate, develop, and pilot materials using curriculum guidelines, and train local authors who speak the same language variety as each target population.
- Send teachers and other relevant personnel to participate in training courses.
- Monitor and provide pedagogical support to bilingual teachers in the field.
- Work with international organizations which support primary education in the provinces to facilitate the printing and distribution of materials.

Certainly this structure and organization of tasks needs to be developed, and the adoption of responsibilities by people in the provinces has to be gradual and consensual. This implies a great deal of discussion and participation among everyone involved in the implementation process. The rest of this chapter offers ideas regarding possible steps to follow in implementing bilingual education programs in the field.

7.4 Maintenance of bilingual programs in Tete and Gaza

So as not to lose the momentum gained by the PEBIMO experience, including the knowledge and understandings that we have acquired up to now, the first priority in implementing bilingual schooling is to re-initiate programs in the provinces of Tete and Gaza. Since the experimental students will finish grade 5 this year, and we have not yet done the final evaluation, improved the materials, or re-trained the teachers, it will not be possible to begin a new bilingual grade 1 immediately. Nevertheless, with good planning, reorganization can begin now and bilingual schooling can be re-initiated within a few years.

There are a number of points which justify re-opening programs in the same two provinces:

- Keep bilingual education alive in theory and in practice, taking advantage of the high level of motivation that currently exists in the communities and schools.
- Maintain or improve the level of awareness and support of the communities.
- Keep trained bilingual teachers and technicians available.
- Put to use and augment the capacity of technicians and structures at the DPE level, gradually diminishing INDE contributions so that INDE support becomes more technical than financial, eventually involving only personnel training and elaboration of curriculum guidelines.
- Use materials which have already been developed in Nyanja and Changana as a basis for re-elaborating didactic materials according to the new model and methods adopted.
- Exchange information and experience with any new bilingual program (see below); for example, Tete and Gaza can benefit from new methods and didactic materials as well as helping new sites with the knowledge and experience gained through PEBIMO.

At the same time, there are some pre-requisites for the maintenance of bilingual programs:

- Develop the capacity of the DPEs and DDEs to support bilingual education when it is no longer a project but forms part of a decentralized national system.
- Guarantee the support of the DPEs in identifying technicians who will participate, including teachers, school directors, and coordinators (supervisors) who have already been trained.
- Request that the DPEs move certain schools and teachers if possible due to post-war linguistic and demographic changes.
- Verify and reinforce community support in the PEBIMO areas.
- Review and improve the didactic materials; train provincial technicians to develop and pilot new materials.
- Re-train existing bilingual teachers and train new ones, providing a more comprehensive training in the teaching of first and second languages.

It may be noted that INDE will continue to have many technical responsibilities in the near future, but that those who supervise bilingual teachers and authors at the provincial level can form part of the implementation team during this phase. The time element is important so that we do not lose what PEBIMO has gained in terms of understandings, experience, and awareness.

7.5 Expansion to other provinces

The next step is to initiate new programs in bilingual education in other local languages. One possibility would be to introduce programs in the province of Sofala, where bilingual schooling was planned in 1991 but not implemented because the Ndau language could not be introduced unless Sena were also used. The bilingual women's literacy project has already developed written materials in both languages and is well accepted in a number of communities; it would be logical to begin at these sites.

Another possibility would be to focus on the district of Vilanculos in the province of Inahambane, where INDE is currently investigating sociolinguistic issues. The Xitsua language is also in shape for use in education. Of course, all of this depends on the disposition of these provinces to implement bilingual programs, and on the availability of human resources who can put the model into practice.

There are a number of points which justify initiating new bilingual programs in other provinces:

- Employ new strategies for the design and implementation of a bilingual curriculum, taking advantage of what was learned in PEBIMO and emphasizing local management and sustainability.
- Elaborate improved materials according to recommended bilingual methodologies.
- Initiate work with primary teachers who do not know about the bilingual education project to avoid negative preconceptions.
- Develop other Bantu languages which have been studied (in terms of orthography, etc.) and make the connection with L1 adult literacy programs in the same communities.
- Expand to other provinces, which is desirable for making the Mozambican population more aware of the benefits of bilingual schooling.
- Develop written materials in other Mozambican languages, which is desirable for political as well as educational reasons; for example, it would be good to work with Xitswa, a minority language in terms of number of speakers, to show that all languages have value.
- Use a linguistically homogeneous place such as Vilanculos which has already been studied by a group of INDE technicians, to make use of their data and contacts.

Like maintenance of bilingual programs, expansion depends on certain prerequisites:

- Explore the attitudes of the community, teachers, DPE and DDE authorities, and provincial governments regarding the initiation of bilingual programs. Define the profiles of teachers to be selected and trained in bilingual education.
- Train some INDE technicians in the field of bilingual education.
- Reorganize the bilingual education sector at INDE to direct curriculum development and teacher training.

7.6 Measures to be taken for expansion of bilingual programs

7.6.1 Reorganization of INDE personnel

To put the above-mentioned programs into effect, it is advisable to reorganize the personnel at INDE and to create a Bilingual Education Department (DEB), which would have the following as its principal duties:

Coordinate the professional training of bilingual teachers and literacy promoters.

- In the initial phase, DEB can train bilingual teachers and literacy promoters. The main themes of training should be linguistic aspects (orthography, etc.) and bilingual teaching methods.

- During this period, the training of trainers in bilingual education should take place.
- For the short and medium term, curriculum should be developed for the preservice and inservice training of future bilingual teachers and literacy promoters.
- In the long term, DEB should serve as a technical resource for activities in preservice and inservice teacher training which are carried out by the teacher training colleges (CFPPs), the Pedagogical University (UP), the Institute of Teacher Improvement (IAP), and others.

Develop curriculum for primary bilingual education and adult literacy.

- DEB should collaborate with other INDE departments, for example the Department of Portuguese.
- The objectives produced should be relevant to Mozambican contexts and appropriate for each level of schooling.
- Guidelines and curricular scope and sequence frameworks should be developed which serve as a basis for elaborating textbooks in the local languages.
- This information should be disseminated during the training of teachers and trainers.

Coordinate elaboration of didactic materials in the local languages.

- In the short term, DEB should organize working groups which include pedagogical and linguistic technicians (native speakers if possible) for each language to be developed, to re-edit materials which have already been written and to coordinate elaboration of new materials.
- In the medium term, strategies for the utilization and training of local authors should be delineated.
- In the long term, DEB should monitor and support the elaboration of didactic materials in the provinces.
- A library should be maintained which includes all L1 materials for primary schooling and adult literacy.
- Linguistic and pedagogical information should be disseminated to institutions involved in teacher training, as mentioned above.

Monitor the models and methods used in decentralized bilingual programs.

- DEB should serve as a resource and provide technical support to the programs in the provinces.
- Bilingual schooling should be investigated continuously to improve the quality of the teaching; possible research topics could be implementation of curricular innovations or methods, teaching academic subjects in the L1, facilitating transition from the L1 to the L2, and so on.

To fulfill these responsibilities, the proposed Bilingual Education Department will need to train more human resources. These might consist of the following:

- 1 coordinator (full time):
  Ideally, someone with training and experience in bilingual education
- 2 to 4 pedagogical technicians (full time):
  People with training and experience in primary education who can be trained in language didactics

– 1 linguist per language in use (full or part time):
  People with linguistic training who speak, read and write their mother tongues
– 1 technical assistant in bilingual education (full time, contracted for 1 or 2 years):
  Specialist with higher-level training and extensive experience in bilingual education, to provide training for all DEB personnel
– 1 technical assistant in curriculum development/languages (full time, contracted for 1 or 2 years): Specialist with higher-level training and extensive experience in curriculum development in first and second languages, to train curriculum developers at INDE.

7.6.2 Training of INDE and MINED personnel

It will be necessary to train sufficient numbers of people to carry out the technical tasks needed for expansion of bilingual education in the country. The following are recommendations for augmenting national technical capacity to respond to this challenge:

Send 2 or 3 technicians to a university program in primary bilingual education.

– Find a university program with theoretical and practical training in bilingual education (South Africa is likely to have an appropriate program).
– Train bilingual education technicians and possibly teacher trainers who can train the trainers upon their return.

Make use of a bilingual education specialist to provide inservice training of personnel in Mozambique.

– Conduct training seminars in language didactics[20] for:
  INDE technicians working with languages (bilingual education, literacy and Portuguese)
  Teacher trainers at INDE and MINED, including the DPEs
  Teacher trainers involved with languages at the CFPPs, UP, IAP, and others
  Adult literacy technicians at INDE and MINED, including the DPEs
  Linguists and provincial technicians who develop materials in Bantu languages
– Advise curriculum developers regarding appropriate methodology.

Make similar use of a curriculum development specialist to train personnel.

– Conduct training seminars in curriculum development for:
  Provincial linguists and technicians who develop materials in Bantu languages
  Technicians and linguists in bilingual education who develop the curriculum guides used to elaborate and pilot materials in the field
– Coordinate the curriculum with the recommended bilingual methods.

7.6 Educational language policy in Mozambique

Having a language policy is important for an education system to function effectively. At present there is no policy which is clear from the point of view of the teachers. According to the INDE technicians in Maputo, primary teachers are authorized to use the mother tongue as a resource in the classroom, especially during the early years

[20] It should be noted that an essential element of training is the teaching of Portuguese as a second language, which will benefit all primary school programs, not only bilingual ones.

of schooling. Nevertheless, none of the teachers we met in the field (with the exception of the PEBIMO teachers), nor any of the district-level technicians, had any knowledge of this authorization; everyone had the impression that classroom use of the L1 was prohibited. Even so, it was obvious that many teachers who speak their students' mother tongue fall back on the language when their students do not understand something said in Portuguese.

This situation is dangerous for three reasons:

1. MINED policy is not reaching those who have the greatest responsibility for implementing it, namely the provincial and district supervisors and the teachers themselves; it is as if this policy did not exist.
2. Teachers have a certain day-to-day behavior and a different behavior when they are observed; if supervisors do not know exactly what is happening in the classroom, how can they offer appropriate pedagogical support?
3. The mother tongue is being used, but in a highly asystematic manner; for example, there is no accepted technique in either bilingual or second language teaching which promotes simple translation or code-switching between languages.[21]

What is sorely lacking is a well defined and widely disseminated educational language policy. Effective dissemination requires more effort than merely sending a policy document out to the field; it means involving people in technical discussions about the practical implications as well as providing training. There are a number of policy models available in neighboring countries (see for example the Namibian policy discussed at the end of Chapter 3 of this report), but Mozambique would undoubtedly need to develop its own national policy. According to one UEM professor, this process has begun, based on the latest revision of the Constitution of the Republic in 1990, whose Article 5 says the following:

> 1. Portuguese is the official language in the Republic of Mozambique.
> 2. The State values the national languages and promotes their development and growing use as vehicular languages and in the education of citizens.
>
> (Lopes, 1994:25, my translation)

Unfortunately, from the perspective of education, this policy stops well short of offering any specific strategies for the use of national languages in basic education or adult literacy. Lopes cites a number of documents from the State Culture Secretariat, NELIMO, Radio Mozambique, various studies of language policy, and his own work (1994:14) where better defined policies are recommended.

MINED has the resources, in addition to INDE and its bilingual education teams, to recommend a policy which meets educational needs. This policy, in principle, could include pronouncements regarding the following points:

1. *The status of the national languages*
   Each language is valuable and has the right to be developed; each citizen has the right to learn and use his or her own language.

[21] Habitual translation results in a situation where students do not pay attention to parts of the lesson given in the second language, because they know they will soon hear the same thing in their mother tongue; this does not lead to effective second language learning.

[22] Ideally, this model would include maintenance of the L1 as a subject of study after transitioning to the official language, so that students can continue to enjoy the benefits of first language literacy.

2. *The pedagogical desirability of teaching in the mother tongue*
   Where possible, and as soon as possible, the mother tongue of the child or adult should be the language of literacy or initial instruction; an appropriate model of bilingual education[22] should be adopted and promoted.
3. *Recognition of the importance of the official language/second language*
   Each citizen has the right to learn the official language if it is not his or her first language; where there is no bilingual education program, the student has the right to receive instruction in the official language as a second language.
4. *Assignment of responsibility for implementing the policy*
   MINED has the financial and administrative responsibility for disseminating, promoting, discussing and implementing this policy on a national basis; the provincial directorates have the task of preparing for implementation of bilingual schooling and/or teaching of Portuguese as a second language in the field.

In the absence of a well defined educational language policy, current initiatives in bilingual education should not be compromised. The linguistic work of NELIMO and SIL, along with promotion of Mozambican languages by Radio Mozambique, have already contributed a great deal to the national discussion. In the field of education, initiatives in the bilingual schooling of adults and children during this period of curricular transformation have raised general awareness of the usefulness of the mother tongue in improving the quality of the educational system in Mozambique.

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APPENDIX A

Models of Primary Bilingual Education

PEBIMO curriculum model

Grade:	1	2	3	4	5
		Port	Portuguese	Portuguese	Portuguese
	Mathematics	Mathematics	Mathematics Nat. sciences	Mathematics Nat. sciences History	Mathematics Nat. sciences History Geography
	Mother tongue	Mother tongue	Mother tongue	Mother tongue	Mother tongue

Key:

- Mother tongue (L1) as language of instruction
- Portuguese (L2) as language of instruction (introduced orally at end of second semester of grade 2)

More appropriate model of bilingual education

Grade:	1	2	3	4	5
	Portuguese	Portuguese	Portuguese	Portuguese	Portuguese
	Most subjects				Most subjects
	Mother tongue	Mother tongue	Mother tongue	Mother tongue	Mother tongue

Key:

- Mother tongue (L1) as language of instruction
- Portuguese (L2) as language of instruction (introduced orally as L2 at beginning of grade 1)

APPENDIX B

Schedule of Activities

Work of Carol Benson, Consultant in Bilingual Education

July 1996

- Attend project meetings; get to know technicians.
- Develop plan of action and discuss with technicians.
- Read documents and discuss with technicians to become familiar with projects.
- Find or develop evaluative instruments (classroom observation form, interview protocol).
- Travel to Tete (19-07 to 4-08) with PEBIMO project team; become familiar with situation in field, observe teachers and interview personnel.

August

- Work with Marcelo Soverano on his study; determine points of collaboration on evaluation.
- Travel to Gaza (12-08 to 21-08) with PEBIMO project team; implement evaluative instruments; visit women's literacy class in Macia.
- Write literature review with general guidelines for bilingual education.
- Compile and summarize interview results.
- Begin teaching ESL to INDE staff to provide language training and demonstrate second language teaching methods.

September

- Organize seminar at INDE on language didactics.
- Analyze contents of textbooks and curriculum for PEBIMO and women's literacy projects.
- Write report on how each project developed.
- Visit Ministry of Education and various international organizations to discuss future of bilingual education.
- Draft tests and pilot them with students in Zimpeto; revise tests for implementation in field.
- Look for comparison classes (SNE classes to serve as "control") in primary schools where PEBIMO operates.

October

- Write report on statistical data from each project.
- Investigate primary teacher training colleges and inservice teacher training programs.
- Visit Tete (25-10 to 9-11) to administer tests in PEBIMO and SNE comparison classes; meet with provincial governor.

November
- Visit Gaza (18-11 to 21-11) to administer tests in PEBIMO and SNE comparison classes.
- Develop recommendations for bilingual education curriculum in teacher training colleges.

December
- Correct written tests.

January 1997
- Participate in PEBIMO teacher training seminar as trainer in lan guage didactics.
- Conduct informative seminar to discuss evaluation results and elicit opinions of teachers and technicians in the field.
- Review and analyze test results.
- Discuss perspectives for the future of bilingual education with donor agencies.

February
- Write report on results and recommendations.
- Request opinions and comments from project participants on parts of the report.

March
- Analyze evaluation results.
- Give training seminar on methodologies for language teaching, including bilingual methods.
- Give another informative seminar to discuss evaluation results and elicit opinions from INDE and MINED personnel, donors, and others.

April
- Write final evaluation report in Portuguese.
- Write summary of report in English.

Appendix C

Interview Protocol

Biographical information Date _____

1. Name _____ 2. School _____

3. Age _____ 4. Sex _____ 5. Ethnicity _____

6. Place of birth _____

7. Current place of residence _____

8. Languages spoken (in order of competence):

   1st_____ 3rd _____

   2nd _____ Others _____

9. Languages spoken at home (in order of use):

   1st _____ 3rd _____

   2nd _____ Others _____

10. Schooling background (old/new system):

    Primary (number of years) _____

    Secondary (number of years) _____

    Professional training _____

    Training seminars _____

11. Years of teaching experience (at which levels): _____

Grade	Number of years	School

12. Years of experience as director/pedagogical technician/coordinator: _____

Opinions

1. Why are you a teacher/working in education? Do you like your work? Why or why not?
2. In your opinion, is the teaching of girls the same as the teaching of boys? Why or why not?
3. (Teachers only) What are the languages used in your classroom, and approximately what percentage of the day is spent using each one?
4. When was the first time you remember hearing about the use of Mozambican languages in teaching? What did you think at that time?
5. In your opinion, is [Nyanja/Changana] a good language to use in primary teaching? For adult literacy? Why or why not?
6. What do you think are the benefits or successes of bilingual education?
7. What do you think are the problems in bilingual education?
8. What works well and what works poorly in the transition to Portuguese?
9. How do you communicate with the parents or guardians of your students?
10. What do parents/guardians think about this bilingual project?

Final question: What are your recommendations for the future of bilingual education?

APPENDIX D

Testing Instruments

Contents of Appendix D:

Written Portuguese test

Name _____ Teacher _____

School _____ Date _____

Lê atentamente a prova e responde às perguntas que se seguem.
Read the test carefully and respond to the questions which follow.

Part I *Completa cada quadro.*
Complete each box.

1) *Completa o quadro pondo lá dentro todas as palavras que indicam lugar.*
hoje, aqui, logo, ali, antes, lá
Complete the box by putting in all of the words which indicate place.
today, here, later, [over] there, before, there

- *lá*
-
-

2) *Completa o quadro pondo lá dentro todas as palavras que indicam tempo.*
agora, amanhã, abaixo, onde, depois, aí
Complete the box by putting in all of the words which indicate time.
now, tomorrow, below, where, after, there/then

-
-
-

3) *Completa o quadro pondo lá dentro todas as palavras que indicam proximidade e distância.*
perto, mais tarde, muito longe, depois, próximo, em cima
Complete the box by putting in all of the words which indicate proximity and distance.
nearby, later, very far, after, next, on top of

-
-
-

4) *Completa o quadro pondo lá dentro todas as letras que são vogais.*
m, h, a, r, b, e, i, c, o, n, u
Complete the box by putting in all of the letters which are vowels.
m, h, a, r, b, e, i, c, o, n, u

-
-
-
-
-

5) *Completa o quadro pondo lá dentro todas as palavras que estão no singular.*
cães, amigo, aluna, elas, ele, pato, livros
Complete the box by putting in all of the words which are in the singular form.
dogs, friend, student (fem.), they (fem.), he, duck, books

- *ele*
-
-
-

Part II *Preenche os espaços em branco com as palavras ou expressões.*
Fill in the blanks with words or expressions.

6) cá, ali, aí
Exemplo: Cá na escola todos gostam de estudar.
here, [over] there, there/then
Example: Here at school everyone likes to study.

a) _____ naquela casa vivem muitas pessoas.
_____ in that house live many people.

b) _____ *nessa sala há um quadro preto.*
_____ in this classroom there is a blackboard.

c) _____ *em Moçambique nós gostamos de futebol.*
_____ in Mozambique we like football.

7) ***ontem, agora, amanhã***
Exemplo: *Ontem* ***fomos*** *ao mercado.*
yesterday, now, tomorrow
Example: Yesterday we **went** to the market.

a) _____ ***estamos*** *a estudar.*
_____ we **are studying**.

b) _____ *o professor* ***contou*** *uma história bonita.*
_____ the teacher (masc.) **told** a nice story.

c) _____ ***irei*** *ao bazar.*
_____ I **will go** to the (outside) market.

Part III *Pasa do singular para o plural as seguintes frases.*
Change the following sentences from the singular to the plural.

Exemplo: O meu cão é bonito. (à) *Os meus cães são bonitos.*
Example: My dog is nice. (to) My dogs are nice.

8) *Esta casa é linda.*
This house is lovely.

_____

9) *Eu gosto muito de bananas.*
I like bananas a lot.

_____

10) *O peixe sabe nadar.*
The fish knows how to swim.

_____

11) *A minha professora vai à escola.*
My teacher (fem.) is going to the school.

Part IV *Preenche os espaços com os verbos conjugados nas formas correctas.*
Fill in the blanks with the verbs conjugated in the correct form.

Exemplo: ***Todos os dias*** *o José* *estuda* ***(estudar)*** *a licão.*
Example: **Every day** José studies **(to study)** the lesson.

12) ***Ontem*** *o José* _____ ***(estudar****) a liçção.*
Yesterday José _____ **(to study)** the lesson.

13) ***Amanhã*** *o José* _____ ***(estudar****) a liçção.*
Tomorrow José _____ **(to study)** the lesson.

14) ***Agora*** *o José* _____ ***(estudar****) a lição.*
Now José _____ **(to study)** the lesson.

Part V *Através de setas, faz corresponder cada frase ao seu tipo e forma.*
Using arrows, make each sentence correspond to its type and form.

	Frases **Sentences**	***Tipo de frases*** **Sentence types**	***Forma*** **Forms**
15)	*Que menino tão gordo!* What a fat boy!	*pergunta* question	
16)	*Ele pesa 80 kilos.* He weighs 80 kilos.	*ordem* command	*afirmativa* affirmative
17)	*Será que ele come muito?* Could it be that he eats a lot?	*admiração* admiration	
18)	*Paulo, não batas no menino.* Paulo, don't hit the boy.	*informação* information	*negativa* negative

Part VI *Nas frases que se seguem, sublinha os adjectivos.*
In the following sentences, underline the adjectives.

Exemplo: O António é alto.
Example: António is tall.

19) *O João é um menino gordo.*
João is a fat boy.

20) *Este carro é bonito.*
This car is beautiful.

21) *O gato branco comeu todo o peixe.*
The white cat ate all of the fish.

22) *A Susana tem uma blusa nova.*
Susana has a new blouse.

Part VII *Preenche a tabela fazendo corresponder a cada elemento da frase ao seu valor sintáctico correspondente.*
Fill in the table by putting each element of the sentence in the space corresponding to its grammatical importance.

23) ***Ontem, o Carlos comprou um livro na escola.***
Yesterday Carlos bought a book at school.

sujeito subject	***predicado*** predicate	***complemento circunstancial de lugar*** place complement	***complemento circunstancial de tempo*** time complement	***complemento directo*** direct (object) complement

Part VIII *Forma frases a partir das seguintes palavras.*
Form sentences using the following words.

Exemplo:	*Paulo*	*lua*	*o*	*vê*	*a*
Example:	Paulo	moon	the (masc.)	sees	the (fem.)

O Paulo vê a lua.
[The] Paulo sees the moon.

24)	*amigos*	*com*	*os*	*brinca*	*João*	*o*
	friends	with	the (masc. pl.)	play	João	the (masc.)
25)	*bom*	*o*	*aluno*	*é*	*Hélder*	*um*
	good	the (masc.)	student	is	Hélder	a (masc.)
26)	*à*	*vou*	*hoje*	*escola*	*eu*	
	to the	go	today	school	I	

Part IX *Lê o texto* ***A Árvore*** *e põe um X na resposta correcta.*
Read the text **The Tree** and put an X by the correct answer.

Exemplo: ***O texto fala-nos de uma árvore***
1 baixa _____
2 grande __X__
3 pequena _____

Example: The text tells us about a _____ tree
1 short _____
2 big __X__
3 small _____

A Árvore
Era uma vez uma árvore grande, grande! Ela gostava muito de água e de sol.
Tinha centenas e centenas de folhas verdes que davam uma sombra fresquinha.
À sombra da árvore, os meninos brincavam às pedrinhas, jogavam à bola...
Os passarinhos pousavam nos seus ramos e cantavam, cantavam...
Mais tarde essa árvore cobriu-se de florinhas bonitas e perfumadas.
Essas flores produziram frutos.
O sol aquecia os frutos e eles ficavam amarelos e doces.
Estes frutos eram a alegria das crianças e dos passarinhos.

The Tree
Once upon a time there was a big, big tree! It liked water and sun a lot.
It had hundreds and hundreds of green leaves which provided cool shade.
In the shade of the tree, children played "pedrinhas," they played ball...
The birds perched in its branches and sang, sang...
Later, that tree was covered with beautiful, sweet-smelling flowers.
Those flowers produced fruits.
The sun warmed the fruits and they turned yellow and sweet.
These fruits made the children and the birds very happy.

1) ***Os frutos ficavam amarelos e doces porque***
1 estavam cozidos _____
2 estavam crús _____
3 o sol os aquecia _____

The fruits were yellow and sweet because
1 they were cooked _____
2 they were raw _____
3 the sun warmed them _____

2) ***A árvore gostava***

1 de sombra _____
2 só de agua _____
3 de agua e sol _____

The tree liked

1 the shade _____
2 only water _____
3 water and sun _____

3) ***Os passarinhos***

1 pousavam nos ramos da árvore e comiam os frutos _____
2 pousavam nos ramos da árvore e cantavam _____
3 pousavam á sombra da árvore _____

The birds

1 perched in the branches of the tree and ate the fruits _____
2 perched in the branches of the tree and sang _____
3 perched in the shade of the tree _____

4) ***Os meninos brincavam***

1 à sombra da árvore _____
2 ao sol _____
3 longe da árvore _____

The children played

1 in the shade of the tree _____
2 in the sun _____
3 far from the tree _____

5) *(Resposta livre)*

Eu gostaria de ver esta árvore porque...

(Free response)

I would like to see this tree because...

Portuguese dictation test

Instruções:
Instructions:

1. *Quando for possível, o professor da turma dá este ditado aos seus alunos.*
If possible, the classroom teacher should give this dictation to his or her students.

2. *Pode ler só 3 vezes.*
It can be read only 3 times.

O João vive numa pequena cidade. Ele é alto, e tem cabelo preto e olhos castanhos. A casa dele é limpa e asseada. Todas as manhãs quando acorda, ele vai à janela ver o sol nascer. Depois disso, ele arruma a cama, lava os dentes e ajuda a mãe a preparar o pequeno almoço.

João lives in a small city. He is tall, and has black hair and brown eyes. His house is clean and neat. Every morning when he wakes up, he goes to the window to see the sun rise. After that, he makes his bed, brushes his teeth and helps his mother prepare breakfast.

Individual test of Portuguese oral and reading competence

1. *(Saudação, auto-apresentação, pequena conversa.)*
   (Greeting, self-introduction, brief conversation.)

   Avalia: *Fluência (expressão correcta e rapidez)*
   Evaluate: Fluency (correct and rapid expression)

2. *Quais são as línguas que falas em casa?*
   What are the languages that you speak at home?

3. *(Mostra as imagens no livro de 3ª classe Português do PEBIMO, página 59.)*
   Através destas imagens, conta uma história.
   Para o último quadro, imagina o que se passa.
   (Show the pictures from the grade 3 PEBIMO Portuguese book, page 59.)
   Tell a story using the pictures.
   Imagine what is happening in the last picture.

Avalia pelos critérios:	Evaluate by these criteria:
1 - Nada/ quase nada	Nothing/ almost nothing
2 - Apenas descrição das imagens	Description of pictures only
3 - Descrição/ história (poucas palavras)	Description/ story (few words)
4 - Descrição/ história (muitas palavras)	Description/ story (many words)
5 - História, último quadro (poucas palavras)	Story about last picture (few words)
6 - História, último quadro (muitas palavras)	Story about last picture (many words)

4. *(Mostra o texto no livro de 3ª classe Português do PEBIMO, página 68.)*
   (Display the text in the grade 3 PEBIMO Portuguese book, page 68.)

Avalia:	Evaluate:
Pontuação	Punctuation
Entoação	Intonation
Fluência (expressão correcta e rapidez)	Fluency (correct and rapid expression)
Correcção	Correctness

Mathematics test

Teste de Matemática, 4a classe
Mathematics Test, grade 4

Subtração
Subtraction . . . . . .

126	264	492	587
- 73	- 91	- 55	- 68
389	435	686	729
- 171	- 217	- 259	- 165

Multiplicação
Multiplication . . . . . .

31	82	69	27
x 3	x 4	x 2	x 6
321	243	135	761
x 11	x 12	x 16	x 34

Divisão
Division . . . . . .

24 : 3 = ___ 56 : 8 = ___ 63 : 9 = ___

30 : 15 = ___ 102 : 2 = ___ 126 : 3 = ___

Comparação com < ou > ou =
Comparison between < or > or = ...

541___542 916___894 127___508

4 + 9___5 + 10 15 x 2 ___10 x 3 114 - 13___22 + 96

Álgebra
Algebra . . . . . .

a	57	38	646	790
a + 11 =				

b	80	29	67	314
b x 2 =				

c	75	43	156	624
c - 25 + 2 =				

d	35	20	100	55
d 5 + 3 =				

Problemas em palavras para resolver
Word problems to solve . . . . . .

1) *A nossa cidade tinha 16481 pessoas. Sairam 5690. Quantas pessoas ficam*?
Our city had 16481 people. 5690 went away. How many people remained?

2) *A Maria quer comprar sete bonecos. Cada boneco vale 5.000 MT. Quanto dinheiro precisa a Maria?*
Maria wants to buy seven dolls. Each doll costs 5.000 MT [*meticais*]. How much money does Maria need?

3) *Há vinte laranjas e quatro alunos. Quantas laranjas pode comer cada aluno?*
There are twenty oranges and four students. How many oranges can each student eat?

4) *O Pedro tem um saco de arroz que pesa 25 kg, um saco de tomates de 39 kg, um saco de milho de 61 kg, e um saco de mandioca de 47 kg. Quantos kilogramas de comida tem o Pedro?*
Pedro has a sack of rice that weighs 25 kg, a 39 kg sack of tomatoes, a 61 kg sack of flour, and a 47 kg sack of manioc. How many kilograms of food does Pedro have?

Desenha as figuras geométricas
Draw the geometric figures . . . . . .

1) *Um círculo*
A circle

3) *Um triángulo*
A triangle

2) *Um rectángulo*
A rectangle

4) *Um paralelogramo*
A parallelogram

Natural sciences test

Teste Diagnóstico de Ciências Naturais, 4ª classe
Diagnostic Test of Natural Sciences, grade 4

Por favor, leia com atenção cada pergunta e responda o mais cor recto possível.
Please read each question carefully and give the most correct response possible.

1. a) *Qual é a província onde tú vives?*
What is the name of the province where you live?

b) *Quantas províncias tem a República de Moçambique?*
How many provinces are there in the Republic of Mozambique?

c) *Em que parte de Moçambique (norte, sul, este ou oeste) fica a província de Maputo?*
In which part of Mozambique (north, south, east or west) is the province of Maputo?

d) *Indica um dos países vizinhos de Moçambique.*
Indicate one of the countries neighboring Mozambique.

2. *Complete as seguintes frases usando as seguintes palavras:*
Complete the following sentences using the following words:

oceano	*margens*	*afluente*	*nascente*
ocean	riverbanks	tributary	spring
chuva	*lençol de água*	*charco*	*rio*
rain	water table	stagnant pond	river

a) *Chama-se_____à corrente de água doce que nasce em regiões montanhosas e desagua nos mares ou oceanos.*
A _____ is the flow of fresh water that originates in mountainous regions and flows out into the seas or oceans.

b) *As terras que ficam dum lado e do outro dum rio chamam-se_____.*
The pieces of land found on either side of a river are called _____.

c) *Chamamos_____ à grande extensão de água salgada onde desaguam os rios.*
We call _____ the large expanse of salt water which rivers flow into.

d) *O lugar onde os rios começam chama-se_____.*
The place where rivers begin is called _____.

3. *O que é um lago?*
What is a lake?

4. *A tabela abaixo indica nomes de alguns animais e os meios onde eles vivem. Nenhum dos animais indicados vive nos dois meios. Assinale com (x) o meio a que cada animal pertence.*
The table below indicates the names of some animals and the environments in which they live. None of the animals indicated live in both environments. Signal with (x) the environment to which each animal belongs.

		Água doce **Fresh water**	***Água salgada*** **Salt water**
Caranguejo	Crab		
Crocodilo	Crocodile		
Rã	Frog		
Camarão	Shrimp		
Hipopótamo	Hippopotamus		

5. *Usando setas, escolhe uma definição (à direita) para cada palavra (à esquerda):*
Using arrows, choose a definition (at right) for each word (at left):

Répteis
Reptiles

Ambiente
Environment

Algas
Algae

– *Conjunto de condições que permitem a vida das plantas e dos animais na terra, no ar e na água.*
Combination of conditions which permit plants and ani mals to live on land, in the air and in the water.

– *São animais que se alimentam só de ervas e plantas.*
These are animals who feed only on grasses and plants.

– *Conjunto formado por rios, montanhas, lagoas e marcos que servem para limitar regiões.*
Combination of rivers, mountains, lagoons and landmarks which serve to delimit regions.

– *Plantas que fornecem oxigénio necessário para a respiração dos peixes e outros animais aquáticos.*
Plants which provide oxygen needed for the respiration of fish and other aquatic animals.

– *São animais que se deslocam rastejando no solo.*
These are animals who move by crawling on the ground.

– *Plantas que crescem nas margens dos rios e com elas fazem-se casas, v edações, esteiras, cestos e outros objectos.*
Plants which grow on riverbanks and are used to make houses, fences, mats, baskets and other objects.

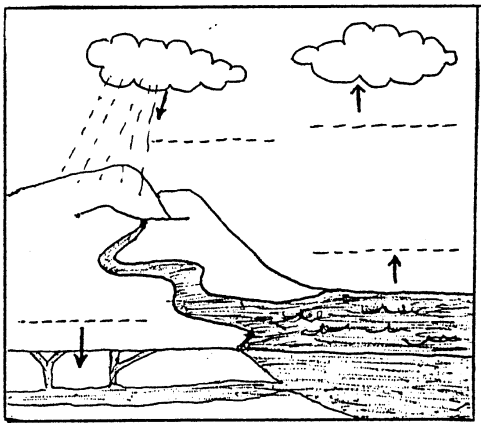
6. *Preenche os espaços sublinhados (_____) com palavras apropriadas.*
Fill in the underlined spaces (_____) with the appropriate words.

precipitação
precipitation

condensação
condensation

infiltração
infiltration

evaporação
evaporation



A seta (flecha) indica a direcção do ciclo da água
The arrow indicates the direction of the water cycle

7. *Dá um exemplo de vaporização da água.*
Give an example of the vaporization of water.

8. *A tabela abaixo indica as propriedades do ar. Assinala com (x) o que é verdadeiro para o ar.*
The table below indicates the properties of air. Signal with (x) what is true about air.

Propriedades do ar **Properties of air**	***Sim*** **Yes**	***Não*** **No**
Tem cheiro It has an odor		
Pode deslocar outros corpos It can move other bodies		
Ocupa espaço It occupies space		
É visível It is visible		
Tem sabor It has a taste		
Tem peso It has weight		

9. *Completa a seguinte frase*:
Complete the following sentence:

*Os principais componentes do ar são o azoto, o*_____, *o dioxido de carbono, as poeiras e o* _____.
The principal components of air are nitrogen, _____, carbon dioxide, dust, and _____.

10. *Qual é a importância do oxigénio para os seres vivos?*
What is the importance of oxygen to living things?

11. *Indica o nome de 3 animais selvagens que conheces.*
Give the names of 3 wild animals that you know.

12. *Como é que o Homem pode proteger*:
How can man protect:
– *as plantas*
plants
– *os terrenos cultivados*
cultivated land
– *os animais selvagens*
wild animals

13. *A água pode ser imprópria para beber por conter doenças. Para poder bebê-la é necessário fazer um tratamento. Descreve um dos processos de tratamento da água.*
Water can be bad to drink because it carries sickness. It is necessary to treat it to be able to drink it. Describe one of the processes of water treatment.

14. *Qual é a fonte de energia que utilizas na tua casa para cozer alimentos*?
What is the source of energy you use in your home to cook food?

APPENDIX E

Summary of Classroom Observations

Observations critical of PEBIMO

1. **Reading in the L1 as if it were an unfamiliar language**
   Bilingual teachers have a tendency to use the same methods they used in SNE to teach reading. For example, they read the texts aloud before asking the students to read them. Since students know the language and can connect the sounds with the letters, they do not need to repeat after the teacher as they are accustomed to doing in Portuguese.

2. **Traditional methods for teaching other content areas**
   Bilingual teachers do not always take advantage of students' ease in communicating in the L1 to generate discussion; in history, for example, teachers still lecture as they were accustomed to doing in Portuguese, and students sit listening or respond with "yes" or "no." In mathematics, explanations which should be clearer in the L1 continue to be complicated.

Observations favorable to PEBIMO

1. **Student participation in the classroom**
   In comparison to SNE students, who are often withdrawn, PEBIMO students are more active and less inhibited about speaking. More students volunteer to speak in bilingual classrooms, and there is more interaction between teacher and students.

2. **Classroom climate**
   PEBIMO teachers and students have a comfortable relationship in and outside class, and it is easy to see the affection they have for each other.

3. **Teacher role and behavior**
   The SNE teacher spends quite a bit of time controlling the class, and must function as a disciplinarian; in contrast, the bilingual teacher spends more time teaching. We observed cases where, for example, a PEBIMO student asked a question about something he did not understand, and the teacher gave him special help.

4. **Classroom discussion**
   In general, SNE teachers lecture for longer periods without interruption or intervention from students. Even though PEBIMO teachers' methods can be criticized (see above), we observed that they ask more open questions and that there is more negotiation of meaning in bilingual classes.

5. Story comprehension and re-telling

PEBIMO students can easily recount information which they read in the L1. In contrast, SNE students have difficulty demonstrating comprehension of lesson contents.

6. Transmission of cultural values

It appears that students who learn in the L1 are closer to the teacher, show more respect, and retain more traditional values. For example, bilingual students in Gaza hand in their papers with one hand supporting the other, in traditional style to show respect.

APPENDIX F

Summary of Interview Responses

Responses critical of PEBIMO

1. **Functioning of the project and management of logistical concerns**
   According to those interviewed, many project activities were done only at the last minute. From the beginning, project activities ran late. As one person explained, "We were not ready to initiate the experiment" (my translation). There was not enough time during any one year to develop the materials and distribute them to the field when needed, and this meant delays of one to four months during which bilingual classrooms went without books.

2. **Lack of financial support for field personnel**
   From the beginning, teachers requested financial incentives for their work. PEBIMO and SNE salaries are the same, but the project has demanded more work, including the teaching of recuperation classes for the bilingual students who have not passed each grade. The provincial coordinators complained about the lack of funds for travel and housing to support their field visits.

3. **Need for more training in bilingual education**
   Teachers requested more technical assistance in the field, especially in the area of language didactics. Their students have experienced difficulties in transitioning to the target language, and teachers require more and better strategies for improving students' Portuguese competence.

Responses favorable to PEBIMO

1. **Active classroom participation**
   Language is the most fundamental element of teacher-student communication. PEBIMO students can express themselves and they feel at home in the classroom. Bilingual teachers greatly enjoy teaching in the L1.

2. **Facilitation of adaptation to the initial school experience**
   The L1 brings the school closer to the student's reality, and the culture shock when the child begins school is less acute. There is also a closer relationship between the teacher and the community.

3. **Facilitation of initial literacy (learning to read and write)**
   The student simply has to connect the sound to the letter to be able to read and understand in the L1. Many teachers feel that skills in the L1 are actually transferred to Portuguese, as predicted.

4. **Facilitation of comprehension of content area instruction**
   Use of the L1 as a medium of instruction facilitates learning in all subject areas beginning the first day of classes. As one teacher explained, "Our work becomes easier" (my translation).

5. **Valorization of the language and culture of the student and community**
   Even though this was not an original objective of the project, participants have discovered and promoted school use of the mother tongue to demonstrate the value of the language and culture of the student.

6. **Less failure and dropout than in SNE**
   Even though PEBIMO did not have the same system for repeaters as SNE, the general perception is that fewer students fail, and fewer drop out of school for linguistic or academic reasons.

7. **Higher achievement than SNE**
   PEBIMO teachers are proud of the performance of their students, and feel there is a difference between them and SNE students. The school directors believe that PEBIMO students are "better than the others" (my translation).

8. **Technical support with materials and training**
   Despite the critiques above, bilingual teachers recognize the value of the support received. They think that the PEBIMO textbooks, especially those written in the L1, are better than the SNE materials. Their SNE colleagues request copies.

Why parents and guardians are pleased with PEBIMO

Parents apparently agree with PEBIMO now, despite having had doubts at the beginning. According to the teachers and provincial coordinators, parents originally had doubts because there was no Portuguese instruction in grade 1. At that time there was a lack of information about the project; only a few parents had attended a meeting held during the preparatory year. Now they are requesting bilingual education for all of their children. The reasons are:

1. **Children can read and write the L1.**
   Religion is quite important to many parents, and they are proud when their children can read the Bible in the mother tongue at church. Another benefit of L1 literacy is that formerly they had to pay someone from outside the family to write letters to family members working in the mines in South Africa, but now one of the children can write letters as well as read them.

2. **They receive free school materials.**
   Without a doubt, it is a great help to receive school materials free of charge. Nevertheless, teachers said that even without materials parents liked bilingual education.

3. **Bilingual education valorizes the mother tongue.**
   Parents are pleased because their own language is studied and because students learn something about their home language and culture.

4. **They can see their children's high achievement in PEBIMO.**
   Parents say that compared with their children in SNE, their children in PEBIMO like to study more and take more initiative at home. Now that they can read and write in both languages, they help their siblings with their schoolwork.

APPENDIX G

Results of Portuguese Tests

End of 1996 school year

Generally speaking, there were no large differences between PEBIMO and SNE students on the tests of dictation and individual oral competence/reading in Portuguese.

Portuguese dictation test

Province	Schooling type	No. of classes	No. of students	Average test score
TETE	PEBIMO	4	69	74%
	SNE	2	78	77%
				Difference + 3 SNE
GAZA	PEBIMO	4	94	76%
	SNE	2	74	84%
				Difference + 8 SNE

The average difference between PEBIMO and SNE test averages was 5 percentage points. These results show that PEBIMO students, in addition to being able to read and write their mother tongue, can write Portuguese at a level nearly as high as that of SNE students.

Individual test of Portuguese oral and reading competence

Province	Schooling type	No. of students (+ achiev)	Average test score (+ achiev)	No. of students (- achiev)	Average test score (- achiev)
TETE	PEBIMO	20	82%	17	48%
	SNE	10	86%	10	44%
		Difference	**+ 4 SNE**		**+ 4 PEBIMO**
GAZA	PEBIMO	19	88%	15	56%
	SNE	7	89%	6	74%
		Difference	**+ 1 SNE**		**+ 18 SNE**

These results show that in Portuguese oral competence and reading, PEBIMO's "best" students performed similarly to SNE's "best" (as identified by their teachers). Among the "worst" there is more variation, which favors PEBIMO in Tete and SNE in Gaza. This also shows that PEBIMO students benefit rather than suffer from bilingual education because they have similar Portuguese levels and can also read and write in the mother tongue.

The differences between PEBIMO and SNE students on the written Portuguese test were significantly in favor of SNE students.

Written Portuguese test

Province	Schooling type	No. of students	Average test score	No. of girls	Average girls' score	No. of boys	Average boys' score
TETE	PEBIMO	69	41%	35	41%	34	41%
	SNE	78	49%	42	50%	36	46%
		Difference	**+ 8 SNE**		**+ 9 SNE**		**+ 5 SNE**
GAZA	PEBIMO	95	43%	39	47%	56	41%
	SNE	81	68%	41	69%	40	66%
		Difference	**+ 25 SNE**		**+ 22 SNE**		**+ 25 SNE**

These results show that PEBIMO students have not yet had time to develop the linguistic skills necessary to use Portuguese as a medium of instruction (nor as a medium of evaluation). We know that the model was not optimal and that this comparison between PEBIMO and SNE is not really valid; the next appendix provides an interpretation of the test results in Portuguese and natural sciences using the mathematics results as an indicator of the inherent differences between PEBIMO and SNE comparison classes.

APPENDIX H

Test Results and Analysis

End of 1996 school year, Grade 4

Even before we administered the tests, we knew that the classes we tested were not really comparable. Nevertheless, we decided to test these students to analyze the differences with the objective of clarifying both the difficulties students experienced and possible aspects in which they benefited from bilingual education.

As discussed in Chapter 4, there were three principal conditions which caused the class samples to lack comparability:

1. Initial selection of PEBIMO classes
2. Lack of a mechanism for repeating years in PEBIMO
3. Differences between PEBIMO and SNE in their exposure to Portuguese

The mathematics test as an indicator of inequality

The mathematics test can be seen as a key for understanding the data. Although the instructions were given to students in Portuguese, the mathematics test did not require a lot of language. Most of the sections had only one term, for example *Subtracção* [Subtraction], followed by numeric problems; in fact, only four of the 52 questions involved reading in Portuguese, and that is because they were word problems. This is why we can use the test results in mathematics as a rough measure of the average difference in ability level inherent in the classes in the sample. As demonstrated by the results below, the average difference between PEBIMO and SNE in Tete was 16 percentage points and in Gaza 28 percentage points.

Mathematics test results

Province	Schooling type	No. of classes	No. of students	Average test score
TETE	PEBIMO	4	69	41%
	SNE	2	74	57%
				Difference + 16 SNE
GAZA	PEBIMO	4	98	39%
	SNE	2	83	67%
				Difference + 28 SNE

We can use this difference between classes in each province to help us interpret the data from the other tests in natural sciences and Portuguese, whose results appear somewhat negative for PEBIMO if we do not compensate for the differences inherent in the sample. (For a more complete explanation, see Chapter 5, section 5.3.5.)

Natural sciences test results

Province	Schooling type	No. of classes	No. of students	Average test score
TETE	PEBIMO	4	68	35%
	SNE	2	63	41%
				Difference + 6 SNE
Correction: 16 (difference) - 6 (SNE) = + 10 PEBIMO				
GAZA	PEBIMO	4	98	33%
	SNE	2	85	61%
				Difference + 28 SNE
Correction: 28 (difference) - 28 (SNE) = 0 (equal)				

Portuguese written test results

Province	Schooling type	No. of classes	No. of students	Average test score
TETE	PEBIMO	4	69	41%
	SNE	2	78	49%
				Difference + 8 SNE
Correction: 16 (difference) - 8 (SNE) = + 8 PEBIMO				
GAZA	PEBIMO	4	95	43%
	SNE	2	81	68%
				Difference + 25 SNE
Correction: 28 (difference) - 25 (SNE) = + 3 PEBIMO				

In summary, in terms of raw scores, PEBIMO students do not demonstrate the ability levels of their colleagues in SNE. Nevertheless, when we correct by using the difference in level of the sample classes on the mathematics test, we can see that PEBIMO students have made greater progress in their schooling. This suggests two things:

1. Although PEBIMO classes were slightly disadvantaged from the beginning (as explained above regarding student selection for experimental classes), they succeeded in making more rapid progress than SNE students in the three subjects tested, in addition to being able to read and write the L1.
2. With more development of the L1 and more practice in Portuguese as a second language throughout grade 5, there is reason to believe that PEBIMO students will advance even more rapidly and demonstrate even better results on the final tests in 1997.

APPENDIX I

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