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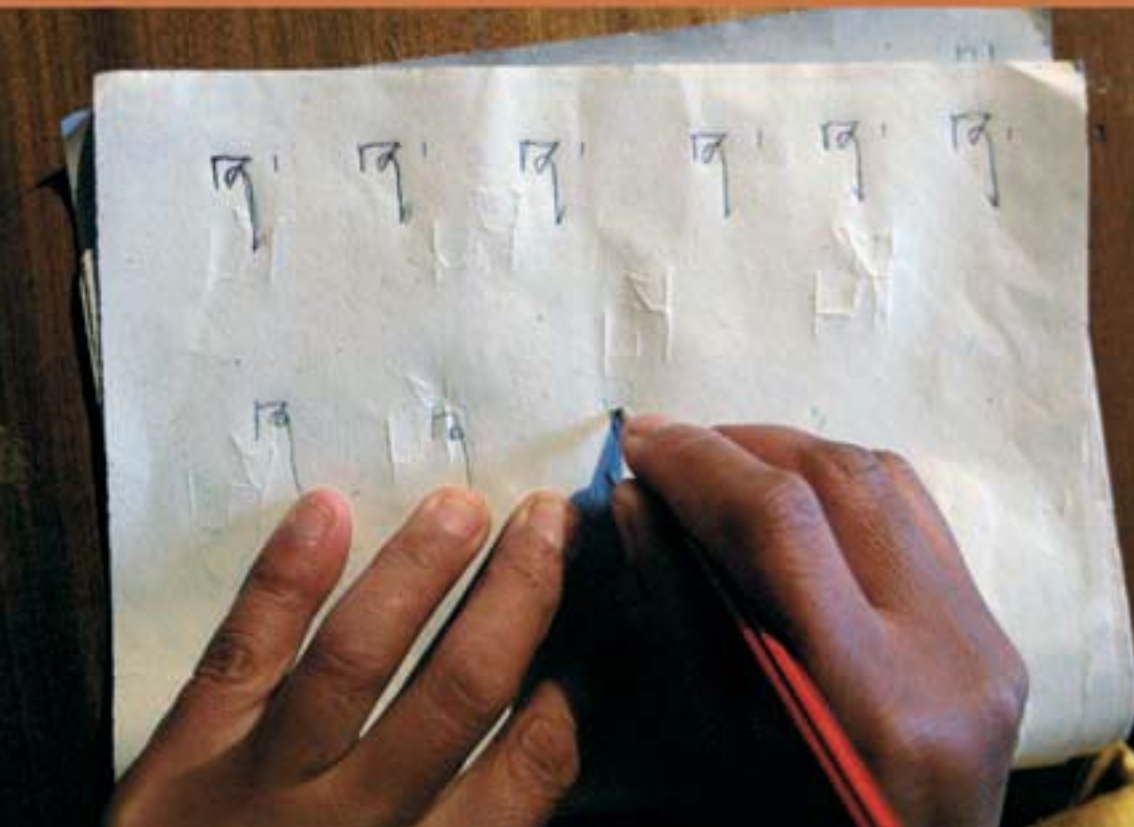
Mother Tongue Matters:
Local Language as a Key to Effective Learning



Mother Tongue Matters: Local Language as a Key to Effective Learning

UNESCO

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Introduction

Several concerns converge on the issue of using local or minority languages in formal education. One of these has to do with increasing awareness of the value of the world's linguistic and cultural diversity. Many of the world's languages and cultures are in danger of disappearing in the coming decades for a variety of political, economic and social reasons. For those concerned by this phenomenon, the challenge is to slow it down or stop it by promoting respect for linguistic and cultural rights, peaceful co-existence in multicultural societies and the preservation of our biocultural heritage.

Another concern has to do with the commitment of the world's nations to the goals of Education for All (EFA) and the limited likelihood that these goals will be realized by 2015 or, indeed, at all. Experts acknowledge that progress towards the EFA goals of improved quality of education and expanded educational opportunity for marginalized and underserved groups 'has not been sufficient and fast enough to meet the target dates, especially in sub-Saharan Africa, South and West Asia, and the Arab States' (UNESCO, 2006*a*, p. ii).

A third concern, related to the second, is clear at local and national levels when communities, parents, local education officers and national authorities recognize that the longstanding language-in-education policies they have been relying on to usher in economic and social progress have simply not worked. Parents may wonder why they are investing so heavily in an education that yields no employment; teachers spend their careers attempting to communicate knowledge in an international language to students who cannot assimilate it; education officers in rural areas despair of ever improving the national standing of their schools when most of their students fail final exams; and national education authorities meet with their international counterparts and realize that ineffective national schooling exists in other countries as well.

Each of these concerns can be addressed in some measure by explicitly including local languages in formal education systems. The research evidence today clearly shows that using the learners' mother tongue is crucial to effective learning. Indeed, some educationists have argued that

the only countries likely to achieve EFA are those where the language of instruction is the learners' mother tongue. However, the prevalence of globalization and democratic ideals demonstrates that students must be proficient in international and regional languages to gain access to wider society and to participate meaningfully in their world. In response to these realities, UNESCO reaffirmed its commitment to the use of multilanguage education in 2003 and emphasized the central role of mother-tongue instruction in achieving quality EFA (UNESCO, 2003). Box 1 provides definitions for the language-related terminology used in this study.

Box 1. Language terminology

Local language refers to the language spoken in the homes and marketplaces of a community, as distinguished from a regional, national or international language.

Indigenous language refers to the language spoken uniquely by an indigenous community and/or with origins in a given community or country (Spolsky, 2002). Given the nature of language change, however, many 'indigenous' languages do not actually meet this definition. The languages of First Peoples communities of the Americas are often referred to as indigenous languages.

National language is used in some parts of the world (including sub-Saharan Africa) to refer to languages unique to the nation as distinguished from international languages (cf. Tabi-Manga, 2000). In other countries, 'national language' refers to the official language (Bamgbose, 1991). This report uses the first definition.

Mother tongue or mother language refers to a child's first language, the language learned in the home from older family members. (See UNESCO, 2003, p. 15 for a more extensive definition.) In some places, the term has taken on more of a culturally symbolic definition, so that an individual might say, 'I don't actually speak my mother tongue'. A related term, *home language*, refers to the language or languages spoken in the student's home.

Minority language refers to the language spoken by a numerically smaller population and/or to the language spoken by a politically marginalized population whatever its size (UNESCO, 2003, p. 13). In the second case, the term *minoritized language* is sometimes used (Lewis and Trudell, 2008, p. 266).

Vernacular refers to a language that is not formally recognized and that is used in informal contexts only. The term *vernacular education* has been used to refer to mother tongue-based education, particularly in the Pacific (Siegel, 1997; Litteral, 2004).

Country case studies

The following four case studies demonstrate the potential and challenges of mother-tongue-based bilingual education. These are not the only national contexts in which mother-tongue bilingual education is being implemented; important programmes are also being carried out in countries such as Burkina Faso, Cameroon, China, Ethiopia, Guatemala, the Philippines and South Africa. However, these four particular studies have been selected for three primary reasons:

1. The educational challenges to which they are responding are common in their regions of the world. Malian concerns about educational quality and access are certainly common to sub-Saharan African nations; Peruvian concerns about providing a means for indigenous populations to integrate with dignity into mainstream society are shared in other Andean nations. The Papua New Guinean case is arguably unique in terms of the large numbers of languages being targeted for bilingual education; however, the social and educational obstacles which the programme is meant to overcome are not unusual in neighbouring Pacific nations. As for the United States study, the challenges of providing high quality education to immigrant populations exist across North America and Europe.
2. The responses made by the actors in these studies reflect some innovative approaches to solving the problems of low academic achievement by making particular language choices in the formal education sector. Numerous lessons emerge from these studies that can be productively shared and analysed for their applicability to other nations in similar circumstances.
3. The programmes have all been operating over a decade or more and have the potential for yielding insights that may not be evident in programmes of shorter duration.

These case studies provide valuable insights into the implications of the various education choices; they demonstrate a number of important lessons for those considering mother tongue-based bilingual or multilingual education programmes. Box 2 provides the terminology referring to education programmes involving more than one language, distinguishing them by which languages are involved and how they are used.

Box 2. Terminology: formal education programmes and language

Mother-tongue instruction or mother-tongue medium instruction refers to the use of the learner's mother tongue as a medium of instruction (UNESCO, 2003, p. 14).

Bilingual education refers primarily to the use of two languages in a formal education system (UNESCO, 2003, p. 17). Bilingual education need not include a local language; however the most common type of bilingual education (also called *mother-tongue-based bilingual education*) attempts to use the students' mother tongue somehow in the curriculum. The more extensive the use of the mother tongue for instruction, the 'stronger' the bilingual education programme is considered to be (Malone, 2008).

Multilingual education refers to the formal use of more than two languages in the curriculum (UNESCO, 2003, p. 17). Countries with multiple regional languages of wider communication or more than one official language may support multilingual education that includes children's mother tongues and the more widely spoken languages of the nation. As with bilingual education, a multilingual education programme is considered 'stronger' as the mother tongue is used more extensively as a medium of instruction.

Transitional bilingual education or multilingual education refers to the objective of a given education programme (Stroud, 2002, p. 26). If the programme involves a planned transition from one language of instruction to another, at any grade, it is called transitional.

Maintenance bilingual education or multilingual education refers to an education programme that aims to use both (or all) the chosen languages as medium of instruction throughout all the years covered by the curriculum (Corson, 1999). Maintenance bilingual education is also referred to as *additive* bilingual education, since the second language is added to but does not displace the first language as a media of instruction.

Immersion education refers to a model in which the student is entirely 'immersed' in a language that is not the mother tongue for most or all curriculum content (Thomas and Collier, 1997, p. 58). Where the student is from a majority language community, immersion education can be quite effective, but when the student is a minority language speaker, immersion can significantly impede academic achievement.

Intercultural education emphasizes mutual understanding between two or more cultures (Lopez and Küper, 2000). It may or may not include the languages associated with those cultures in the curriculum.

Mali: *Pédagogie convergente*

In Mali, as in other former French colonies in Africa, the challenges faced in education and in the development of African languages can be largely attributed to the legacy of French colonial policy. The historical dominance of the French language in the formal education systems despite the lack of French fluency among most of the African population has led to poor learning outcomes, teaching strategies that do not promote comprehension and the stunting of students' natural learning abilities.

In 1979, the government of Mali took the radical decision to introduce the use of national languages in formal education as an attempt to solve critical problems of student abandonment, failure and grade repetition. Bilingual education began on an experimental basis; national languages were introduced in Grades 1 through 6 as the medium of instruction.

In 1987, a new pedagogical approach called *Pédagogie convergente* (or 'Convergent pedagogy') was introduced on an experimental basis. This new model had been developed at the Belgian Centre international audiovisuel d'études et de recherches (CIAVER). The term convergence describes a pedagogy that emphasizes interactive learning and links teaching methods of the first and second languages. The child's mother tongue is used as the language of instruction throughout primary school and the second language is taught in such a way that the learners become functionally bilingual. The goals of this model are to improve school access and learning outcomes for students, to integrate the school into the social and cultural environment of the students, and to produce functionally bilingual learners.

In *Pédagogie convergente* schools, students begin primary school in their first language, and they learn to read and write in it before starting to learn French. By the fifth and sixth grades, half of the teaching time is allocated to French and half to the national language. At this stage, students are expected to be able to learn subject content in each of the two languages. By the end of the six years of the primary school cycle, both languages are used equally as medium of instruction. Students in *Pédagogie convergente* classrooms take the same primary school leaving exam as students in French-only classrooms, but they are also examined in subjects specific to *Pédagogie convergente*.

Programme scope and learning outcomes

The *Pédagogie convergente* model was tested for six years in the town of Ségou. In September 1993, the first generation of *Pédagogie convergente* students finished the basic six years of elementary school and 77 per cent passed the national entry exam to seventh grade compared with the national average of 66 per cent (Traoré, 2001, p. 23). Assessments of *Pédagogie convergente* have shown that student achievement is significantly higher than in French-only schools. It was these findings that led to the extension of the programme to other primary schools in Mali beginning in 1994. From 1994 to 2000, *Pédagogie convergente* students generally achieved better results on the seventh grade entrance exam than did the other students (Table 1).

Since 2005, Mali has been generalizing a curriculum of basic teaching that uses the same methods and learning materials as *Pédagogie convergente*.

Pédagogie convergente was extended beyond the pilot schools beginning in 1994 and, by 2005, it was being used in 2,050 public schools nationwide and in 11 of the 13 national languages: Bamanankan, Fulfuldé, Songhay, Tamasheq, Dogon, Soninké, Bomu, Syenara, Tyeyaxo, Mamara and Khassonké (UNESCO, 2006, pp. 10-11).

Table 1. Average seventh-grade entrance exam scores, Ségou, 1994-2000

Year	*Pédagogie convergente* schools	French-only schools	Score differential
1994	56.52	40.62	15.90
1995	37.64	42.34	- 4.70
1996	75.75	54.26	21.49
1997	50.00	36.89	13.11
1998	71.95	48.30	23.65
1999	78.75	49.13	29.62
2000	46.69	45.12	1.57

Source: Ministry of Education, Mali.

In 2000, the first student generation in the extended *Pédagogie convergente* programme reached seventh grade. Regional results for the entrance exam nationwide showed that these students performed better overall than students in French-only schools; *Pédagogie convergente* student achievement was an average of 16.23 points higher than that of French-only school students (Table 2).

Table 2. Average seventh grade entrance exam scores by region, 2000

Region	*Pédagogie convergente* schools	Monolingual French schools	Difference in score averages
Kayes	68.10	49.04	19.06
Koulikoro	92.90	61	31.90
Sikasso	65.10	46.03	19.07
Ségou	46.69	45.12	1.57
Mopti	79.22	51.03	28.21
Tombouctou	62.00	62.01	- 0.01
Gao	59.56	53.51	6.05
Bamako	75.54	56.75	18.79
National	68.57	52.34	16.23

Source: Ministry of Education, Mali.

Another study based on 1996 test results for 24 *Pédagogie convergente* schools and 21 monolingual French schools compared language (Bamanankan and French, respectively) and mathematics scores of 1,260 students in first and second grades. Both language and mathematics scores were higher in *Pédagogie convergente* schools than in monolingual French schools (Table 3).

Table 3. First and second grade mathematics and French test scores, 1996

Grade	*Pédagogie convergente* schools		Monolingual French schools	
	Mathematics	National language (Bamanankan)	Mathematics	French
First	52.80	48.70	35.70	39.50
Second	57.60	48.40	40.00	45.20

Source: Fomba et al., 2003.

Student performance in third grade[1] provides further evidence of the superiority of *Pédagogie convergente* for teaching mathematics and French. Students in *Pédagogie convergente* schools begin learning French only in second grade, but still obtain better results than the children in monolingual French schools. Even French teaching is more effective with the *Pédagogie convergente* model (Table 4).

Table 4. Third grade test scores, mathematics and French, 1998 and 1999

Year	*Pédagogie convergente* schools		Monolingual French schools	
	Maths	French	Maths	French
1998	52.80	48.70	35.70	39.50
1999	57.60	48.40	40.00	45.20

Source: Fomba et al., 2003.

From the early years of schooling, therefore, students in *Pédagogie convergente* schools perform significantly better in French and mathematics than their counterparts in French-only schools. In addition, *Pédagogie convergente* students are reported to be enthusiastic, active and communicative learners.

Strengths

Several factors have contributed to the successful introduction of *Pédagogie convergente* in Mali's primary schools.

The political will to actively support instruction in national languages: mother-tongue instruction programmes largely depend on sustained political will to support them. In Mali, the use of national languages in basic education has been given the space and the resources to evolve and improve over time. Evaluation of the first experience using national languages in education in 1979 revealed that learning outcomes had

1. The 1998 study, conducted in the Dogon country, involved 410 students. The 1999 study, conducted in *Pédagogie convergente* schools using Songhay, Tamasheq and Soninké, involved 1,960 students.

improved but that difficulties remained, especially upon transition to French. Thus the *Pédagogie convergente* programme was developed, implemented and evaluated. This kind of programme development was only possible in an environment of political support.

Development of a bilingual education curriculum. Bilingual education is most likely to succeed if it consists of more than a change in the language of instruction. In Mali, *Pédagogie convergente* involves not only a change in language of instruction; it is a bilingual curriculum with specific educational objectives, and teaching and learning methods and materials. The student-centred, project-focused pedagogy has contributed significantly to improved learning outcomes in Mali's bilingual primary schools.

Including the national language in the primary school leaving exam. In Mali, tests in national languages are included as part of the primary school leaving exam. At the end of primary school, students from *Pédagogie convergente* schools take another set of tests on the particular competencies taught in *Pédagogie convergente* in addition to the national exam. Evaluating these competencies in the primary school leaving exam demonstrates the legitimacy and value of the unique learning objectives of *Pédagogie convergente*, while at the same time demonstrating that *Pédagogie convergente* students' achievement levels are at least as high as those of their counterparts in the traditional, French-language school system. This helps to convince students, parents and teachers that bilingual education is not second-class education.

Weaknesses

The major weaknesses of Mali's *Pédagogie convergente* are related to the following factors:

Financial support. Outside partners have financed the testing and expansion of *Pédagogie convergente* to a significant extent. From 1984 to 1993, the Agence de Coopération Culturelle et Technique (ACCT) was among the primary financers of the pilot programmes of the *Pédagogie convergente* model (Traoré, 2001, p. 11). The United States Agency for International Development (USAID) was responsible for the expansion of the programmes starting in 1994, after which the World Bank took

the lead. It is not clear whether financial long-term planning or any mechanisms exist to integrate the costs of *Pédagogie convergente* into the national education budget.

Pédagogie convergente improves the cost effectiveness of basic education, improving learning achievement levels significantly.[2] Currently, however, per capita costs for *Pédagogie convergente* students are higher than in the French-language school system. This is partly due to the investment costs of the expansion phase (related particularly to teacher training and materials production costs). It is not clear how these costs will be met or whether long-term financial planning is being done to support the programme.

Degree of integration into national education support systems. Despite the fact that *Pédagogie convergente* principles are becoming part of the normal curriculum nationwide, its integration into national support systems is not entirely coherent. For example, initial teacher training does not include training in *Pédagogie convergente* or in the bilingual curriculum, even though this model is becoming the norm. Rather, primary school teachers are trained to use *Pédagogie convergente* in three 20-day sessions after having completed their initial teacher training. If this programme is to become sustainable in the long term, it has to be better integrated into initial teacher training. Moreover, teachers need to be more thoroughly trained; they cannot fully acquire the principles and orientations of this educational approach in only 60 days.

Issues of expansion. Expansion of *Pédagogie convergente* to all the primary schools in Mali poses a number of challenges having to do with the choice of local language, the availability and the deployment of teachers, teacher training, and the production of adequate teaching and learning materials in all the national languages. In multilingual communities with only one school, the decision concerning the language of instruction is a challenge since every community has a right to education in its mother tongue. There are not enough trained teachers currently available who can teach the primary school cycle in all of the national languages; in addition, some teachers will need to be reassigned

2. Cf. Fomba et al., 2003, p. 36. '…les meilleurs rapports coûts-efficacité se situent au niveau des écoles à *pédagogie convergente* qui se caractérisent par des coûts relativement modérés au regard des bénéfices que les élèves en tirent en termes d'acquisition.'

to areas of the country where they speak the language of the community. The development of teaching and learning materials in all national languages presents further difficulties: the lack of human resources, especially competent illustrators; the lack of sufficient materials written in national languages; and insufficient capacity for production and distribution of school books. All of these factors are major challenges for expansion.

Limited evaluation of student achievement. So far, the evaluation of student achievement in *Pédagogie convergente* has been limited to mathematics and French. Broader assessment is needed, especially of the subjects specific to *Pédagogie convergente* having to do with learning achievement in national languages. It is also important to evaluate the learning achievement in secondary school to determine the long-term results of *Pédagogie convergente*.

The available evaluation data show that French language learning achievement is not as strong as mathematics learning achievement. French acquisition still seems to present some difficulties, even in *Pédagogie convergente* schools. *Pédagogie convergente* students generally score higher on the French examinations than do their counterparts in French-only classrooms. However, more detailed examination shows that the higher results are in comprehension and vocabulary, not in grammar and conjugation (Table 5). These observations are in line with the curriculum of *Pédagogie convergente*, which aims primarily at teaching fluent expression and communication and less at the systematic rote teaching of grammar.

Table 5. Students' performance in French in fourth grade, 2003

Subject	***Pédagogie convergente* schools**	**Monolingual French schools**
Grammar	45.00	45.01
Conjugation	40.10	40.30
Comprehension	45.20	39.80
Vocabulary	55.60	51.50
French	44.00	42.60

Source: Ministry of Education, Mali.

Lessons learned

The principal lessons learned in this case study have to do with the importance of developing target languages and educational models for mother-tongue-based bilingual education programmes.

- For Mali's national languages, linguistic development is needed before they can be introduced in education. Corpus planning activities (Cooper, 1989, p. 149), including the extension of the language for new functions and topics (also called lexical innovation or language modernization), the re-establishment or 'rescue' of vocabulary in danger of being forgotten, and the regularization of spelling and other written conventions are a prerequisite for effective learning and for producing high quality teaching and learning materials. Early experimentation showed that some concepts were not easily transferable to the national languages due to a lack of appropriate technical vocabulary in those languages. Language development, and especially lexical innovation, are a prerequisite for using national languages in education.

- Educational models evolve with time. Educational reforms should be introduced progressively, on an experimental basis first, in order to implement necessary improvements. In Mali, *Pédagogie convergente* was the second experience with the use of national languages in education. Another curriculum is currently being developed based on lessons learned through *Pédagogie convergente*.

- The use of local languages as medium of instruction does not suffice to guarantee optimum effectiveness of teaching and learning. The use of national languages in basic education was first introduced in 1979, but nothing else in the curriculum, such as teaching methods and content of instruction, was changed. As a result, learning outcomes did improve for students in the experimental schools, but not a great deal. It was concluded that the use of the national languages in education could not be maximally successful without revising teaching methods and developing adequate teaching and learning materials. The transition from the national language to French process also needed specific attention. Thus, the use of national languages has been just one component of *Pédagogie convergente*.

Papua New Guinea: vernacular education in hundreds of national languages

Papua New Guinea is the most linguistically diverse country in the world, with 820 living languages spoken by 5.4 million people. About 85 per cent of the population lives in rural areas on subsistence farming, hunting and gathering. Port Moresby, the only city of any significant size in the country, is home to the national government and the civil service. Extractive industries thrive in the country, but local managerial and technical skills are limited, and indicators of social well-being such as health and nutrition have declined in recent decades.

Before the mid-twentieth century, nearly all schools in Papua New Guinea were church-run and used the local languages extensively. However, with the establishment of a national education system, the government decreed that English should be the exclusive language of instruction in that system. When the country became independent in 1975, the government continued to support an English-only education policy in the formal education system.

However, dissatisfaction with the relevance and evident lack of effectiveness of this system began to grow. A community-based non-formal pre-school education movement called the Tok Ples Pri Skul began in the late 1970s, teaching literacy and numeracy in the local languages. In the 1980s, it began to appear that the formal education system was contributing to the alienation of the nation's youth. Along with government responses to this problem, communities were encouraged to establish more non-formal pre-school programmes. By 1994, more than 2,300 such programmes existed in over 200 languages with nearly 80,000 students.

Meanwhile, an education sector review was carried out in 1991. Educational reform was recommended in which national languages would be used as medium of instruction in the first three years of formal schooling. Evaluations of the Tok Ples Pri Skul had shown that children who became literate in local languages before entering the formal education system had a learning advantage over their classmates, and made the transition more easily to the all-English classroom than those who had not been enrolled in the local-language pre-school (Wroge, 2002).

The education reform was enacted in 1995. By 2000, the national formal education system was providing instruction in kindergarten (the Preparatory Year) and Grades 1 and 2 (Elementary 1 and 2) in 380 national languages in addition to Papua New Guinean Pidgin and English. By 2003, Papua New Guinea was providing Preparatory Year and Elementary 1 and 2 in over 430 languages (Litteral, 2004, p. 2) and the goal has been to introduce such education in still more languages.

Thus the new education system provides three years of mother-tongue-based education, in which reading and writing are taught in the language of the community and English is taught as a second language. Beginning in Grade 3, children then move into English-medium instruction.

Programme scope and learning outcomes

Results of programme assessments were published in 2005 and 2006 although no longitudinal analysis of educational outcomes has been carried out as yet. However, the available studies indicate that access to education has been enhanced and drop-out rates have dropped. Some of the positive outcomes that have been attributed to the new education system include greater ease of becoming literate and learning English, higher enrolment, particularly among girls, and greater classroom engagement by the students. Teachers report that students are more active and self-confident about learning. In the provinces that first implemented the reform, results from the 1998 Primary Education Certificate Examination (administered at the end of Grade 6) showed that children scored much higher than in other provinces (Klaus, 2003, p. 106). The rapid spread of the programme throughout the country could be seen as another important indicator of its success.

Strengths

Broad-ranging support. The introduction of national languages in the formal education system of Papua New Guinea was a key component in a larger reform process that aimed to restructure an education system that was not responding to the educational needs of the country. The reform process was conceptualized over a period of twenty years and involved significant

national and international input. This meant that when implementation began, it had significant buy-in at many levels of the system.

Communities and parents were among those who bought into the new system, a fact which has been critical to its success. Over the years the public had been consulted on the relevance of the existing education system and on the possibilities of a system that integrated local languages into the curriculum. Widespread fears that the existing education system was alienating children from their cultures and communities, and failing to prepare them to live and be active in their communities after schooling, caused the communities to look favourably on the proposed alternative. Thus, the use of indigenous languages in formal education was in many ways a response to popularly perceived needs.

Building on positive prior experience. The education reform of 1995 built on an existing positive experience with the widespread and popular Tok Ples Pri Skul. This had several implications: the population appreciated this kind of education; the means had already been developed for creating materials and curriculum in local languages; personnel experienced in local language education issues were in place at the national and provincial levels; and a network of cooperating communities, non-governemental organizations (NGOs) and provincial governments was already in place.

Community involvement. Communities in Papua New Guinea are deeply involved in the elementary school programme; they manage the schools and provide the school building, select the teachers for training, choose the language of instruction, and assist in the development of a culturally relevant curriculum and in carrying out learning activities. This ensures that what is taught is culturally and socially relevant, and contributes to the creation of strong relationships between the community and the school. In this way, community support for education in local languages is ensured and the education becomes more relevant.

Financial planning. The financial planning of the reform has aimed at containing costs so as to increase the likelihood of long-term sustainability. Initial investments have been financed from outside donors, but the long-term recurrent costs are expected to be sustainable with national resources. The cost per student is much lower than in the English-only system. Cost savings are achieved through the involvement of the communities as described above. In addition, the teachers who are engaged and trained for the programme are typically not certified primary-school teachers, and

so can be paid less than certified teachers are paid. A pragmatic, grassroots approach is taken to the development of the alphabet, the curriculum and the instructional materials. Where no writing system exists for the language, the community develops it using alphabet design workshops. Many teaching materials and the curriculum are also developed locally, with the help of community members. Moreover, materials in local languages are deliberately made to be simple. For example, certain readers are produced as templates, into which local-language text can be inserted.

Weaknesses

Limited years of mother-tongue instruction. One weakness of this bilingual education system is that schooling in national languages is limited to relatively few years. Expecting students with no English proficiency to gain sufficient fluency in that language in three years may not be realistic. Other arguments against transitional bilingual education programmes could be made here; optimum cognitive development and academic achievement require more than three years of instruction in the mother tongue. However, the Papua New Guinea government made this choice deliberately because of its linguistic, social and financial context. This choice makes education available in many languages, even though it limits their use to the first years of schooling.

Reliance on teachers and communities for materials development. The active participation of communities and non-certified teachers to develop the alphabet and instructional materials is crucial to the success of the programme, but relying on non-professionals can prove to be a challenge as well. For example, the simplicity of the materials requires teachers to be trained specifically in their use and development; their limited number also requires teachers to develop additional learning materials themselves and they need a good command of teaching methods in order to sustain educational quality. Where the teachers are not highly trained, this can be a real challenge.

Uneven national implementation. The decentralized management of the new education system, with autonomous community-managed elementary schools, contributes to the successful implementation of this education reform in Papua New Guinea, but it also constitutes one of its major weaknesses. The implementation of national policy largely

depends on management by the communities and so significant disparities exist in the implementation of the reform across the country. Moreover, experienced education personnel are not always available, and remote areas have suffered from shortages of educational materials and lack of teacher trainers. Regional inconsistencies between national policy and local implementation may be seen as a consequence, making the regulation of educational quality difficult to achieve.

Incomplete administrative support. The local organization and management of elementary schools and the methods used to produce curriculum materials differ substantially from the previous primary-school education system. It is thus very important to intentionally raise awareness of these aspects of the new elementary school within the existing education establishment. The availability and the training of primary-school teachers is another administrative challenge that has arisen since primary schools have become bilingual. Some regions do not have enough local-language-speaking primary-school teachers to provide bilingual teaching in lower primary grades. Also, most existing primary-school teachers lack experience in bilingual teaching and local-language literacy. Providing adequate training to a sufficient number of primary-school teachers is thus a challenge. In addition, nationwide monitoring of student achievement needs to be attended to, since the standardized testing used in the English-only system is no longer adequate. Similar instruments are needed for monitoring student achievement in the many different languages being used.

Lessons learned

The lessons learned in this case study reflect the importance of policy and planning for achieving effective mother-tongue-based bilingual education.

- The multiplicity of languages in a country does not constitute an insurmountable obstacle to their use in formal education, even in a country with limited financial resources. Papua New Guinea, the most linguistically diverse country in the world, has successfully introduced initial formal education in more than 430 languages. No other country in the world uses so many different languages in formal education.

- Bilingual education can only be introduced and sustained if it is politically supported and is seen as effective by the population and the educational establishment. The success of the education reform in Papua New Guinea is largely due to the positive attitude of the population, based on their experience with local-language education in the *Tok Ples Pri Skul.*

- The planning of bilingual education reform has to take account of the financial capacities of the country in order to be sustainable. In the case of Papua New Guinea, a pragmatic approach to implementation of the education reform is helping to contain costs and surmount the difficulty of producing learning materials in different languages.

- Outside financial assistance and technical expertise have also been extremely helpful, indeed indispensable, to the implementation of this education reform. The investment costs have exceeded the financial capacities of the country and have had to be financed by donors. Expertise in language development has come from NGOs with experience in local-language literacy that have been requested by the National Department of Education to develop alphabets and create learning materials in a number of languages since the government did not have the personnel to do this.

- The gradual phasing in of the reform facilitates controlled implementation and helps to sustain educational quality. The reform process in Papua New Guinea evolved slowly, starting with several pilot schools. The new elementary schools were implemented only when the material conditions, i.e. the existence of an approved writing system, trained teachers and teaching materials, made it possible. The existing English-language primary education system was maintained wherever the reform could not yet be introduced.

Peru: bilingual intercultural education

In Peru, mother-tongue-based bilingual education was first officially introduced in 1952, when the Ministry of Education created a programme to meet the educational needs of the indigenous populations of the Peruvian Amazon rainforest.

However, the creation of this programme did not necessarily indicate profound government interest in the well-being of Peru's indigenous peoples. The programme was heavily supported by international NGOs and targeted a population of roughly 250,000 people who were geographically isolated, socially marginalized and politically unimportant. The far more numerous, politically volatile Quechua-speaking populations of the Andean region were not included in this early bilingual education programme.

The 1972 Education Reform of General Velasco's Revolutionary Government reform was intended primarily to include the indigenous population of the Andean highlands as well as the Amazonian populations in the construction of a culturally pluralistic state. The Quechua language (actually a family of languages) was officially recognized as a language in 1975. Velasco's reforms were significant because they recognized the multi-ethnic character of the state and focused for the first time on including the indigenous population in the construction of the state.

In 1988, a national Directorate of Bilingual Education within the Ministry of Education was created, an important acknowledgement and support of bilingual education. Since then, the 1994 Constitution recognized the linguistic and educational rights of indigenous peoples by recognizing the nation's ethnic and cultural plurality. Article 2 gave official language status to all the indigenous languages in the regions where they were spoken and Article 17 underlined the state's obligation to promote intercultural and bilingual education.

Bilingual education policy in Peru has now evolved into what is called bilingual intercultural education. A basic principle of this model is to maintain the indigenous language alongside the use of Spanish. Students first learn to read and write in the mother tongue, the sole language of instruction in the early years of schooling. Spanish is initially taught as

a second language and in later years becomes a language of instruction. Another key principle of the bilingual intercultural education model is its specific attention to the culture of the students and the incorporation of elements from other cultures into the curriculum. The model promotes respect for cultural difference and harmonious interaction between members of different cultures.

From 1996 to 2000, a national bilingual intercultural education programme was developed: 94 bilingual teaching manuals were produced, over 10,000 teachers were trained in bilingual teaching and materials were provided for bilingual libraries in schools that provided bilingual intercultural education. A timeline was also established for the development of bilingual intercultural education as part of state policy. Implementation of bilingual intercultural education is currently being carried out in a three-phase programme called the Rural Education and Teacher Development Project that began in 2004 and is to run through 2013, funded by the World Bank.

Programme scope and learning outcomes

Bilingual intercultural education in Peru today is comprised of numerous programmes and projects that vary with the sociolinguistic situation and the type of bilingualism in the area. However, this educational approach is almost exclusively directed at the Indian population of the country and is so far limited in coverage. In 1999, 2000 and 2001 about 100,000 children were enrolled in bilingual intercultural education programmes per year (Godenzzi, 2003, p. 28) or an estimated 10 per cent of the Indian children in Peru whose mother tongue is an indigenous language (Küper, 2007).

Evaluations of bilingual intercultural education in Peru have shown a positive cognitive and affective impact on indigenous students. Lopez and Küper (2000, pp. 34-5) summarized the results of these evaluations whose benefits include:

- improved overall academic performances;
- greater ability in solving mathematical problems;
- greater assurance in speaking Spanish;
- fewer disparities in learning outcomes between girls and boys, and between urban and rural students;

- greater self-esteem among the students;
- more active student participation in the learning process.

The authors also note that comparable performance in Spanish between students in the Spanish-only school system and students in bilingual schools should be seen as an achievement, since the bilingual students spend less time learning Spanish than their peers but unlike their peers, they also acquire additional indigenous language competencies.

Strengths

Education as a component of broader sociopolitical change. The major strength of the bilingual intercultural education policy in Peru is its position in the broader movement of democracy, including greater recognition of indigenous cultural and linguistic rights. Bilingual intercultural education has been one of the primary demands of indigenous rights activists in Latin America. Today, at least 17 countries of the region have implemented some form of bilingual intercultural education (Lopez and Küper, 2000, p. 4). Some of the educational initiatives are cross-border projects such as the university networking programme *PROEIB Andes,* created in 1996 to support bilingual intercultural training programmes in Argentina, Bolivia, Chile, Colombia, Ecuador and Peru.

External assistance. Bilingual intercultural education projects in Peru have benefited from important technical and financial assistance from international NGOs and development agencies. This has allowed education programmes to gain in scope, quality and financial viability. The Experimental Project of Bilingual Education in Puno (PEEB-P) was created in 1975 and lasted through the 1980s, funded primarily by the German Development Cooperation (GTZ); without this external funding, this programme would not have existed.

Weaknesses

Limited government support. The government has provided only limited practical and financial support to bilingual intercultural education in Peru. Policies supporting these programmes do exist, backed by the Constitution;

but implementation is weak and programmes have only limited coverage. There appears to be a real gap between the official intercultural education agenda and the resources allocated to it. The government has allowed national universities and institutes to collaborate in implementing these programmes but has provided only minimal funding for them (García, 2004, p. 363).

Continued lack of resources diminishes the quality and efficiency of bilingual intercultural education programmes, establishing a vicious cycle of poor learning outcomes, lack of credibility and lack of popular support for them. In rural areas where education is often poorly resourced, the single multigrade rural classroom and one insufficiently trained teacher is symptomatic of deficient education funding and poor learning outcomes. Insufficient public funding prevents bilingual intercultural education in Peru from fulfilling its potential for alleviating serious deficits in the coverage, efficiency and quality of education.

Inequality between indigenous populations and the dominant non-indigenous population. The efforts of the bilingual intercultural education model to include the indigenous population in building the state are undermined by a divided society in which the indigenous peoples, and their cultures and languages have been marginalized in favour of the urban values and lifestyles of the dominant class. The bilingual intercultural education model opens up a new space for indigenous cultures and languages in education, but cannot affect the broader social context.

The linguistic development of the languages, their limited use in the public space and the absence of a literate environment in these languages reduce their benefits in education. The study of indigenous languages is not seen as useful or attractive enough.

Exclusive use of the programme in indigenous communities. Despite government commitment to intercultural education for all Peruvian children, bilingual intercultural education has so far only targeted rural indigenous children while the non-indigenous Spanish speaking population is not expected to send its children to these programmes. Given that it is only the dominated indigenous population that benefits from bilingual intercultural education, the programme lacks credibility and appears to be providing a second-class education. Even in the communities where this type of education is offered, parents tend to feel that their children are wasting their time learning a language they already know instead

of learning the language of economic and social opportunity. So in the Peruvian case, issues of economic exclusion, prejudice, and cultural and linguistic status weaken the effectiveness of an education policy that aims at constructing a more democratic and egalitarian society.

Community participation and popular support. A further challenge, that of community participation and popular support, is linked to this negative local perspective. Many indigenous parents reject bilingual intercultural education because they fear that their children are being prevented from gaining access to social and economic opportunity. Education decision-makers and indigenous leaders who promote this type of education often seem to ignore parental concerns, and this bodes ill for the success of the programme. The challenge is to raise public awareness of the benefits of bilingual intercultural education and to intensify community involvement and participation in existing or new education programmes. Indeed, comparison between Peruvian highland and lowland experiences with bilingual intercultural education has shown that in cases where the indigenous communities were involved in the decisions relating to language use, and educational content and methods in bilingual intercultural education, these programmes enjoyed greater popular support.

Educational quality and scope. The success of bilingual intercultural education in Peru has been limited by insufficient results and low learning outcomes due to the lack of adequate educational methods and materials, and insufficient teacher training. This problem is linked to the low levels of financial support being provided to the programme. National policy has to be backed by the necessary resources in order to produce and review educational materials, to provide training for teachers, planners and researchers, and to improve teaching methods, especially for first language teaching and second language acquisition.

Lessons learned

The lessons learned in this case study relate primarily to the importance of understanding and aligning the expectations and contributions of all stakeholders in a mother-tongue-based bilingual education programme.

- In a political context of weak government buy-in, outside technical and financial assistance is essential. The continued technical and

financial assistance of several outside organizations has been crucial to the implementation and maintenance of bilingual intercultural education.

- Education policies do not exist in isolation from their socioeconomic and cultural context. In Peru, issues relating to the socio-economic inequalities of the country, language status and use, and the legacy of the existing education system have not been addressed sufficiently and so hinder the potential and the credibility of bilingual intercultural education.

- Educational innovations must take into account the interests of all the stakeholders, especially those who are primarily concerned by the programmes: the communities and families themselves. The top-down imposition of education policy in Peru has met with strong parental resistance. When education programmes are implemented, the vision of those who are primarily concerned by the programmes needs to be taken into account, and their concerns and resistance need to be intentionally addressed.

United States: the Thomas and Collier study of bilingual education models

Bilingual education has a long history in the United States, with programmes being offered primarily for immigrants from other nations since the eighteenth century. Programmes of various sorts have flourished across the country, driven by both legal and pedagogical considerations.

The goals and strategies of bilingual education programmes in the United States vary widely, however. Concerns for cultural maintenance and support for the mother tongue have competed with more assimilationist perspectives that use bilingual education to integrate students into the mainstream, English-language American education system.

The variety of methodologies therefore range from maintenance programmes aiming to develop literacy and learning abilities in English and the language of the home to 'remedial' English programmes that appear to treat monolingualism in the home language as a defect.

In the mid-1980s, researchers Wayne Thomas and Virginia Collier embarked on a longitudinal study to analyse the learning outcomes of what they termed the 'education services provided for language minority students in US public schools' (Thomas and Collier, 2002, p. 1). Their goal was to gather and analyse national-level data that would help education administrators at the local school level to understand the long-term implications of the bilingual education programme decisions they were making. From 1985 to 2001, Thomas and Collier followed large numbers of students in different kinds of bilingual programmes and in different parts of the country, collecting long-term data on their academic achievement.

The study examined various bilingual education programmes: English immersion programmes; a programme that pulls students out of regular classes to teach them English as a second language for a certain number of years followed by immersion in English-language instruction; programmes that begin in the mother tongue and transition into English after two or more years; and what Thomas and Collier term 'developmental' (or maintenance) bilingual education, in which children

from one language community (one-way) or two language communities (two-way) are targeted.

Programme scope and learning outcomes

The Thomas and Collier study examined the records of 700,000 language minority students, speaking dozens of home languages, in five school systems across the country between 1985 and 2001. According to Thomas and Collier, the strongest predictor of learner success at upper secondary levels in the dominant language (English) education system was the number of early years of instruction the learners had received in their mother tongue. Children who had the first six years or more of formal instruction in their own language fared the best in later academic achievement. Three related key findings also emerged from this study, regarding what enhances long-term success in school:

1. Cognitively complex academic instruction in the students' first language for as long as possible, at least five or six years, and cognitively complex instruction in the second language for part of the school day as well.

2. The use of interactive methods in teaching through the two languages.

3. A school environment that supports bilingual learning.

Thomas and Collier advocate what they call 'dual language education' or two-way maintenance bilingual education as the ideal educational model in bilingual contexts where both majority and minority students learn bilingually. One-way maintenance bilingual education is recommended where only one language community is being targeted.

Aside from the cognitive outcomes measured in standardized tests of the students being tracked, Thomas and Collier report that parents of both language groups in a dual language education context tend to participate more actively in the school because they feel welcome, valued, respected and included in school decision-making.

Strengths

Two aspects of this study are examined here for strengths and weaknesses: the study's findings and recommendations, and the study itself.

Strengths of the recommendations. The findings give substance to the opinions that many bilingual education specialists have held for a long time but could not demonstrate effectively. The variety of programmes practised in the United States under the name 'bilingual education' is great and at times programme choice seems driven more by economic, political and social concerns than by pedagogical concerns. Comparing the outcomes of those various kinds of bilingual education programmes forces proponents of the various models to face the question of whether these models actually enhance the student's long-term learning or not. The recommendations also link interactive learning with mother-tongue instruction in a way that other programmes described in this paper have also done, lending additional credibility to that dual strategy for teaching minority-language students.

One surprise of the study was the length of instructional time in the mother tongue required to bring minority-language students academically up to par with their peers who are speakers of the school language. Thomas and Collier's question was: how can minority language students 'catch up' to the other students in terms of content and learning achievement? The answer they give to this question involves mother-tongue instruction for far longer than even experts in the field would have thought. This is one of the aspects of the Thomas and Collier study that cause it to be widely cited in the field.

Strengths of the study. The most obvious strength of the study lies in its scope. Such a large sample size, drawn from students of many different communities and home languages, lends real weight to the authors' findings. The longitudinal nature of the study, carried out over so many years, also allows conclusions to be drawn which a synchronous study could not ascertain.

Weaknesses

Weaknesses of the recommendations. The social and economic context of the United States-based study tends to limit the universality of the recommendations. The ideal bilingual education programmes in this study, one-way and two-way maintenance bilingual education programmes, are both costly and unfamiliar to educators and policy-makers of nations in the South. Nor is the political will necessary for implementation of such programmes adequately addressed in the study, even though, clearly, adoption of such a radical mother-tongue-based bilingual education programme in countries of the global South would require significant commitment on the part of national and regional governments.

In addition, for countries with a highly complex sociolinguistic character, an education model such as this is not entirely realistic. Examples are India, with at least 300 language families and an avowed commitment to multilingualism, not simply bilingualism, and China, with a learning load of nearly 6,000 Mandarin characters to be learned in primary school, mastery of which is crucial to attainment of proper Chinese culture.[3]

Weaknesses of the study. One weakness of the study is related to the weakness in the recommendations described above. It is difficult to transpose the results of this study, carried out in the United States school system, into social and educational contexts elsewhere in the world – particularly in the global South. Indeed, the authors do not make claims about the generalizability of the results to contexts outside of the United States. This is understandable, but nevertheless it does seem a shame that such a landmark study would be so narrowly applicable.

Another aspect of the study that brings it into question is its focus on test scores as the measure of a successful bilingual education programme. Thomas and Collier do track some of the 'softer' outcomes of various bilingual education programmes, but the primary measures have to do with testing outcomes. Cultural outcomes of bilingual education, which are of great significance in many bilingual education programmes around the world, are here relegated to a position of secondary importance.

3. Examples from Malone, 2008.

However the most energetic criticism of this study has been methodological in nature. One social researcher, Christine Rossell, in fact claims that the study is 'unscientific', with inadequate control of variables, insufficient randomness of samples, and other methodological faults. These characteristics, Rossell (1998) argues, cast significant doubt on the validity of the results being reported. It is not clear, however, whether this is a legitimate criticism or only a disagreement over the nature of 'scientific' enquiry.

Lessons learned

The lessons learned in this case study have to do with the importance of social and cultural context, as well as quantifiable measures, in understanding the impact and generalizability of bilingual education programme alternatives.

- A key question for any rigorous research concerns whether conclusions can be generalized. Although it may be possible to generalize the Thomas and Collier study in the United States, using it as an argument for implementing particular kinds of bilingual education programmes elsewhere in the world may not be warranted. Without a doubt, the sociolinguistic context in which the study took place affects the range of accuracy of its recommendations. Yet educators around the world cite the study as evidence for the general superiority of the one-way or two-way maintenance bilingual education model.

- Successful learning outcomes cannot be divorced from cultural and political considerations. Even when test scores are the only data examined, the success of a curriculum depends on its cultural relevance and political acceptability.

- The cultural role of a given bilingual education programme in the community and in the nation has a substantial impact on whether or not principal stakeholders who consider more than test scores accept it. In terms of political impact, Thomas and Collier are quite explicit about the political agenda driving choices of bilingual education models in the United States and of the political risk involved in choosing the model recommended in this study. Clearly the political implications of language-in-education policy are not limited to nations in the South.

Table 6. Summary case study information

	Mali: *Pédagogie convergente*	**Papua New Guinea: vernacular education**	**Peru: bilingual intercultural education**	**United States: Thomas and Collier study**
Scope	2,050 schools, 11 languages (2005)	Children in 430 language communities (2003)	100,000 indigenous children (2001)	700,000 student records, 5 school systems
Time-frame	Since 1987	Since 1995	Since 1996	1985-2001
Type	Maintenance bilingual education	Transitional bilingual education	Maintenance bilingual education	Many types studied; one- or two-way maintenance programmes recommended.
Grades	Grades 1-6	Pre-school (1 year) plus Grades 1-2	Throughout grade school	6 years or more recommended.
Goals	Enhanced learning outcomes for mother-tongue speakers of national languages	Education system responds to linguistic and social realities of the population	Integration of indigenous populations into national society with dignity and equality	Investigation of variety of bilingual education models and dissemination of information on effectiveness to education decision-makers.

Primary outcomes	Better results on seventh grade entrance exam Significantly better French and math performance. Enthusiastic, active and communi-cative learners.	Children score higher on the Grade 6 exam than other provinces. Access enhanced, especially for girls; drop-out rates decrease. Teachers report students to be more active and self-confident about learning.	Improved overall academic performance. Greater ability to solve math problems. Greater assurance in speaking Spanish. Reduced gender and urban/rural disparities in learning outcomes. Increased student self-esteem and more active participation in class.	Enhanced Long-term success in school: Cognitively complex instruction in first language for as long as possible (5-6 years); cognitively complex instruction in second language for part of school day. Interactive teaching methods through the two languages. School sociocultural context supports bilingual learning.

Key findings

The principal findings of these four studies are related to educational outcomes, financial issues and a number of recurrent themes that are central to the implementation of sustainable mother-tongue-based bilingual education programmes.

Educational outcomes. Students in the programmes analysed here demonstrate the following principal educational outcomes:

- Their overall academic achievement is superior to that of students in the monolingual second-language system.
- Their mathematics achievement is superior as well.
- Their achievement in the second language is at least as high as that of students in the monolingual second-language system.
- They acquire additional linguistic competencies in their first language.
- They participate more actively in the learning process and feel more confident about learning.

Financial issues. The following financial issues are key:

- Sound financial planning and commitment are very important for sustainable bilingual education programmes, particularly in their initial stages.
- Compared with education systems that use the second language as the medium of instruction, bilingual education is more cost effective since student learning improves significantly.
- The long-term financial cost per student in a bilingual education programme may turn out to be lower than in the monolingual system. However, even if it is not, long-term financial planning is critical.

The role of government. This issue is related to the issues of financial support. Particularly in developing countries, government support for bilingual education is critical and can be manifested in various ways. Certainly one of those ways is a clear, sustained political commitment played out in policy frameworks and administrative contexts. The success of mother-tongue-based bilingual education depends considerably on such sustained political commitment by national and local authorities. In Mali, long-term political support allowed the growth and early development of the *Pédagogie convergente* model.

However, national governments have not always been able to provide commensurate financial support. It is significant that in Mali, Papua New Guinea and Peru, the bilingual education programmes have been funded primarily by outside agencies, particularly at the start. Where national political commitment tends to waver, outside assistance is even more crucial to the maintenance and growth of these programmes. Limited government financial backing for a bilingual education programme may indicate lack of political will but may also be indicative of competing priorities and resource constraints.

Status of minority communities. The socio-economic and sociolinguistic status of minority languages and the communities that speak them can affect the likelihood of success of bilingual education programmes in those communities. In most cases, bilingual education involves a dominant second language and a minority-status mother tongue, with significant socio-economic differences between the communities speaking the two languages. Such a large differential can impede educational success among the lower-status group. In Peru, factors such as prejudice, poverty and inequality compound the lack of language development and restricted language use. In the United States, Thomas and Collier note that many parents and teachers actually prefer some forms of 'bilingual' education that ignore the pedagogical and cultural value of the home language, because English is more prestigious and has greater perceived economic value.

Language development. Where a language has no written tradition, linguistic research and corpus planning are prerequisites for using it effectively in formal education. The alphabets of these languages need to be developed and tested, and vocabulary for classroom subjects needs to be developed. In addition, terminology in the minority language may need to be standardized across its varieties. It is very important that the language community participates in these processes.

Community involvement. Developing community support is crucial for implementing sustainable bilingual education programmes, especially where instruction in the first languages might otherwise lack popular support. Communities that are actively involved in education reform processes or in implementing and managing education programmes are more likely to support those programmes. In Papua New Guinea, the education reform was preceded by public consultations on education issues and the introduction of indigenous languages into the formal school system was publicly discussed for many years before it was put into effect. The communities of Papua New Guinea continue to be involved in the programme now being implemented.

Educational quality. A change in the language of instruction is not likely to yield significant results if the overall quality of the education programme remains poor. In Peru, for example, the bilingual intercultural education programme has had poor learning outcomes even though the children's mother tongues are being used and this has damaged the programme's credibility since it has not been of demonstrably better quality than the Spanish-medium schools. In Mali, the introduction of interactive learning as part of the *Pédagogie convergente* model has been integral to its success in raising academic achievement among the students.

Educational quality needs to be addressed in several ways, including adequate teacher training and the availability of appropriate teaching and learning materials for the programme. However, the development, production and distribution of such materials can be challenging, especially in developing countries with limited education budgets. Teachers are also central to the effective implementation of education reforms. Teacher training needs to be of sufficient length and quality for teachers to fully acquire the new educational principles and methods. Other education professionals also need training and orientation so that they fully understand and support the objectives and implementation of the reform programmes. In Papua New Guinea, the locally-focused management of the new bilingual school system differs substantially from the previous system; when the education establishment does not understand the role of parents in the new system, schools in some communities function less well than they might.

Pedagogical innovation is another aspect of educational quality that helps to ensure the effectiveness of bilingual education programmes. Effective mother-tongue bilingual education models usually include changes to the entire curriculum and, therefore, to teaching methods and materials as

well. In particular, the pedagogy of language teaching itself usually requires special attention. In Mali, it was found to be impossible to benefit fully from the use of national languages without developing new methods and materials for teaching, and for using French and the national languages as media of instruction. *Pédagogie convergente* was therefore developed with a specific approach to first and second language teaching and learning that aimed at the transfer of competencies from one language to the other.

Evaluation. The development of specific tools for evaluating learning outcomes is a major contribution to sustainable bilingual education. If at all possible, these tools should include examinations in the mother tongue and not only in the official language. This is important not only for monitoring of the effectiveness of the programme and student achievement, but also for boosting the perceived benefits of the new programme. In Mali, the educational value of *Pédagogie convergente* for students, parents and teachers rose when students were examined in national languages.

Aligning purpose with programme. The four bilingual education programmes examined in this study are linked to pedagogical methods and curriculum design, and to particular outcomes.

The programme in Papua New Guinea was developed to address specific issues of non-alignment between the education system and the society. The choice of a transitional bilingual education programme also appears to respond to limits of resources and to attitudes of the population to language. Finally, the strong community orientation of the programme has implications for both sustainability and learning outcomes: involving the community so deeply in educational decisions is likely to mean that the programme is more sustainable but also less professionally sophisticated. The Papua New Guinean government appears to have considered its choices and to have made them according to its own priorities for its population.

The bilingual education programmes recommended by Thomas and Collier, which follow dual language education models, are also addressing specific contextual issues. In the United States, the goal of formal education for language minority students is to bring them up to par with language majority student peers in secondary school achievement; this is not a goal that would readily be found in countries where the minoritized languages are actually the numerical majority, or where there is no assumption that education extends to secondary school.

Intercultural education is another example of a programme that has developed in response to its environment. Its goal is that minority and majority culture students understand each other's realities. Given the inequalities between minority indigenous cultures and the dominant non-indigenous cultures in Latin America, the potential of intercultural education there is promising. Unfortunately, in Peru this laudable goal has run into challenges in application. Any programme with an intercultural component must be implemented in both the minority and majority communities; but in Peru bilingual intercultural education has been applied exclusively among the rural indigenous population and not at all among the urban dominant classes of the country. This defeats the purpose of the model. Extending its application to populations beyond the indigenous community would allow it to become a truly high quality education, no longer compensatory in nature, but education that makes an asset of linguistic and cultural diversity.

The *Pédagogie convergente* model, developed in Belgium in response to the poor educational performance of children in francophone Africa, centres on improved teaching of first and second languages as well as the use of interactive teaching methods. National languages, and the cultures associated with them, are highly viable in Mali; so the concern there has less to do with the valuing and maintenance of community culture and more to do with designing an education programme that will produce bilingual, literate learners.

Understanding the links between national context, goals and programme choices is critical for successfully designing and implementing bilingual education models. Programme choices that do not correspond to the particular needs and goals of a population will be neither popular nor sustainable.

Conclusion

The evidence is clear: mother-tongue-based bilingual education significantly enhances the learning outcomes of students from minority language communities. Moreover, when mother-tongue bilingual education programmes are developed in a manner that involves community members in some significant way and explicitly addresses community concerns, these programmes also promote the identification of the minority community with the formal education process.

The parameters that shape a bilingual education programme include the availability of resources, its pedagogical and social goals, and the political environment in which it is to be implemented. The examples described above demonstrate a variety of such parameters, all of which have given rise to innovative and effective bilingual education models.

It is also clear that successful models of bilingual education require the collaboration of more than one or two actors. Development of the language itself, of curricular materials, teacher training, advocacy with the community and financial support all imply a range of participants in the process. For this reason, any government planning to establish a mother-tongue bilingual education programme would do well to aim for the involvement of multiple partners in ensuring its success.

As complex an undertaking as such a programme can be, these four case studies show that, with commitment and careful planning, it is possible for any nation to provide higher quality learning outcomes for its minority-language students through mother-tongue bilingual education.

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Abbreviations and acronyms

ACCT	Agence de Coopération Culturelle et Technique
ADEA	Association for the Development of Education in Africa
AusAID	Australian Agency for International Development
CIAVER	Centre international audiovisuel d'études et de recherches (Belgium)
ECCE	Early Childhood Care and Education
EFA	Education for All
GTZ	German Development Cooperation
NABE	National Association for Bilingual Education
NGOs	Non-governmental organizations
PEEB-P	Experimental Project of Bilingual Education in Puno
PROEIB Andes	Programa de Formación en Educación Intercultural Bilingüe para los Países Andinos
SIL	Formerly Summer Institute of Linguistics now SIL International
SIT	School for International Training
UIE	UNESCO Institute for Education (now UNESCO Institute for Lifelong Learning (UIL))
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development

There are many concerns around the recognition, development and use of local or minority languages in education. UNESCO believes that the issues of inclusion in education and quality education are closely related to a mother-tongue-based bilingual or multilingual education. While studies have shown that mother tongue matters for effective learning in education, few countries have introduced mother-tongue-based education programmes. The four case studies (Mali, Papua New Guinea, Peru and the United States) demonstrate the potential, benefits and challenges of a mother-tongue-based bilingual or multilingual education.

This document aims to inform policy-makers on research evidence in mother tongue instruction and to raise their awareness regarding its importance. It will also serve to support policy decisions and policy-making at country level.

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