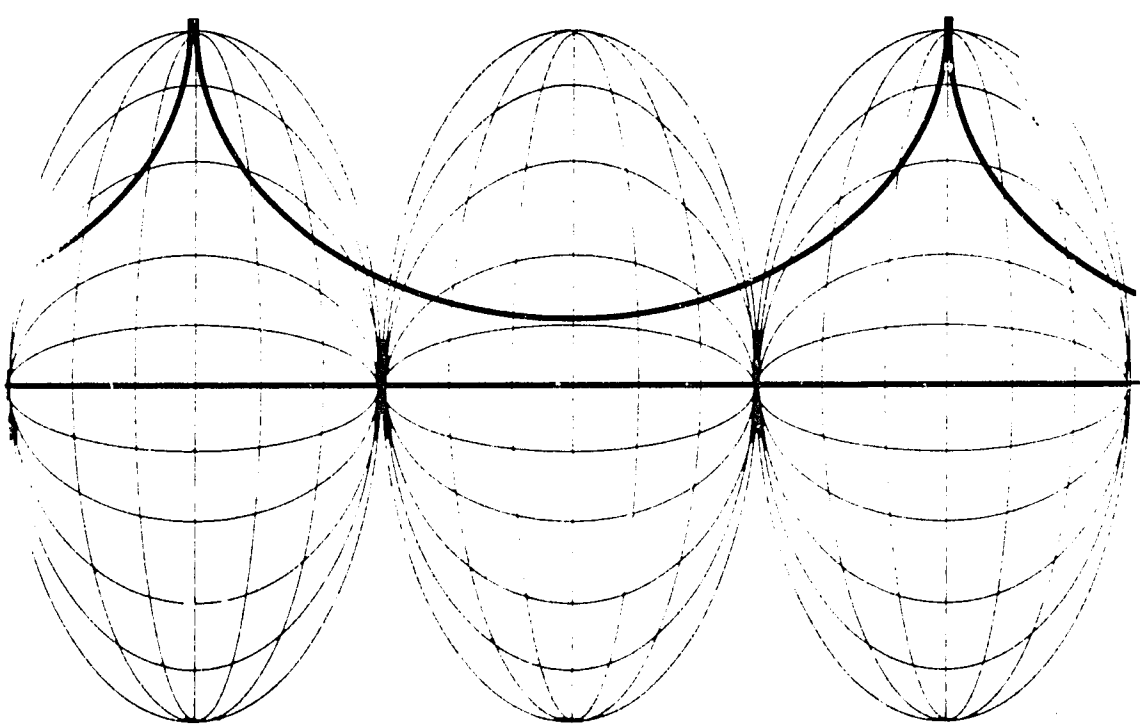

B • R • I • D • G • E • S

Basic Research and Implementation
in DevelopinG Education Systems

CASUAL PAPERS

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Facing Up to the Dilemmas of Quality:

The Lessons of BRIDGES

Research in Burundi

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As low income countries struggle to maintain and increase the quality of their primary schools, the exceedingly difficult economic, social and political circumstances with which they are faced have led to a state of educational crisis (Fuller & Heyneman, 1989). Within this context, Burundi stands out as a country of few resources where much has already been done to improve educational opportunities at the primary level and where there is excellent potential for further improvement. But even so, formidable obstacles remain. It is therefore a place where much can be learned that will be of value to other countries.

In this presentation we summarize the results of the BRIDGES Burundi research in a series of policy lessons drawn from the project. The focus is on the improvement of primary school quality, with emphasis on the assessment of learning and the impact of various educational policies.

The BRIDGES Burundi research was planned and carried out over three years from 1986 to 1989. The first year was spent almost entirely in negotiations with two ministries--Education and Labor--to find areas of common interest between the Government's priorities, on the one hand, and the aims of the BRIDGES project, on the other. Agreement was signified in the drafting of a global plan intended for use by the Government in addressing issues of education and work (Plan Global, 1987). A second initial task was to establish a collaborative relationship with a Burundian organization which would share responsibility for the research. In the second year, after reaching agreement with the Government and our counterpart organization, the Centre de Perfectionnement et de Formation en Cours d'Emploi (CPF), we began the research with several pilot studies, including case studies of three primary schools in different areas of the country; a survey of farmers to examine the relationship between schooling, farmer knowledge, and agricultural

practice and productivity; and a survey of 25 private sector firms to look at issues of education and work in the modern sector. During the third year, the focus was narrowed to permit a larger, more adequate study of factors influencing student learning in rural primary schools. The results of the overall project were discussed with Ministry officials and donors at a seminar held in Bujumbura in November 1989 (CPF, 1989; CPF, with Eisemon, Prouty & Schwille, 1989a). That seminar stressed the country-specific implications of the project whereas the following lessons are couched in terms of the implications across countries.

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Lesson 1: The improvement of quality demands good information on what all children are learning in school

This lesson may appear self-evident, but unfortunately much educational research and policy making in developing countries has taken place in the absence of such information. It is only recently that comprehensive student assessment is being increasingly emphasized as a priority concern, as is evident from the 1990 World Conference on Education for All, which reported as follows:

> Delegates agreed that education data on enrollment rates or numbers of years in schools are not useful and that emphasis ought to be on the access to and achievement of learning that is relevant to the needs of the individual and his or her community (Inter-Agency Commission, 1990, p. 13).

In Burundi before BRIDGES, the information on student learning that was most readily available to the Government had very limited value in judging the quality of primary schooling. The only national test regularly used in primary schools was not designed as a test of how well students in general had mastered the curriculum, but rather as a selection instrument designed to

choose a tiny minority (only 10% of all sixth graders) to go on to secondary school. Not only were the development, administration and results of this concours national almost entirely closed to public inspection (a situation which is now being changed), but such a selective examination is by its very nature inappropriately used to draw conclusions about the system as a whole. The items in this test and other similar very selective tests are very difficult for the average child; most children cannot be expected to be able to answer them correctly. Thus, the examination has little to say about whether most children have learned much or little in school. Moreover, items which are best at sorting out children are not necessarily most central to the curriculum and the aims of the Government for what children should learn.

The 1989 BRIDGES survey was an attempt to show how this state of affairs could be remedied through sampling rather than through testing of all students (Eisemon et al., ERCW, 1990; CPF, with Eisemon, Prouty & Schwille, 1989a). Data were collected from a probability sample of 1946 grade 6 students in 47 schools belonging to 24 school clusters in rural areas. The students were tested in reading comprehension, written composition, mathematics and a combination of science and agriculture. These tests differed from the secondary school entrance examination in a number of important ways. One was that the BRIDGES tests gave more importance to testing in the mother tongue than does the secondary school entrance examination. Within each of the classrooms drawn for the sample, one subsample of the students took the tests in French while other students in the same classroom were administered the same tests in Kirundi, their mother tongue. The BRIDGES tests were also intended to be somewhat less difficult than the concours national, eschewing obscure complications in favor of problem-solving tasks of greater relevance

to everyday life. Finally, the BRIDGES tests included two domains which had been omitted from the concours: agriculture and written composition. The latter was of particular interest since the national secondary school entrance examination has been entirely multiple choice and therefore nothing was known about how well the students could perform a writing task on their own. The importance of these differences between the BRIDGES tests and the secondary school entrance examination will become increasingly apparent in later sections of this paper.

Even though our intent was to reduce somewhat the difficulty of the questions asked, the overall performance of the students was still not as good as one would hope. The lowest scores were on the test of written composition in French where the average mark was only 10% of the maximum possible score. The highest average score was 54% in Kirundi reading comprehension. While this score still leaves much room for improvement, it is nonetheless indicative that substantial learning is taking place among average students even in the very difficult circumstances of schooling in Burundi (Eisemon et al., ERCW, 1990).

There is little point in dwelling too much on overall mean scores. Information on student learning becomes truly meaningful only as the scores of subgroups of students are analyzed and explained in terms of how well they are served by schools. These breakdowns allow us to answer such questions as follows: How well do schools meet the needs of rural students? How does the learning of repeaters compare with nonrepeaters? Within school clusters, how do the scores of children in satellite schools compare with the scores of children in core schools? These are examples of questions addressed in the BRIDGES studies, but there are many, many more such questions which should be

answered if educational policy is to be based at least in part on solid data. Without such data, assumptions are likely to be made about student learning that are unsubstantiated and unjustified. A particularly flagrant example is to be found in the practice of operationalizing educational efficiency in terms of whether children finish school in the prescribed amount of time rather than in terms of how much they have learned. This is almost as if the efficiency of factory workers were to be judged solely on the basis of how long they work as opposed to how much they produce.

* * *

Lesson 2: Increasing quality requires evaluation of access, retention and selection policies for their effect on learning

Unlike most African countries, Burundi was slow after independence in 1962 to expand access to primary education. It was only in 1982 that the government began to move swiftly toward universal primary schooling. Since additional funds were not available to expand the system at the desired rate, a policy of double shifts and a policy of collective (i.e. almost automatic) promotion were adopted to increase enrollments dramatically. Enrollments in primary school nearly tripled in six years from 183,641 students in 1981-82 to 535,529 students in 1987-88 (Ciza & Ntahoturi, 1989). Of the two policies it was the imposition of double shifts that was by far the most important in explaining this growth. Double shifts are now nearly universal throughout the country, meaning that each teacher is typically expected to teach a morning and afternoon group of children with up to 40, 50 or even more children in each group.

In contrast, the policy of collective promotion was not successfully implemented. Repetition remained much higher than the average 10% (plus 5%

dropout) targeted by the policy. In 1988-89 the repetition rate varied from approximately 18% in first and second grades to a nationally reported 51% in sixth grade. The reason for this exceedingly high repetition rate and the failure to implement the collective promotion policy lies largely in the difficulties of obtaining access to secondary school. In Burundi, all sixth graders are permitted to take the secondary school entrance examination and nearly all do so, but, as mentioned above, only 10% are allowed to pass, producing a secondary school enrollment ratio of perhaps 4%. The number of passes is fixed as a function, not of student competence, but of the number of openings in secondary schools. Most students who do not pass are eager to repeat (Schwille, Eisemon & Prouty, 1990).

How should policy deal with these high repetition rates? The prevailing view of grade repetition in primary school is that it is wasteful, has little or no positive effect on learning, and should therefore be minimized. But it turns out that this view is strongly influenced by studies in industrialized countries and that there has been little empirical research on the nature and effects of repetition in developing countries, in part because of the lack of capacity for assessing student learning that has been discussed above (Schwille, Eisemon & Prouty, 1990).

The findings of BRIDGES research in Burundi raise questions about the presumed wastefulness of repetition. The repetition of grade 6 had the strongest positive relationship with BRIDGES test scores of any of the factors examined. Repeaters did much better than nonrepeaters and these differences were the largest for the most school-based tests, that is, the tests in which the knowledge being tested is least likely to be learned outside school (Schwille, Eisemon & Prouty, 1990).

These results run against the grain of much that has been written and force us to recognize that the nature and effects of repetition may vary from country to country. Discussion of repetition is meaningful only in the context of the choices open to students faced with possible repetition. The options open to sixth graders in Burundi are not the same as in other countries. Sixth grade repeaters in Burundi are not for the most part demoralized school failures; more often they are scholastically capable students preparing for additional tries at the secondary school entrance examination. They might well be better off going directly to secondary school without repetition, but at present there is not enough room for them in secondary school nor are there sufficient resources to expand secondary schooling to meet the demand represented by such students. Burundi is not unique in this respect. Capable repeaters preparing for external selection examinations are common in other countries as well (Schwille, Eisemon & Prouty, 1990).

How wasteful is this practice? In the literature on educational efficiency, the completion of primary school within the prescribed period of time has typically been regarded as more efficient than taking more time. But in the difficult conditions under which many schools in developing countries operate, many children may attend school for the prescribed time and learn very little. The absence of repetition is not prima facie evidence of efficiency. Thus, while it may be more efficient for students to spend one rather than two or more years in sixth grade, this question cannot be adequately answered without data on how much repeaters and nonrepeaters learn under present circumstances as well as how much they would be likely to learn under alternative arrangements if the repetition rate were reduced (Schwille, Eisemon & Prouty, 1990).

This is but one example of how school quality depends on answers to the effects of access, repetition and selection policies. There is also much interest in Burundi in the effects of double shifts on the quality of primary education, and it is generally thought that double shifts have led to a decline in quality. The idea of such a decline is highly plausible since, to permit the introduction of double shifts, the hours of instruction for teaching an already difficult curriculum were reduced. But data are lacking to address this issue in a rigorous fashion since little is known about the distribution of student learning before the introduction of double shifts and since there is currently little variation in this practice, double shifts having become universal throughout the country.

* * *

Lesson 3: Increasing school quality requires evidence of competence in both mother tongue and one or more second languages

Unlike the citizens of most African nations, Burundians share a common mother tongue, Kirundi, but this distinctive situation does little to release them from the dilemmas of educating children in more than one language. No national system can afford to be exclusively monolingual in schooling its people. Some countries, especially large countries and countries with much immigration, must respond to internal language diversity. Other countries, especially small countries with their own distinctive languages, have to develop some competence in the world languages of commerce, science, religion and education.

What are the costs of this need to teach multiple languages and how can this cost be minimized without losing the desired level of competence? Lockheed and Verspoor (1990) suggest that too much emphasis on multiple

languages can have negative effects in that "decreased attention to a single language . . . could result in a slower rate of literacy acquisition in multilingual developing countries in comparison with monolingual industrial countries" (p. 31). In contrast, Genesee (1987), after a review of second language programs in North America, concludes that "the results of numerous longitudinal evaluations in Canada have consistently indicated that majority language students participating in these programs do not experience any long-term deficits in native language development or academic achievement" (p. 191).

In Burundi the language dilemma is manifested in the competing demands of Kirundi and French. From 1973 to 1989, national policy called for reduced use of French in primary schools. Nevertheless, the intent to use Kirundi as the medium of instruction throughout primary school was never implemented. French remained the medium of instruction for all academic subjects in grades 5 and 6. Knowledge of French has been critical to passing the secondary school entrance examination where it is used for all subjects except the section testing knowledge of Kirundi as a subject-matter. French also remains the exclusive language of instruction in secondary and higher education (Eisemon, Prouty & Schwille, in press; Eisemon & Schwille, in press).

With BRIDGES research it became possible for the first time to compare the competence of students in French with their competence in Kirundi, using the same tests. Students did much better in Kirundi than in French for all subjects except mathematics. Moreover, it was the more scholastically capable students who were most disadvantaged by testing in French; the weaker students could do very little in either language (Eisemon et al., ERCW, 1990).

In addition, as an experiment, teachers were asked to split a sixth grade mathematics lesson on the calculation of simple interest and to teach it in two parts, one in French and the other in Kirundi. In the case of mathematics, since teachers were most accustomed to teaching in their second language, changing the medium of instruction from French to Kirundi posed many difficulties both for students and teachers. It did not increase student/teacher interaction nor did it serve to improve the quality of explanation offered by the teacher. In this one experiment, improvement in teaching and student learning was not to be readily obtained by offering mathematics in Kirundi (Eisemon et al., ERCW, 1990). But since the BRIDGES research indicated that mathematics was unique in that the student test results in Kirundi were no better than in French, it may be that with more time for preparation and with another choice of subjects, the use of Kirundi as the language of instruction might well have more advantages.

In general, there is no doubt that the policy of switching to French as the medium of instruction in grade 5 does profoundly influence how much students learn. Even in grade 6, according to the teachers interviewed, most students cannot follow instruction in French. In view of such results and in consideration of popular sentiments favoring French, the Burundi government decided in 1989 to introduce French as a second language earlier in the school cycle--in first grade instead of third. We believe that further experimentation is in order if a viable mix of the two languages is to be achieved (Eisemon et al., ERCW, 1990; Eisemon, Prouty & Schwille, in press).

The Burundi example illustrates how the measurement of learning outcomes in more than one language can become an important indicator of the effectiveness of an educational system. There is, however, no language mix in

schools that universally recommends itself. Each educational system is left to search for a balance between different languages that is best suited to its particular priorities and circumstances. But it does appear that too much emphasis on either mother tongue or second language is likely to be detrimental to overall school quality.

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Lesson 4: Increasing school quality requires attention to the implementation of curricula, (including such matters as the difficulty of the curriculum and the impact of external examinations)

In 1973 the Government of Burundi adopted policies which were intended to alter fundamentally the instruction given in primary schools. Since that time these reforms have been designated by the terms ruralization and kirundization, but at the time the intent was more global and far-reaching than these catch phrases would indicate. Ruralization was to be more than the teaching of agriculture and kirundization more than the facilitation of learning through use of mother tongue instead of French. The grand design was to have a system of community schools in which teachers and community people would collaborate in practical instruction to produce innovative farmers capable of playing an effective role in the rural development of the country (Butare, 1988).

But this policy did not take into account one of the underlying dilemmas of primary schooling, namely, how much to emphasize the preparation of the mass of students for employment and how much to emphasize preparation of an elite for secondary school (Eisemon & Schwille, in press). As a result of policy which sidestepped this issue, teachers were faced with a curriculum so extensive that it was extraordinarily difficult to implement in an effective

manner (especially once the number of hours of instruction had been reduced by the introduction of double shifts). According to BRIDGES research, teachers have responded by adopting various expedients in order to reduce the curriculum to manageable proportions and to free up more time for instruction and for out-of-class tasks. In the 1989 survey, teachers reported combining morning and afternoon shifts to provide more hours of instruction for the subjects considered important while for the practical subjects considered less important, they were combining classes of students as well as skipping some lessons altogether (Eisemon et al., ERCW, 1990).

This state of affairs is much influenced by the secondary school entrance examination which dominates the primary school. Although this examination was not designed for the purpose of controlling the primary school curriculum, it does in fact strongly affect the schooling of all, including the 90% of the children who will not be permitted to pass the examination and enter the secondary schools. If the examination put more emphasis on natural science, nutrition, health and modern agricultural technology, all children could share in the benefits of the improved learning that could result (Eisemon et al., ERCW, 1990; Eisemon & Schwille, 1988).

The importance of paying attention to curriculum implementation has recently been highlighted by Lockheed and Verspoor (1990). Within the BRIDGES project, insight into the nature of these curricular influences and adaptations was obtained from a set of carefully structured classroom observations. While teacher questionnaires can in part serve this purpose, it is through a more comprehensive program of survey research, case study and systematic classroom observation that the implementation of a national curriculum can best be judged (Schwille, Eisemon & Prouty, 1989; Eisemon et

al., ERCU, 1990). Analysis of the national syllabus or of instructional materials is worthwhile, but it will not tell what topics are being emphasized more than intended, what topics are being skipped, what topics are taught in a manner other than what had been envisaged, what topics are distorted due to the pressures of external examinations, how textbooks are used and not used, what student exercises are assigned and not assigned, how much students participate actively in the instructional process, and how teachers respond both cognitively and affectively to the students. To be sure, almost all experienced educators have firm opinions on these points, but their opinions have generally not been tested against an adequate sample survey of practices in a nation's classrooms. Ministry personnel may not have even visited classrooms frequently or recently, and when they have, they may fail to take into account how much their presence changes what goes on in these settings. To be accurate, classroom observation is best carried out by researchers who are free from hierarchical responsibility for evaluating schools or teachers (though even here the presence of observers is a potentially biasing factor). Our experience in Burundi indicates that it is possible to select and train observers for this role without undue difficulty, especially when they have some prior classroom or other relevant experience (CPF, with Eisemon, Prouty & Schwille, 1989b).

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Lesson 5: Increasing quality requires school management policies that deal with teacher performance in ways which are responsive to the particular circumstances of schools and school systems

In its official pronouncements the Ministry of Primary and Secondary Education in Burundi has left no doubt about whether school directors are to

be instructional leaders or not. In a document published in 1986, entitled The Duties of a School Director, the following expectations are set forth, among others:

- "Make class visits ... The minimum called for at the end of the year is 150 visits or at least 50 visits per term.
- "Give demonstration lessons. The minimum required is 30 lessons at the end of the year or at least 10 lessons per term.
- "Administer monthly tests and do a critical analysis of the results.
- "Monitor the examination questions chosen by the teachers to see if they are adapted to each level of instruction.
- "Do a critical analysis of the student outcomes for each term with a view to giving clear directives for the purpose of improving the quality of teaching in the following terms.
- "Give regular attention to syllabus coverage so that, insofar as possible, the syllabi can be finished by the end of the school year.
- "Hold teacher's meetings during which problems of a pedagogical nature are dealt with." (Département de l'Enseignement Primaire, 1986)

Further indication of the Ministry's expectations in this regard were aptly illustrated at a session observed by one of the authors during a month-long inservice workshop for new inspectors and primary school principals in August 1986. The workshop instructor was emphasizing the need for all teachers to continually check their students to make sure that each student has acquired the idea being taught. One of the school directors in the audience objected that, with double shifts, it was difficult for teachers to do this. To this objection, the workshop instructor responded, "It is your duty to see that the teachers really evaluate the students." She agreed that it was indeed difficult, but even so other principals had found ways of meeting this expectation (Schwille, Eisemon & Prouty, 1989).

Given the way in which schools are organized in Burundi, it is not easy for school directors to visit all teachers, much less supervise instruction. In 1988-89 the average school director had a cluster of 3 schools and a total of 19 classrooms of students under his or her direction (Ciza & Ntahoturi, 1989). The satellite schools in each cluster are often at a considerable distance from the director's office in the core school. Lacking vehicles, directors may have to walk 6 to 12 kilometers or even more to these satellite schools.

The school directors studied did not make all the classroom visits that the Ministry in principle required, but they did make many visits. These visits appear to pay off. In the statistical analysis of presumed causal relationships we carried out, the number of director visits had a relatively strong effect on teacher punctuality and on two measures of outcomes: prior teacher success on the national secondary school entrance examination and scores on the BRIDGES tests. The Burundi research thus supports the contention that supervision of teachers by school directors is an important means through which the amount and quality of instruction is influenced (Eisemon et al., ERCW, 1990).

However, it would be easy to overstate these results. It is not just frequency of visits, but also the insistence on pedagogical leadership (e.g., conducting inservice, giving demonstration lessons, analyzing test results) that is striking in Burundi. Moreover, as in other countries, it is difficult to specify and obtain not necessarily a maximal, but an optimal degree of supervision of teachers, especially when teachers are physically distant at satellite schools and school directors have many competing duties.

Finally, there is much said in current literature about the limitations of direct hierarchical control and the importance of school and teacher autonomy in improving school quality. The Burundi research indicates that under some circumstances positive results can be achieved with direct hierarchical measures. Thus, one of the lessons of Burundi as well as Thailand BRIDGES research seems to be that it is important to tailor the degree of hierarchical initiative and control to the particular circumstances of individual schools and their settings (cf. Schwille & Wheeler, in press; Wheeler et al., in press).

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Lesson 6: Increasing school quality calls for reconciling the output of the educational system with the demands of the economy, in agriculture as well as the modern sector

Burundi is a small, landlocked country with a population of about 5 million. It is one of the most densely populated countries in Africa. It has few natural resources other than fertile soil and water to support its rapidly growing population (about 3% per year). More than 90% of the population depend on subsistence agriculture; most farmers also grow some coffee for cash income (in some areas tea or cotton are also produced). The average farm size per household was only 1.7 hectares in 1980 and is expected to fall to 1.1 hectares in 1995 (Ndarusigiye, 1990).

The country is among the poorest countries of the world in terms of per capita gross national product (cited in Ndarusigiye, 1990, from annual World Bank figures in current prices at between $210 and $250 between 1980 and 1987). The private modern sector is still in its infancy. Given these characteristics, the development of human resources is a critical and urgent

priority. Fortunately, as the BRIDGES research has shown, and earlier lessons in this paper imply, Burundi is better off than certain other developing countries in having a relatively well-organized school system that has much potential for human resource development (Eisemon & Schwille, in press; Schwille, Eisemon & Prouty, 1989; Eisemon et al., ERCW, 1990).

Policy research can help the country realize this potential, and therefore it is not surprising that, at the beginning of the BRIDGES project, the Government of Burundi identified improving the fit between education and work as one of its most pressing priorities. As discussions continued, it became clear that the government was keenly interested in stimulating innovations in educational planning and making better labor market information available to government agencies. The BRIDGES project responded to these concerns in two ways: by helping draft an overall plan to guide government efforts in this sphere (Plan Global, 1987) and by conducting two pilot studies. One was a study of education, occupation and employment in the private modern sector; the other was a survey concerned with the relationship between primary schooling and agricultural development.

Traditional manpower planning techniques have in the past relied on periodic projections which have proved so inaccurate to be of little value. In the BRIDGES work on the private modern sector, the intent was to pilot an approach which, if continued, would evolve into a "moving picture" capability for data collection and analysis conducted collaboratively by the Ministries of Education and Labor. From this perspective, occupational supply and demand would become but one of a number of labor market signals continually monitored by educational planners (Lawrence & Balet, 1989; CPF, 1988).

In a pilot study, the characteristics of 25 firms were analyzed and, in addition, 15 priority occupations were examined in detail (e.g., accountant, typist, electrician, nurse, mechanic). For example, actual numbers of persons employed by the firms in various occupations were analyzed in relation to employer perceptions of the adequacy of those levels and their likely evolution. Similarly, the actual skill levels of current employees were contrasted with employers' preferences for skill levels by occupation. Specific reasons were documented for employer dissatisfaction with government education and training for the selected occupations. While reductions in BRIDGES funding and changes in BRIDGES staff precluded carrying this approach as far as intended, the results showed that new alliances are possible between the education ministry, labor ministry and employers to provide a basis for more realistic appraisal of employment opportunities (Lawrence & Balet, 1989).

A similar concern motivated the BRIDGES pilot study of the relation between schooling and work in agriculture. But in this case data were collected both inside and outside schools. Inside schools, in spite of the fact that the reforms of 1973 had called for ruralization, BRIDGES research confirmed the extent to which agriculture had become a low priority in Burundian primary schools. Not only was the time devoted to agriculture insignificant, but in the agriculture lessons observed, the instruction deviated in important respects from what was intended in the national syllabus. Typically, there was no lesson given prior to student work in the school garden, no demonstration by the teacher and no recapitulation of the lesson. Many of the lessons observed dealt with production techniques that the students had undoubtedly mastered at home; the teacher's role was reduced to supervising student work. This situation was further aggravated by the

lack of integration between practical agriculture and natural science. They are taught as separate subjects (and even in different languages in grades 5 and 6). Under such conditions, schooling can add little to the human resources invested in agriculture other than some basic literacy and numeracy (Eisemon, Prouty & Schwille, 1990; Eisemon et al., FRCW, 1990; Schwille, Eisemon & Prouty, 1989).

Outside the schools, the contribution of schooling to farmer literacy was documented in a survey of 120 farmers with varying levels of education. When literacy scores for farmers were broken down by level of schooling, the findings suggest that there is no level of schooling which is so minimal as not to have an effect on literacy. That is, farmers with church literacy classes conducted outside the formal government system as well as farmers with only one to three years of schooling both had, on average, higher reading and comprehension scores than farmers with no schooling (Eisemon, Prouty & Schwille, 1990).

But, if schools are to do more for agriculture than to provide minimal levels of literacy, rethinking and innovation are required. For at least the last half century in Africa, agricultural education has been mainly discussed in terms of school leaver unemployment, the exodus of youth from rural areas, excessive demand for secondary and postprimary te chnical education, the dignity of manual work and the virtues of rural life. These concerns may strengthen arguments in favor of rural education, but they do not suffice in indicating what to do for rural education. Agricultural education can be improved only if its purposes are reconsidered and if one asks the question what can schools do better than extension services and adult education programs (Eisemon, Prouty & Schwille, 1990).

Although schooling by itself is not sufficient to change agricultural practice, schooling could be more ambitious in attempting to change the way farmers think about and solve agricultural problems. The results of research in Burundi and Kenya, though based on few and selected cases, are suggestive and promising. In these studies, farmers who had been to school explained events in the natural world by assigning causation to conditions over which individuals have control as opposed to conditions over which they would have no control. The causal models employed by school leavers to explain agricultural problems also appeared to make use of information from formal instruction as well as contact with agricultural extension agents and other personal experience. This research even brought to light differences in ways of thinking between farmers in Kenya and Burundi that might be attributed to the organization of agricultural instruction in primary schools. The causal explanations given by the more educated Kenyan farmers focused on technological interventions and showed an understanding of modern science. In Burundi, where science and agriculture are taught as separate subjects, educated farmers emphasized those modern practices that can be used without new technologies. This may be because these Burundian farmers understand the scientific basis for the new technologies less well than the farmers in Kenya. These results therefore suggest that the most promising trend for agricultural education is to introduce agriculture within a curriculum designed to enhance the student's basic scientific understanding of the natural world and, at the same time, to develop the student's capacities to make inferences from this knowledge, to assimilate new information and to adopt new practices. Such schooling would be of value in many nonagricultural occupations as well (Eisemon, 1988).

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Lesson 7: Increasing school quality demands analysis of the interactive effects of different policies with the intent of reducing tensions among them

As has already been discussed above, the main policy instruments that can be expected to shape primary schooling in Burundi are double shifts, collective promotion, ruralization, Kirundization and selection by examination for secondary school. Each such instrument may appear sensible when considered by itself, but there are important tensions when one considers the overall effect of these policies taken together (Nyaburerwa et al., 1989). For example, the double shift, Kirundization and secondary school selection policies have worked against one another. The double shift policy has led to reduced time for instruction. In the sixth grade syllabus there are, in total, only 19 hours of instruction each week per shift (recreation and physical education excluded). French, which is critical for success on the secondary school entrance examination, consumes 7.5 hours or 39% of the total time. Only 2 hours or 10% of the total time is devoted to Kirundi language instruction. Thus, it is French that remains preeminent in primary schools.

But due to Kirundization, French has not been used as the language of instruction for grades 1 to 4, and until 1989 it was not even introduced until third grade. Most students therefore have reached sixth grade without much knowledge of French. During the BRIDGES project, student achievement tests, interviews with teachers, and classroom observation all revealed a lack of French competence, and yet the academic future of the students depends much more on their mastery of this language than on their literacy in Kirundi (Nyaburerwa et al., 1989; Eisemon et al., ERCW, 1990).

These tensions and contradictions among policies are aggravated in Burundi due to the lack of resources and the special need for education in two languages. But since all educational systems have multiple objectives, policies which attempt to maximize single objectives (e.g. use of double shifts and Kirundi to universalize access) are likely to hinder the realization of other objectives. Such dilemmas are endemic to education, and policymakers need to know how much they are losing in one direction by emphasizing another too much.

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Conclusion

Common to all these lessons is a prescription for continued data collection to complement other forms of government action. There is a need not for predigested findings, but for research which can stimulate policy dialogue and illuminate a range of policy options. Taken together, these considerations suggest that policymakers should have access to quantitative indicators and qualitative data giving insight into student learning across the curriculum, student competence in more than one language, the effects of access and selection policies on learning, implementation of the national syllabus, school-to-school variation in the effectiveness of school management strategies, tightness of fit between the educational system and the needs of the economy, and the nature of the interactive effects of different policies. Information on all of these points has been in short supply in developing countries. Consequently, while it is thought that the quality of primary schooling is declining in many areas, it is difficult to say how much, under what circumstances, and what to do about it. In fact, the absence of such data encourages the tendency among policymakers, educators and public alike to

act as if the dilemmas of schooling do not exist. Nor are researchers exempt from such blinders. Such persons continue to act as if one could expand schools indefinitely in settings with scarce resources and still not lose the value of schooling through reduction in quality. They may also presume that one can get away with reducing repetition rates without concern for the effects on learning or with putting more and more emphasis on the use of a first language without regard for the effects on a second. Policymakers or researchers with blinders may advocate adding more and more to the national syllabus without really knowing how much actually gets taught in classrooms. They may prescribe for school directors more than can be done, and some of what they prescribe should not be done at all in particular settings. They may attempt to respond to the needs of the economy and society without careful analysis of what schools can do that other institutions and markets cannot. Their judgments are often based on individual policies as if the effects of these policies could be assessed in isolation. The BRIDGES project indicates that Burundi provides a good example of a country that has begun to remove those blinders to face up to some of the dilemmas of quality. Other countries, the United States included, would do well to do the same.

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