# Contents

<table>
<thead>
<tr>
<th>Acknowledgments</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1: Creating Effective Schools</td>
<td>1</td>
</tr>
<tr>
<td>Marlaire E. Lockheed and Henry M. Levin</td>
<td></td>
</tr>
<tr>
<td>Chapter 2: The Condition of Primary Education in Developing Countries</td>
<td>20</td>
</tr>
<tr>
<td>Marlaire E. Lockheed</td>
<td></td>
</tr>
<tr>
<td>Chapter 3: How Can Schooling Help Improve the Lives of the Poorest?</td>
<td>41</td>
</tr>
<tr>
<td>The Need for Radical Reform</td>
<td></td>
</tr>
<tr>
<td>Nicholas Bennett</td>
<td></td>
</tr>
<tr>
<td>Chapter 4: The New School Program: More and Better Primary Education for Children in Rural Areas in Colombia</td>
<td>52</td>
</tr>
<tr>
<td>Vicky Colbert, Clemencia Chiappe and Jairo Arboleda</td>
<td></td>
</tr>
<tr>
<td>Chapter 5: CIEP: A Democratic School Model for Educating Economically Disadvantaged Students in Brazil?</td>
<td>69</td>
</tr>
<tr>
<td>Ana Cristina Leonards</td>
<td></td>
</tr>
<tr>
<td>Chapter 6: Improving Educational Effectiveness in a Plantation School: The Case of the Gonakelle School in Sri Lanka</td>
<td>87</td>
</tr>
<tr>
<td>Angela Little and R. Sivasithamaram</td>
<td></td>
</tr>
<tr>
<td>Chapter 7: Local Initiatives and Their Implications for a Multi-Level Approach to School Improvement in Thailand</td>
<td>108</td>
</tr>
<tr>
<td>Mun C. Tsang and Christopher Wheeler</td>
<td></td>
</tr>
<tr>
<td>Chapter 8: Providing Quality Education When Resources are Scarce: Strategies for Increasing Primary School Effectiveness in Burundi</td>
<td>130</td>
</tr>
<tr>
<td>Thomas Owen Eisemon, John Schwille, Robert Prouty, Francis Ukobizoba, Deogratias Kana, Gilbert Manirabona.</td>
<td></td>
</tr>
<tr>
<td>Chapter 9: Accelerated Schools in the United States: Do They Have Relevance for Developing Countries?</td>
<td>158</td>
</tr>
<tr>
<td>Henry M. Levin</td>
<td></td>
</tr>
<tr>
<td>Index</td>
<td>173</td>
</tr>
</tbody>
</table>
Chapter 8

Providing Quality Education When Resources are Scarce: Strategies for Increasing Primary School Effectiveness in Burundi*

Thomas Owen Eisemon, John Schwille, Robert Prouty, Francis U kobizoba, Deogratias Kana and Gilbert Manirabona

Introduction

While a great deal of attention has been given to documenting the poor quality of African primary schools and the need to improve them (World Bank, 1988), the supporting evidence is often drawn either from international studies of educational achievement or from national research which uses a metropolitan language to measure achievement. African students, it seems, have not learned very much at primary school or even in secondary schools which select students on the basis of rigorous national examinations that are generally administered in a metropolitan language.

What such results indicate is not entirely clear. The use of a metropolitan language to measure achievement is justified on the grounds that it is the medium of instruction for the upper stage of primary schooling and for secondary schooling in Burundi and other African countries (Eisemon and Schwille, 1991; Eisemon, Schwille, and Prouty, 1991a). But the use of a metropolitan language in assessment may strongly bias performance in most academic subjects, particularly those like science that are important to improving health status, to increasing agricultural productivity, and to a wide range of social and economic outcomes of educational investments. A better understanding of how language may affect

* The research reported in this paper was supported by the USAID BRIDGES Project administered by Harvard University (DPE 5824-A00-5076-00). The research was planned and carried out by the Centre de Perfectionnement et de Formation en Cours d'Emploi (CPF) in collaboration with Michigan State University and McGill University. Heather Usher and David Williams, graduate students at McGill, assisted in the data analysis. Many valuable suggestions and comments on particular aspects of the analysis were made in consultation with Drs Michael Abrahamowicz, Carl Frederiksen and Socrates Rapagna, McGill University; and William Schmidt and Richard Hounang, Michigan State University. The authors take responsibility for any remaining shortcomings.
Increasing Primary School Effectiveness in Burundi

measurement of individual differences is central to the objectives that have guided the research reported in this paper.

We will be concerned as well with what contributes to effective instruction at the classroom level. Effective teaching is, of course, difficult to define for any educational system. But for countries that use national examinations to allocate educational opportunities, a teacher whose students have a record of success in examinations is viewed as successful. This formulation may ignore many things, though it captures what is significant for students and parents as well as many teachers and educational administrators. Teacher qualifications and experience may be as important for successful examination preparation as are in-service teacher training and inspection (Mwamwenda and Mwamwenda, 1989). Since these teacher characteristics and administrative practices can be manipulated by educational policies, they are of much interest to policymakers (Alexander and Simon, 1975). However, the effects of gross manipulations of policies affecting, for instance, years of teacher training on student achievement are uneven and often ambiguous (Heyneman and White, 1986, p. 49).

Not surprisingly, efforts to correlate achievement with more subtle indicators of instructional effectiveness, such as use of time, curriculum coverage, and monitoring of learning, suggest that 'some elements of effective teaching are common cross-culturally, while others may be culture specific' (Lockheed and Komenan, forthcoming, p. 15). For African countries with influential examinations systems, teacher understanding of assessment tasks, sources of student errors, and strategies for remediating them should also be considered important features of instructional effectiveness.

Finally, we will investigate the impact of student repetition on achievement. Depending on how internal efficiency is defined, repetition may either enhance or erode it. Repetition increases the number of years it takes a primary school to produce a graduate and, thus, wastes instructional resources. On the other hand, repetition may increase student achievement and, in doing so, bring more students up to a level of learning expected of primary school graduates. In Burundi, as in many other African countries, repetition is largely voluntary, that is, students repeat to improve their chances of educational success. Some authorities (cited in Schwille, Eisemon and Prouty, 1990b) assert that repetition simultaneously wastes resources and may have only a negligible impact on student achievement. That is the position of many African ministries of education and of donors to African education. According to a World Bank (1988) report, 16 percent of primary school students in sub-Saharan African countries were repeaters — 23 percent in the Francophone countries.

The Policy Context

Unlike most African countries, Burundi moved slowly to expand primary schooling. When the government did begin to expand primary schooling rapidly in 1982, it introduced double shifts. Double shifts were combined with a policy of collective promotion to increase educational attainment. In consequence, school enrollments grew dramatically: by 256 percent in the period 1980–81 to 1986–87 (Ministry of National Education, personal communication, 1988).

Another consequence was that the curricular changes proposed in the 1973
Thomas Owen Eisemon, John Schwille, Robert Prouty, Francis Ukobizoba

reform emphasizing 'Kirundization' and 'ruralization' of primary schooling, which continue to guide educational policy, could not be easily implemented (Ministry of National Education, 1988a; Ministry of National Education, 1988b). Kirundization and ruralization were predicated on two unrealistic assumptions. The first was that access to schooling could be increased without raising aspirations for academic rather than practical training, and for instruction in French, the language of secondary and higher education, instead of Kirundi, the mother tongue of most Burundians. Second, it was assumed that the curricular objectives of the 1973 reform would continue to guide instruction despite less instructional time, larger class sizes, and heavier teacher workloads that resulted from the introduction of double shifts and collective promotion. The scope of the school curricula had to be reduced. The teaching of agriculture was one casualty. The amount of agriculture instruction was cut to one period of 30 minutes per week (Eisemon, 1989).

In the 1973 reform Kirundi was intended to become the medium of instruction at the primary level and, eventually, of lower secondary schooling. However, French has been retained as the medium of instruction for grades 5 and 6 largely because of fears that students would be unable to cope with French in secondary school (Ministry of National Education, 1988b). In 1989 lack of student facility in French led the government to begin instruction in the metropolitan language in the first grade rather than in the third.

Educational effectiveness has been equated with achievement in academic subjects, which are assessed mainly in French in the rigorous concours national, the national secondary school entrance examination. The small proportion of students admitted to secondary schools on the basis of their examination results, less than 10 percent, has not increased since the introduction of double shifts, though the number of entrants has increased in absolute terms. The examination orients instruction at the upper stage of the primary cycle (Eisemon, Schwille and Prouty, 1989). Primary school teachers and school directors do not participate in the selection of examination questions or in the marking of answers, and until 1989 individual student scores were not announced. These measures have ensured that the examination is viewed as an almost lottery-like event.

The concours national consists of examinations in French, Kirundi, mathematics, and a combination of science and social studies (known as étude du milieu). Two hundred points are awarded. French and mathematics are the most important papers, accounting for 80 percent of the possible marks. The selectivity of the concours national contributes to the high reported rate of student repetition in grade 6: 51 percent in 1988–89 (Proceedings, 1989). Ministry policy has called on schools to limit repetition to an overall 10 percent average across all grades of primary school. But the overall national repetition rate for primary school in 1988–89 was 25.7 percent (Proceedings, 1989). As students are not given unique inscription numbers when registering for school, repetition cannot be easily monitored. Students wishing to repeat grade 6 can enroll in other schools. Collective promotion of students reduces wastage in the lower stage of the primary cycle but increases repetition in the final year. The absence of a strict control over repetition in grade 6 is curious in an educational system that is otherwise highly managed and well controlled. The explanation may have to do with the fact that the examination is the principal determinant of a student's economic future. No student is prevented from repeated failure, from experiences likely to
Increasing Primary School Effectiveness in Burundi

convince parents and students that the causes of poor performance have to do with individual effort and ability rather than with a selection mechanism that does not afford sufficient opportunity to succeed.

The desire to expand enrollments prompted the government in the early 1980s to introduce double shifts, which decreased the amount of instruction students receive to three and a half hours a day. Double shifts increased efficiency in the utilization of staff and facilities but also increased requirements for other resources that support teaching, including instructional materials. School fees of about US$1.70 are assessed for purchase of student textbooks, which are available only for language arts subjects in French and Kirundi. Teachers' guides (fichiers) are used for other subjects even in the upper stage of the primary cycle.

Although all primary schools are given a common curriculum to follow and teaching is circumscribed by the teachers' guides, there is still opportunity for alteration of the program of studies, especially in sixth grade when students are preparing for the concours national. For example, teachers and principals may increase in several ways the amount of instruction students receive in the subjects tested in the concours national. They may reduce the number of lessons given in subjects like agriculture. Teachers may combine morning and afternoon shifts, teaching both groups together all day. Or they may increase the length of instruction by beginning classes earlier and/or ending later. Some of these measures deviate from the guidelines school directors and teachers are given to follow.

What emerges from the foregoing are many unreconciled objectives, policies and practices. Access to primary schooling has been expanded through double shifts and educational attainment raised by collective promotion. But this has not been accompanied by a proportionate increase in opportunities for secondary education. While primary school is the terminal stage of schooling for most children, instruction in the upper stage of the cycle is oriented to gaining admission to secondary school. Selection mechanisms and double shifts do not support the curricular objectives of the 1973 reform. Although emphasis is placed on efficient utilization of instructional resources, the selectivity of the concours national fosters grade repetition. Policies adopted to facilitate school expansion produce qualitative variations in instruction notwithstanding efforts to ensure uniformity.

Study Design

This study was planned and carried out in collaboration with the Centre de Perfectionnement et de Formation en Cours d'Emploi (CPF). A more detailed account of design, instrument development, and analyses can be found in the technical report by Eiseon, Schwille, Prouty, U kobizoba, Kana and Manirabona (1990). Sixth-grade students and teachers in predominantly rural areas of the country were the focus of data collection. Of the thirty-one school cantons in the country, three were excluded as predominantly urban, two were excluded because they were still disrupted from recent (1988) ethnic violence, and five were excluded because they were judged to contain too many inaccessible schools to permit the execution of a probability sample. From the remaining twenty-one cantons a multi-stage, stratified cluster sample was drawn by probability methods. All students in the sampled classes were to be tested. The sample was executed virtually according to plan. Thus, a total of 1,946 students in
forty-seven classes in twenty-four clusters were surveyed during a two-month period (mid-March through mid-May 1989) prior to administration of the *concours national*. The number of units drawn at each stage of sampling was a compromise between efforts to make the data collection manageable and our attempt to acquire all the data needed for the envisaged analyses. In the analyses of student data reported below, weights have been used to compensate for the fact that the sampling was not self-weighting in the final stage.

The sample ranged in age from 11 to 19 years. More than half (54 percent) of the students were 14 or 15 years of age. Only 10 percent started school at age 6 and progressed to the sixth grade without repeating. A majority (55 percent) were repeating the sixth grade, and 50 percent had repeated previous grades. The majority were male (59 percent).

All but one of the school directors and most (83 percent) of the grade 6 teachers were men. Given the lack of substitute teachers for staff on maternity leave, few women are assigned to teach the final year when students are preparing for the *concours national*. Nor were there any untrained teachers in the sample. But a large proportion (41 percent) had been teaching two years or less. And 40 percent of the teachers had finished only a one-year program of teacher training offered to students with four years of academic secondary schooling. This program was abolished in 1982 and teacher training lengthened to two years. As for the school directors in the sample, 49 percent had three or fewer years of experience in that position.

Tests were developed to assess student performance in the domains of reading comprehension, written composition, mathematics and science, the latter including elements of agriculture and health as well. The tests were initially prepared in English and then translated into French and from French into Kirundi. In the case of the French comprehension tests, two versions were developed. One employed standard French vocabulary, similar to the vocabulary contained in the teachers' guides prepared and distributed by the Bureau of Rural Education in the Ministry of Primary and Secondary Education. Included in the comprehension test were texts dealing with the filtration of water and how to construct a water filter from ordinary household materials. The Bureau of Rural Education has promoted such filters in its efforts to improve health instruction. The comprehension tasks elicited skills involving locating and recalling information as well as making inferences from text propositions or prior knowledge. The tasks were constructed in the multiple choice format used for the *concours national*.

The *concours national* examines knowledge of French and Kirundi production rules with tasks requiring students to select answers that are grammatically, syntactically or semantically correct. However, knowledge of production rules may have little to do with skills in applying them to composition tasks, particularly if the method of assessment discourages teaching of composition. Thus, a picture task was constructed to stimulate production of a narrative composition in French or Kirundi. Nine pictures were used for the story composition task in an effort to increase the amount of text students produced for subsequent analysis. Three scores (overall quality, coherency of narrative, and use of language) were derived, based on ratings by CPF researchers trained for this task.

A test of mathematics was developed measuring computational skills and problem solving. Four of the nineteen questions dealt either with computations
or operations involving numerical transformations (for example, representing common fractions as decimals) and required little or no text processing for successful performance. Most were short problems with one-step or two-step solutions. They tested application of text processing and problem solving skills imbedded in practical tasks requiring numeracy and literacy, such as calculating correct application rates for an agricultural pesticide.

Still another 19-item test was developed for measuring learning in science, health and agriculture, which are covered in different parts of the school syllabus. Science and health are taught in étude du milieu which also deals with geography, history, and civics. Étude du milieu constitutes one of the four main parts of the national secondary school entrance examination. Other topics on the BRIDGES test are covered in the practical subjects of agriculture and home economics, which are not included in the secondary school entrance examination.

Most of the items on the test measured students' ability to make observations or process scientific information in such a way that inferences could be drawn consistent with a scientific principle. Some questions elicited knowledge of physical laws and their application: for example, determining how much force is needed to lever an object of known weight, given the distance to and from the fulcrum. About half of these items required integration of knowledge of academic and practical subjects that are usually taught and assessed separately.

Draft versions of the BRIDGES tests were pretested as well as reviewed for curriculum validity by the relevant curriculum development units of the Ministry of Primary and Secondary Education. In all, five versions of the tests were produced and administered to subsamples as follows: French comprehension and composition (with standard French text) administered to approximately one-eighth of the sample; French comprehension and composition (with simplified, colloquial French text), one-eighth; Kirundi comprehension and composition, one-fourth; French mathematics, science and agriculture, one-fourth; Kirundi mathematics, science and agriculture, one-fourth. Within the tested classes, these five versions were distributed in a predetermined order to avoid bias in the selection of the subsamples taking each version of the tests. Students were given two hours to finish one of the five versions.

School Director and Teacher Instruments

The school director and teacher instruments provide most of the information used to analyze the effects of school and teacher characteristics on student achievement. The school director instrument, which was administered as a questionnaire, elicited information with respect to: (a) the number, qualifications, experience, and supervision of staff as well as size of instructional groups and incidence of repetition in the sixth year; (b) variation in implementation of double shifts, coverage of the school curricula, and application of the policy of using French as the medium of instruction for most subjects in the upper stage of the primary school; and (c) practices involving preparation of students for the concours national, such as lengthening the number of hours of instruction.

The teacher instrument, also administered as a questionnaire, consisted of three parts. One, using an adaptation of IEA (International Association for the Evaluation of Educational Achievement) opportunity-to-learn ratings, required
Table 8.1  Student performance in reading comprehension, written composition, mathematics and science/agriculture: French vs. Kirundi as language of assessment

<table>
<thead>
<tr>
<th>Test</th>
<th>Mean Scores</th>
<th>F value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standard French</td>
<td>Simplified French</td>
</tr>
<tr>
<td>Reading comprehension total test (15 items)</td>
<td>6.04</td>
<td>6.53</td>
</tr>
<tr>
<td>Narrative text subtest (8 items)</td>
<td>3.02</td>
<td>3.36</td>
</tr>
<tr>
<td>Procedural text subtest (7 items)</td>
<td>3.01</td>
<td>3.18</td>
</tr>
<tr>
<td>Composition test (ratings 0–10)</td>
<td>French</td>
<td>Kirundi</td>
</tr>
<tr>
<td>Overall quality</td>
<td>2.27</td>
<td>4.11</td>
</tr>
<tr>
<td>Coherency of narrative</td>
<td>1.96</td>
<td>3.06</td>
</tr>
<tr>
<td>Use of language</td>
<td>2.14</td>
<td>4.01</td>
</tr>
<tr>
<td>Mathematics (19 items)</td>
<td>8.65</td>
<td>8.19</td>
</tr>
<tr>
<td>Science/agriculture (19 items)</td>
<td>7.16</td>
<td>9.31</td>
</tr>
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*** p < .001

the teacher to review each question in the mathematics and science-agriculture tests given to students and determine if the information needed to answer the question had been taught. Another section of the instrument obtained information on how much of the prescribed curricula teachers had been able to cover and on their examination preparation strategies. The third section contained six types of questions measuring teachers' understanding of the knowledge and skills elicited in assessment tasks similar to those in the student instruments. Teachers' responses to these questions were rated through comparison to a scoring scheme for analyzing how well the responses articulated what the specific questions were intended to elicit. These six ratings were intended to measure the insights teachers have into what is expected of students for successful performance or difficult assessment tasks, why students make mistakes, and what can be done to correct them.

Results of Analyses

Effects of Language on Test Performance

Language of assessment, French or Kirundi, profoundly influenced the measurement of achievement in most of the subjects tested, as Table 8.1 indicates. The mean number of correct answers was significantly higher for the Kirundi versions of the language comprehension, composition, and science/agriculture tests. The variations in performance under the different language conditions were greatest for scores on the science/agriculture test and the three ratings of the student compositions. Only in mathematics were the results for the French and Kirundi
Increasing Primary School Effectiveness in Burundi

tests similar. The lowest scores were obtained for the student compositions. For instance, the mean score (M = 2.27) for the overall quality of the French compositions represents an evaluation of 'poor'. The Kirundi compositions received higher scores, but the mean scores were also low (M = 4.11 for overall quality), suggesting that students have little practice with such tasks.

The comprehension test mean score for standard French (M = 6.04) was only slightly lower than that for colloquial French (M = 6.53). Both were well below the score for Kirundi (M = 8.05, or about 53 percent of the maximum score). Interestingly, the differences in total scores for the French and Kirundi tests result more from answers concerning the narrative text on water filtration than from those concerning the procedural text. Student responses to questions pertaining to the procedural text on how to construct a water filter differed significantly by language of assessment, but the absolute differences were small. Procedural texts are less often used for instruction and are more difficult for children to comprehend. Unfortunately, comprehension of procedural texts is perhaps a better measure of functional literacy.

The variations in the mean scores for the French and Kirundi tests of knowledge of science and agriculture were the largest for the four sets of tests. Still, the mean score for Kirundi, M = 9.31, was less than half (49 percent) of the highest possible score. For the French test of science/agriculture, studies selected about a third (38 percent, M = 7.16) of the correct answers. These poor results may have to do with the fact that, although the knowledge tested in this examination is supposed to be taught in the integrated science and social studies class or in the practical subjects of agriculture and home economics, the students' teachers reported that only half (53 percent) of the questions had been covered in class. Questions that had not been covered generally dealt with agricultural topics. Nevertheless, most (68 percent) of the teachers claimed that the questions on this test were identical or very similar to the kinds of question items selected for the concours national. The results for the mathematics tests in French and Kirundi were nearly identical. Mathematics was the only subject in which students scored slightly higher in French. Most teachers had covered the topics examined in class (89 percent of the questions), and most felt that the test items were similar to those appearing in the concours national (95 percent of the questions). Nevertheless, the mean scores for the French and Kirundi versions of the mathematics test were only 46 percent and 43 percent of the highest possible score, respectively. Though the mathematics test had the highest instructional validity and the lowest differences in performance under the two language conditions, these favorable factors did not lead to much better results.

Responses to the question items included in the reading comprehension, mathematics, and science/agriculture tests were examined using monotone regression splines analysis to determine how language of assessment affects performance for students of different ability. This approach was developed by Ramsay and Abrahnamowicz (1989), who carried out this analysis as an exploratory application. For this analysis, ability was estimated from the student's response pattern for each test, and the estimate compared to the student's response to individual questions. No independent estimates of student ability were obtained, such as scores on related tests administered in the student's mother tongue. Since test difficulty affected the ability estimate, the developers
of this methodology have suggested that these initial results could underestimate language effects (Ramsay and Abrahamowicz, personal communication).

Figures 8.1–3 present aggregate results for the three tests. The vertical axis represents the probability of success expressed as the expected proportion of correct answers (corresponding to the probability of answering the individual item correctly in the case of the individual item graphs). Ability is estimated along the horizontal axis. The aggregate results sum the item analyses, which used a one-knot spline function to produce the item characteristic curves. A question that is highly discriminating for students of varying levels of ability should have a curve that rises steeply with higher estimated ability and probability of successfully answering the question.

The curves representing the French and Kirundi results for each item and total test scores indicate how well they measured the students' knowledge and skills. Different curves for French and Kirundi reveal underlying differences in measurement. An important feature of monotone regression splines analysis for this study is that it permits identification of which kinds of students are most affected by being tested in their mother tongue or in a second language.

In Figure 8.1 these curves are represented for the expected scores on the standard French, simplified or colloquial French, and Kirundi comprehension tests. At the lowest levels of estimated ability, the curves follow a similar trajectory and then begin to diverge. At the highest levels of ability, the curves for the Kirundi and colloquial French tests are close together. The curve for the standard French test is much lower and flattens out at the high end of the ability range, meaning that the results for this test give lower estimates of the proportion of correct
Increasing Primary School Effectiveness in Burundi

Figure 8.2 Science test scores

Figure 8.3 Mathematics test scores

Key:
- Standard French
- Kirundi
answers among the most able students, and Kirundi science tests, which were not nearly as successful in.

Because Figures 8.1–3 represent the summation of item results, they necessarily conceal wide variations in responses to individual items and tend to suppress language effects. The item analyses revealed that several items on the French science test were not well translated into Kirundi. Such difficulties could have either increased or decreased the mean differences in student performance between the two language conditions. For instance, the second question asked students to select the most desirable rotation of food crops in order to control soil-borne plant diseases. The correct answer to this question required an inference from a complex set of premises regarding the vulnerability of crops to particular diseases. This was a good question in the French version of the test. In the Kirundi test, student responses peaked at a low level of estimated ability and levelled off. The most able students were not more likely to get the correct answer in Kirundi, probably because they did not understand the question.

On the other hand, in numerous other instances the Kirundi curves were substantially higher than the French ones. This was particularly true of the questions in the comprehension tests requiring high level inferences. An example is a question requiring students to select an appropriate title for the procedural text (see item 15 in Figure 8.4). For this question, the curve for standard French peaked at the level of a 30 percent probability of successfully answering the question and then flattened out. The curve for colloquial French reached 45 percent. The Kirundi curve was near perfect, reaching 100 percent probability of success for students at the highest level of ability.
Increasing Primary School Effectiveness in Burundi

The principal finding derived from the analyses presented in Figures 8.1 and 8.2 is that comprehension skills and knowledge of science and agriculture are more poorly measured in French than in Kirundi. Of particular importance is the fact that the performance of the most able students was the most affected by being tested in French. Conversely, testing in the mother tongue did not increase the performance of less able students who had great difficulty with the tests in either language. And, to reiterate, an independent Kirundi measure of student ability would probably magnify the language effects for these tests.

Figure 8.3 presents a very different finding. There were no language effects for mathematics. The French and Kirundi curves follow the same paths, indicating that the two tests performed similarly in discriminating among students. Since most of the test questions were story problems, the similarity in the French and Kirundi results cannot be explained simply in terms of the fact that the items required little language comprehension for correct solution. Linguistically demanding problems, such as one requiring students to solve an ordering problem using a set of ‘bigger/smaller than’ premises, sometimes produced differences — in favor of Kirundi. But many problems of comparable difficulty requiring students to process a great deal of textual information for accurate problem representation (such as area problems necessitating multi-step solutions) did not.

Certain kinds of computation and mathematical problem solving may involve little cognitive interference when carried out in French because equivalent symbols, structures, or concepts now exist in Kirundi, having been imported from French. The base ten number system is an illustration. It has no traditional equivalent in Kirundi (Zaslavsky, 1973) or in many indigenous African languages, which use a base five system (Gay and Cole, 1967; Reed and Lave, 1979). Consequently, complex computations are often performed in Kirundi with a number system and operations for manipulating numbers that are derived from French and taught in Kirundi in the lower stage of primary school. This method may facilitate mathematical thinking in French and in part explain differences between performance in mathematics and the other domains.

Finally, it should be noted that test scores for the BRIDGES tests in both languages were correlated with the scores students in these schools received on the 1989 concours national examination. For instance, the school mean scores in BRIDGES for comprehension of standard French and Kirundi were correlated with mean school level results for the French and Kirundi papers from the concours national ($r = .37$, $p < .01$; and $r = .32$, $p < .01$, respectively). The correlation between results on the concours national mathematics paper and the scores for the BRIDGES French test of mathematics was somewhat higher ($r = .48$, $p < .001$).

Effects of Grade Repetition on Student Performance

Measures of factors affecting school effectiveness in preparing students for the tests developed for this study were grouped according to whether they related to (a) student social and educational background; (b) school management and teacher supervision; (c) implementation of the national curricula and instructional practices that influence opportunity to learn; and (d) teacher experience and skills. Of all the variables examined, the one with the greatest impact on test scores was whether a student had repeated grade 6. The differences between the mean scores
Table 8.2  Mean test score differences by test: repeaters versus nonrepeaters at sixth grade.

<table>
<thead>
<tr>
<th>Test</th>
<th>Mean test scores</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Repeaters</td>
</tr>
<tr>
<td>French mathematics (19 items, n = 469)</td>
<td>10.46</td>
</tr>
<tr>
<td>Kirundi mathematics (19 items, n = 486)</td>
<td>9.69</td>
</tr>
<tr>
<td>French reading, comprehension of standard text (15 items, n = 269)</td>
<td>6.94</td>
</tr>
<tr>
<td>French reading, comprehension of simplified text (15 items, n = 241)</td>
<td>7.78</td>
</tr>
<tr>
<td>Kirundi reading comprehension (15 items, n = 481)</td>
<td>9.09</td>
</tr>
<tr>
<td>French composition: general quality (ratings 0–10, n = 474)</td>
<td>3.33</td>
</tr>
<tr>
<td>Kirundi composition: general quality (ratings 0–10, n = 451)</td>
<td>4.83</td>
</tr>
<tr>
<td>French composition: coherence (ratings 0–10, n = 474)</td>
<td>2.80</td>
</tr>
<tr>
<td>Kirundi composition: coherence (ratings 0–10, n = 451)</td>
<td>3.64</td>
</tr>
<tr>
<td>French composition: use of language (ratings 0–10, n = 474)</td>
<td>3.14</td>
</tr>
<tr>
<td>Kirundi composition: use of language (ratings 1–10, n = 451)</td>
<td>4.71</td>
</tr>
<tr>
<td>French science/agriculture (19 items, n = 469)</td>
<td>7.82</td>
</tr>
<tr>
<td>Kirundi science/agriculture (19 items, n = 486)</td>
<td>9.74</td>
</tr>
</tbody>
</table>

* p < .05  
** p < .01  
*** p < .001

of repeaters and nonrepeaters were both large and highly significant. Repeaters scored higher on all tests, especially in mathematics (Table 8.2).

In general, the differences were greatest for the French tests. In the French version of the mathematics test, for instance, the repeaters got 55 percent of the questions correct and the nonrepeaters only 32 percent. Nevertheless, the language effect appears in large part to compensate for the repetition effect. In other words, on certain tests the nonrepeaters did as well, or almost as well, on the Kirundi version as the repeaters did on the French version. This pattern can be seen in the comprehension test (nonrepeaters 6.79 in Kirundi vs. repeaters 6.94 in standard French), the general quality of composition (nonrepeaters 3.24 in Kirundi vs. repeaters 3.33 in French), and especially in the science/agriculture test (nonrepeaters 8.79 in Kirundi vs. repeaters 7.82 in French). In addition, whereas the repeaters did better on the French version of the mathematics test than on the Kirundi version (10.46 vs. 9.69), the nonrepeaters did slightly better in Kirundi than in French (6.40 vs. 6.06).

In Burundi, decisions of whether or not students repeat are subject to teacher and school director influence as well as to student and parent wishes. In grades 1–5 school directors are authorized to allow repetition for students whose end-of-year grades do not exceed a certain minimum (40 percent), whereas at the end
of sixth grade repetition is authorized for better students who are thought deserving of additional tries at the secondary school entrance examination. Normally, permission to repeat sixth grade is contingent on the student's passing the examination given in the final semester (which is different from the concours national). Teachers and school directors may adopt a permissive policy toward student repetition if they feel that it increases the proportion of students who succeed in the concours national examination. Many (61 percent) of the school directors reported that concours national success rates strongly influenced how their work was evaluated by the Ministry of Primary and Secondary Education. Fewer (39 percent) felt that controlling student repetition was very important in affecting evaluations.

The fact that in Burundi sixth-grade repeaters did better than nonrepeaters runs against the grain of much that has been written (see Schwille, Eisemon and Prouty, 1990, for references), and hence it is tempting to discount such findings on methodological grounds. For example, one argument is that the comparisons are inappropriate because repeaters and nonrepeaters are drawn from such different populations. But in our view, the reason for making these comparisons is precisely to raise questions such as these: How do these repeaters differ from nonrepeaters at the same grade level and from those who get promoted to the next grade level? What is the variation in the nature and effects of repetition across schools and countries?

Our Burundi data do not completely answer these questions, but they do suggest that the social meanings and consequences of grade repetition may differ greatly across settings. Many Burundi repeaters at the sixth-grade level are well motivated and scholastically capable children who are taking extra time to prepare for additional attempts to pass the very selective secondary school entrance examination. This situation contrasts sharply with those in which repeaters tend to be students who are doing very poorly at school and who are held back because they are judged not to have learned enough to meet minimum standards for promotion.

In considering the selectivity of repeaters versus nonrepeaters, we examined several background factors to the extent possible with data that are limited in these respects. The proportion of repeaters who were male was nearly the same as the overall proportion of males in grade 6. The fathers of repeaters had, on the average, a little more schooling than the fathers of nonrepeaters (M = 4.26 years vs. M = 3.82 years, F = 8.779, p < .05). There was no such difference in mothers' education. A more important difference derives from the fact that nonrepeaters were the first class to go through the double shift system which was adopted progressively one grade at a time beginning in 1982. Since this system reduces instructional time, repeaters had more advantaged school conditions in their earlier years.

Use of Instructional Supervision to Increase Student Performance

School management and teacher supervision comprise many activities associated with monitoring instruction to ensure compliance with Ministry of Education policies. An important responsibility of school directors is to visit teachers, observe their classes, and provide guidance to them. School directors are required
Thomas Owen Eisemon, John Schwille, Robert Prouty, Francis Ukobizoba

to make 150 classroom visits a year. Information was obtained from the school directors as to the number of times they had visited the schools of teachers whose students were tested. Information was obtained as well from cantonal school inspectors on the number of classroom visit reports received from school directors for the first and second trimesters of the 1988–89 school year. There was a great deal of variation among school directors in the number of class visits they reported. In one of the cantons sampled, for instance, one director had made ninety visits and another only fifty-one, or half the number of visits required. School directors generally have a cluster of schools (with core and satellite schools) under their supervision. Distance between schools and lack of transportation sometimes make it difficult for directors to visit satellite schools as often as core schools.

When school directors visit classes, they are supposed to evaluate many aspects of a teacher’s performance: punctuality, whether the lesson is being taught at the time specified in the calendar given for each academic subject, how well the teacher follows the teachers’ guide, and so on. In addition, the school directors observes the language of instruction and provides advice to teachers in the upper stage of the primary cycle on the use of French and Kirundi. Ministry policies call for all subjects except Kirundi, even agriculture and home economics, to be taught in French in the fifth and sixth year. Unfortunately, many students cannot follow instruction in French. Teachers estimated that less than a third (30 percent) of their students understood French well enough to be taught in that language without frequent recourse to Kirundi. School directors were asked what advice they gave to the teachers on the use of French and Kirundi in the fifth grade when the transition to French occurs. Such information constitutes a useful measure of the extent to which teachers are encouraged to use French exclusively.

Instructional Practices that Increase Opportunity to Learn

Instructional practices that may be effective in increasing learning outcomes include some that involve adherence to ministry policies and others that require deviations from them. Successful implementation of the school curricula is predicated on fidelity to the teachers’ guides provided for academic subjects and to the schedule for teaching lessons. Teachers cannot easily accelerate coverage of the curricula through, for instance, selecting some topics for independent study. There are no student textbooks for most academic subjects. Moreover, double shifts have reduced instructional time, necessitating adherence to the teaching schedule to cover what may be examined in the concours national. Only two to three weeks are provided for review for the examination. This period cannot be increased without skipping topics. Many topics of examination questions are introduced in the lesson schedule in the period immediately preceding testing. The highly variable syllabus coverage of the concours national, together with the factual content of many examination questions, discourages teachers from being very selective, especially in teaching academic subjects.

However, as noted above, teachers can increase the amount of instruction students receive on important topics in other ways. A majority (55 percent) of the teachers admitted to often combining morning and afternoon shifts during the school year, and almost all (88 percent) had done so for the teaching of French in
the two weeks preceding the questionnaire. This deviates from the double shift policy that schools are expected to follow. Teachers also combined different grade levels for instruction in practical subjects. Most (60 percent) did this for teaching practical agriculture. A fourth (25 percent) of the teachers said that they skipped teaching practical agriculture often or occasionally, and about the same proportion (27 percent) reported skipping home economics. In the two weeks prior to the time when the teachers were interviewed, most teachers had skipped one or more lessons in agriculture (61 percent) and home economics (57 percent), usually using the period to teach French or mathematics instead. Another strategy to increase instruction is to lengthen the school day.

* Measures of Teacher Skills and Experience

In highly selective educational systems in which teaching in the upper stage of the primary cycle is oriented to preparing students for a national secondary school entrance examination, one way to measure effective teaching is in terms of student results and the skills implicated in examination success. Teachers’ previous experience in grade 6 and their success in preparing students for the concours national may also be considered indicators of teacher skill. Still another indicator could be the frequency with which the teacher has given demonstration lessons to colleagues during in-service training.

Further measures of teacher skills were obtained from the instrument measuring teachers’ understanding of student assessment tasks, sources of student errors, and strategies for remediating them. For example, teachers were given the following examples of errors students often make in spoken and written French:

1. *Je ne vois rien* (The word *rien* is often mispronounced by Kirundi speakers, becoming *lien* and transforming its meaning: ‘I don’t see link’ for ‘I don’t see anything’).
2. *Je vais venir hier* (I will come yesterday).

As asked about the source of these errors, one of the teachers said: ‘It’s phonetics and [semantics] that are the problems, as well as translation from the mother tongue to a foreign language which creates interference. For example, *ejo* in Kirundi means at the same time yesterday and tomorrow in French. This distinction between the past and the future is not the same as in French’. In order to assist students to correct these kinds of errors, the teacher described several oral exercises to improve pronunciation and increase students’ awareness of tense structures in French.

Ratings for the language arts and mathematics/science items in the teacher skills instrument were correlated with years of teaching experience in grade 6 ($r = .33, p < .01$; and $r = .36, p < .05$, respectively). They were also correlated with demonstration teaching ($r = .26, p < .05$; and $r = .29, p < .05$). Unexpectedly, level of teacher training was negatively related to the two measures of teacher skills ($r = -.25, p < .05$; $r = -.23, p < .05$). This anomaly may be explained by the fact that level of teacher training is negatively confounded with teaching experience in grade 6. Graduates of the older teacher education program, which provided only one year of training after four years of academic secondary education, have more experience at this grade level.
Of the instructional and school characteristics discussed above, the number of class visits in the past two weeks to sixth-grade classes (as reported by the school director) had the closest relationship to test scores. The correlation was large and significant for all of the tests (for example, $r = .47$, $p < .001$, for the combined mathematics/science/agriculture test in Kirundi). The number of times the teachers studied were supervised ranged from two to twelve. Two-thirds (65 percent) of the teachers received four or fewer visits from the school director. Reported teacher punctuality was significantly correlated with three of the mean test scores, most highly for the mathematics/science/agriculture test given in Kirundi ($r = .46$, $p < .001$). Correlations of other instructional and teacher characteristics with student scores (not shown) were usually much weaker. Application of the language policy was correlated with the two language arts tests.

Most measures of opportunity to learn (such as the number of combined shift classes given in the past two weeks) were not significantly related to class scores. Among the teacher characteristics and measures of teaching skills, teacher experience in grade 6 and demonstration teaching were related to the Kirundi test of mathematics and science; previous success in preparing students for the concours national was related to the Kirundi language arts and French mathematics and science tests; and teacher assessment skills in mathematics and science were related to the associated Kirundi test.

A Model of School Effectiveness

The relationships among the supervisory and instructional characteristics mentioned above and their contribution to variations in student performance for the classes sampled were investigated using a model for examining linear structural relations among variables (as estimated by LISREL, see Joreskog, 1978; Joreskog and Sorbom, 1986). This method allows investigation of the relationship of variables to underlying theoretical constructs, as well as among variables whose causal relationships are specified a priori. The latter feature is of more importance for this analysis, which tests a structural model of how school and instructional characteristics might influence student achievement.

A path analysis model was developed to describe relationships among variables that theoretically affect student performance in language arts and mathematics/science assessed in French. For exploratory purposes, student level variables such as fathers' schooling and grade 6 repetition were excluded and class mean scores used for the data analyses. That is, information about supervisory and instructional characteristics pertains to classes rather than to individual students. This has several implications. Using mean scores for the achievement tests obscures variations in performance within classes. The effects of student background characteristics are ignored. In addition, the number of observations is reduced substantially, potentially inflating correlations and controverting some assumptions of the LISREL method that normally require large sample sizes to satisfy. Our intentions are, however, modest. We wish to explore whether a general model of the impact of supervisory and instructional characteristics on student achievement at the primary school level is consistent with the data for the French tests in language arts, mathematics, and science.

The general model contained four exogenous variables: the number of class
visits to sixth-grade classes in the past two weeks as reported by the school director (NUMVIS), the advice given by the school director on the extent to which French should be used exclusively (LGADVD), the number of extra teaching hours added to the class schedule in the past two weeks (NUMHRS), and the number of years the teacher has taught in grade 6 (YRSIN6). Endogenous variables included reported teacher punctuality (PUNCT), the number of times shifts have been combined for instruction in the past two weeks (MIXTOT), the number of lessons skipped in the less important subjects over the past two weeks (TOTS KP), the average predicted number of days required to finish the school syllabus in various subjects (TOTEND), the number of demonstration lessons given by the teacher in the past two years (DEMTCH), the teacher’s success in preparing children for the concours national examination the previous year (EST7SC), the teacher’s assessment skill ratings in language arts (SET123), and the French test scores for language arts (LARTSF), the latter being the sum of individual comprehension and composition scores. This model is shown in Figure 8.5.

Arrows indicate the direction of relationships. For example, teacher supervision, i.e., the number of visits made by the school director (NUMVIS), was considered to ‘cause’ teacher punctuality (PUNCT) which, in turn, was viewed as ‘causing’ higher student achievement (LARTSF). Similarly, number of director visits (NUMVIS) was expected to have a negative relationship to skipping lessons (TOTS KP), and through it, a positive relationship to achievement (LARTSF).

In the general model, several instructional practices were regarded as being affected by teacher supervision in different ways. Closer teacher supervision might be expected to foster greater adherence to ministry policies, resulting in less lesson skipping, fewer instances of combining shifts, and fidelity to subject-matter syllabi that call for completion of subjects not earlier than two to three weeks before the administration of the concours national examination.

Teacher characteristics and skills constitute a submodel within the general model. Years of teaching experience in grade 6, an exogenous variable, was represented as influencing teacher skills, demonstration teaching, and previous success in examination preparation. It is shown in Figure 8.5 as indirectly influencing student achievement. Teacher characteristics and skills were not connected to particular instructional practices in the model; they were regarded as being conceptually independent. For the same reason, most instructional practices were not linked to teacher supervision in the model. Closer supervision, for instance, was not predicted to directly affect demonstration teaching, though it was thought to influence teacher success in preparing students for the concours national. The number of extra hours of instruction was not seen as a policy variable affected by teacher supervision, an outcome of teaching experience, or necessarily an indicator of teacher skill, but instead was thought to be related directly to student performance.

Results of the Path Model

The LISREL method requires testing of the assumptions of a model through chi-square tests or other indices of fit. Using the measure of student achievement in French language arts, the full model was tested as depicted in Figure 8.5. It
Figure 8.5 A general path model of school effectiveness

KEY:
NUMVIS = No. of school director's class visits
LGADVD = School director's advice on use of French
YRSIN6 = Teacher's experience in grade 6
NUMHRS = No. of hours of extra teaching
MIXTOT = No. of times shifts combined
TOTSKP = No. of lessons in practical subjects skipped
TOTEND = No. of days predicted to finish syllabus
PUNCT = Reported teacher punctuality
DEMTCH = No. of demonstrations given by teacher
EST7SC = Teacher's previous year's exam success
SET123 = Rating of teacher skills in understanding assessment tasks in French language arts
LARTSF = Student achievement in French language arts
yielded a chi-square of 38.32, with 40 degrees of freedom (p = .546), a moderate fit to the data indicating that the model cannot be rejected. The model was also estimated after removing the direct path linking number of extra hours of instruction (NUMHRS) to the outcome measure. This second model produced a chi-square of 35.57 with 33 degrees of freedom (p = .348).

Figure 8.6 presents the results of the latter model for the French language arts scores. Among exogenous variables, the number of director visits has the highest coefficients, particularly for the paths to teacher punctuality and previous teacher success in examination preparation, and the one leading directly to scores on the French language arts test. The connection between teacher supervision, teacher punctuality, and achievement was the strongest indirect relationship. Instructional practices that were predicted to be related to teacher supervision, such as combining shifts and skipping lessons, had relatively weak relationships to supervision. However, the signs of these relationships are of interest. Combining classes and skipping lessons were positively influenced by director supervision. Moreover, these practices were positively related to student performance. It seems that teachers that are supervised more closely and, presumably, held most accountable for the performance of their students, are those that in certain respects exhibit less, not greater, adherence to ministry policies. While the path coefficient for the link between director visits and combining classes is weak, the coefficient connecting combining shifts to student scores is more substantial. Combining shifts did seem to increase achievement.

The number of director visits is strongly related to the measure of previous teacher success in examination preparation. But we cannot conclude that closer teacher supervision necessarily causes successful teaching, as the coefficient for the path leading from external examination success to the BRIDGES outcome measure is relatively low. Moreover, our measure of supervision was collected after not prior to the measure of teacher examination success. Nevertheless, the direct effect of teacher supervision on teaching success is noteworthy.

Among the variables in the submodel, the relationships between years of teaching experience and demonstration teaching, and especially the measure of teaching skill in language arts, are for the most part stronger than the connections between these variables and achievement. The endogenous variables seem to ‘absorb’ the effects of teaching experience and do not themselves consistently and strongly influence student achievement. Demonstration teaching is the one variable linked to teaching experience that has considerable impact on achievement. The effect of the teacher skill measure is disappointingly small.

In brief, the most powerful features of this model of school effectiveness have to do with school director visits, the direct impact of visits on learning outcomes as well as the indirect impact through teacher punctuality. Similar results (not shown) were obtained from testing the revised model with the French mathematics scores.

Discussion

Five conclusions are supported by the various data analyses. First, students exhibited low levels of achievement in all of the subject domains tested. Although testing in the mother tongue improves the measurement of learning outcomes,
Figure 8.6 Path model for achievement in French language arts

KEY:
NUMVIS = No. of school director's class visits
LGADVD = School director's advice on use of French
YRSIN6 = Teacher's experience in grade 6
NUMHRS = No. of hours of extra teaching
MIXTOT = No. of times shifts combined
TOTSKP = No. of lessons in practical subjects skipped
TOTEND = No. of days predicted to finish syllabus
PUNCT = Reported teacher punctuality
DEMTCH = No. of demonstrations given by teacher
EST7SC = Teacher's previous year's exam success
SET123 = Rating of teacher skills in understanding assessment tasks in French language arts
LARTSF = Student achievement in French language arts

\[ x^2 = 35.57, \text{ df } = 33, \text{ p } = .348 \]
it mainly enables a more precise estimate of levels of performance for better students. Although few students performed well under either language condition, the mean level of performance by repeaters in Kirundi was high enough to give one the sense of how much the Burundi system could accomplish under better conditions.

The low levels of performance in the language arts tests should be of particular concern to policymakers. Most students, for instance, had difficulty comprehending the kinds of procedural texts in French and Kirundi that they are likely to encounter in daily life. Students’ skills in written communication were even poorer, particularly in French. That, of course, has serious implications for secondary schooling.

The performance of students was relatively strong in the test of knowledge of science and agriculture when the examination was in Kirundi. This finding might be seen as consistent with the objectives of the 1973 reform, which stressed practical studies and mother tongue teaching. Unfortunately for this explanation, practical studies currently have an inconsequential place in the primary school curricula, largely separated from science and other cognate academic subjects, and they are to be taught in French and not in Kirundi. Moreover, the content of the science and agriculture test was generally not covered by the students’ teachers.

Second, the policy of switching to French as the medium of instruction in grade 5 profoundly influences how much students learn. Even in grade 6, according to the teachers interviewed, only a small proportion of students can follow instruction in French. This depresses test performance in both languages, because French is used as the medium of instruction for most subjects taught in grades 5 and 6. The exception is mathematics. Although the mean scores in mathematics were a little below 50 percent of possible marks, some students obtained perfect scores. Student performance in mathematics was least affected by the use of French as the language of assessment. Moreover, an experiment we did to compare the teaching of mathematics in French and Kirundi, which is described elsewhere (Eisemon et al., 1990), indicated that teaching mathematics in Kirundi without extensive preparation poses many problems for both students and teachers. The implication is that language policy should be more sensitive to the subject domains that are to be taught in French and the mother tongue.

Third, some instructional practices that increase opportunity to learn, such as providing extra hours of instruction, have a relatively weak impact on learning outcomes, both directly and indirectly as estimated in the path models. That may be because the BRIDES tests measure cognitive skills that are less sensitive to practices that many teachers feel are useful for preparing students for the concours national. Examination ‘cramming’, though it may increase the likelihood of concours national success, may not be particularly effective in developing high-level cognitive skills.

Fourth, school management has a strong direct and indirect influence on instruction and learning. Teacher supervision is an important means through which the amount and effectiveness of instruction are influenced. School directors also do substitute teaching, organize in-service training, and have other responsibilities such as liaison with school committees and ministry and party officials. As a result, many may have too little time and too few resources to carry out their primary responsibility, which is to supervise instruction in several schools.

Fifth, repetition has more effect on student performance than any other social
background, school or instructional characteristic measured. A threshold effect cannot be established from this study, because we did not collect information on the number of times a student repeated. Nor, more pointedly, do we know how repetition affects success in the concours national. Nevertheless, students who repeat grade 6 do benefit from the additional opportunity to learn. High repetition rates are often represented as an indicator of low educational effectiveness; 'poor quality teachers, too few textbooks and other relevant learning materials, inadequate guidelines for assessing learning, too few national examination(s), and too few well-qualified educational managers and school directors' (Heyneman and White, 1986, p. 48). High repetition rates may, as well, be an indicator of limited opportunity to learn what is expected of students for entry into secondary school.

Conclusion: Strengthening Basic Education

Strategies for Change

The findings summarized above suggest many strategies for raising levels of achievement, improving monitoring of learning, and reinforcing school management, as well as for increasing the internal efficiency of primary schooling.

Increasing opportunity to learn: The double shift policy has reduced the school day to little more than three hours in order to expand school participation. Many teachers combine shifts and classes to increase the amount of teaching and curriculum coverage of academic subjects during the school year, and especially prior to the administration of the concours national. Combining classes at different grade levels for practical instruction, for example, allows teachers to spend more time on lesson preparation and marking, while combining shifts increases the number of periods of instruction in mathematics and other subjects examined in the concours national.

Combining classes in different grade levels for practical instruction is not likely to have an adverse effect on learning or seriously strain school facilities and resources, at least not as such instruction is presently conceived and organized. Much of this practical teaching takes place outside school buildings in school gardens and involves no formal instruction or use of equipment apart from the tools students bring with them to school.

However, combining shifts for instruction in academic subjects has more serious implications for learning, though not the same implications for all subjects. In the upper stage of the primary cycle, student textbooks are available only for language arts subjects, French and Kirundi. Doubling class sizes for these subjects make it difficult to teach reading and written communications skills, which are best developed through study and exposition of printed texts. On the other hand, the teachers' guides (fichiers) are the only instructional materials for mathematics and étude du milieu. This lack of student materials may not be desirable for teaching independent study skills, but it affords opportunities for increasing class sizes without a proportionate reduction in the amount of learning material that a teacher can cover.
Changing the curricula and language of instruction. The difficulty and scope of the primary school curriculum in Burundi probably go well beyond what is expected of sixth-grade students in many other countries, both developed and developing. Faced with this curriculum, teachers reduce the scope of instruction by neglecting the teaching of practical subjects. One way to address the problem would be to integrate instruction in certain scientifically oriented subjects and to cover all of them in the secondary school entrance examination. Such a change would involve biology, health, nutrition, and agriculture that now are largely taught as separate subjects. They could be profitably combined into a single subject, integrated science. The separation of scientific from practical instruction in the program of studies is reinforced by the use of French to teach étude du milieu, while Kirundi is used for most practical subjects. Though practical subjects are officially to be taught in French in grades 5 and 6, they are in fact usually taught in Kirundi since they are not examined in the concours national (Schwille, Eisemon and Prouty, 1989). On the BRIDGES test, students exhibited little understanding of the scientific information that the question items elicited in French, but great improvement when Kirundi was used. This contrasts with the results of the mathematics tests where language effects were less pronounced. Much French mathematical vocabulary has been absorbed into Kirundi, perhaps because it is used for instruction in mathematics prior to grade 5. The use of French for teaching most science in primary schools may inhibit the development of Kirundi as a language of ordinary scientific discourse and, in consequence, the dissemination of modern science.

Progress toward Kirundization, an important objective of the 1973 educational reform, has been impeded by concern for the French language skills of students who are admitted to secondary schools and who have experienced the double shift system. Whether today’s graduates have less facility in French than earlier students is the subject of much controversy. Our study indicates that most students have poor French language skills, particularly in composition. Whether double shifts have adversely affected the quality of entrants into secondary schools cannot be determined from our data. That many students are unable to benefit fully from instruction in French has been well established.

Elsewhere (Eisemon and Schwille, 1991) we have proposed improvement and expansion of the teaching of French in the lower stage of the primary cycle while at the same time expanding the use of Kirundi in grades 5 and 6 for teaching science and practical subjects. This change would bring about a balance between the two languages throughout primary school. The government took an important step in this direction in 1989 by deciding to introduce French as a subject in grade 1 instead of grade 3.

Improving assessment of student learning. To improve the effectiveness of primary schooling in Burundi will require changes in the concours national. As long as secondary schooling remains highly selective, the secondary school entrance examination will greatly influence the instruction of all primary school students whether or not they go on to secondary school. If those who are not going on to secondary school are to benefit from primary school, the design of the concours national must take them into account, too.

Therefore, in our view, the examination should be designed for three purposes: (1) to select students for secondary school as is presently done; (2) to
Thomas Owen Eisemon, John Schvilee, Robert Prouty, Francis Ukobizoba

certify satisfactory completion of primary school; and (3) to provide feedback
to parents, students, teachers, principals and policymakers on what all students
are learning. To implement the different purposes of the examination, different
pass rates could be used. The highest cutoff score might be used to identify stu-
dents going on to secondary school; it could continue to be based on the num-
ber of places available in secondary school. Another level might be used to
signify successful completion of primary school. This cutoff should be domain-
referenced in the sense of representing as nearly as possible that minimum level of
knowledge and skills that students need in order to benefit from primary school-
ing. The examination should cover all those domains judged important for
primary school students to learn, including those elements of health, nutrition,
and agriculture-related science that are particularly needed by students who will
not be going on to secondary school.

**Strengthening teacher supervision and improving in-service training.** We have drawn
attention to the importance of teacher supervision. Now that universal primary
education is close to being achieved, it may be useful to consider whether present
school clusters permit effective supervision. The number of satellite schools, their
size, and the distance from core schools all influence the amount of attention they
receive from school directors. In comparison to school headmasters in several
other East African countries, school directors in Burundi have greater adminis-
trative responsibilities, both in scope and substance. The number of school
directors might be increased; if this is not possible, other ways of improving
supervision in satellite schools need to be explored (such as giving directors
bicycles or motorcycles for transportation).

Improving the effectiveness of teaching is fundamental to increasing school
effectiveness and reducing variability in student achievement. Conventional
approaches to in-service training focus on improving teacher knowledge of
subject matter and/or demonstrating 'effective' methods of lesson presentation.
Nevertheless, good teaching involves more than understanding the teachers'
guides and being able to present them. It also involves an understanding of what
is expected of students, why students make errors, and how to improve their
performance. Involving teachers in the examination process in suggesting items
and marking papers can be important in fostering a better understanding of
assessment tasks and the difficulties students have in performing them. The
knowledge gained from these activities is excellent in-service education and will
help teachers improve their instruction. That is the experience of many countries
where this is practiced (Eisemon and Schville, 1988).

**Achieving appropriate rates of repetition.** The high repetition rates at the grade
6 level in primary schools are an outcome of policies intended to increase
educational participation and attainment in primary schools but without greater
opportunity for secondary education. The rigor of the concours national and, until
1989, the lack of feedback to students on their results, encourages the belief that
the likelihood of success is increased with subsequent trials. We have no way of
confirming or refuting this belief with the data collected in the present study.
Nevertheless, for students who repeat, it is clear that retention raised their levels
of performance in the domains that we examined and that are also tested in the
concours national.
Repetition probably increases students' ability to learn in French and, in doing so, to perform better on examinations. Apparently, the shift from Kirundi to French as the medium of instruction in grade 5 is too abrupt for many students for whom repetition may be a strategy for catching up. The retention of French as the medium of instruction in grades 5 and 6 and for examination for admission to secondary school favors the persistence of high repetition rates. Because students are not given unique national inscription numbers in the first grade, repetition cannot be easily monitored. The introduction of national inscription numbers would facilitate further research on the effects of repetition, which in turn could suggest appropriate measures of control.

In 1989 more than 73,000 students sat for the concours national and only about 7,000 received places in secondary schools. Between 30,000 and 40,000 students would be expected to repeat the sixth grade. It will require considerable expenditure of scarce resources to educate them. Therefore, a limit on the number of times a student is allowed to repeat might be established, based on a minimum score on the secondary school entrance examination. Or, the proportion of secondary school admissions awarded to students who retake the entrance examination might be limited to further discourage repetition. But reductions in repetition make sense only if considered in conjunction with other changes designed to increase learning or at least to ensure the same level of learning outcomes at less cost.

**Needed Experimentation**

In part, these findings are a vindication of conventional thinking about what makes for effective primary schooling in Burundi, such as the value of principals making frequent classroom visits and the positive effects of repetition. However, given the shortage of resources in Burundi and the difficult conditions under which many teachers and principals work, just doing more of the same is not likely to be effective in strengthening primary schooling. The variables found to have a positive impact may be nonlinear in their effects, resulting in diminishing returns. Moreover, in some respects our findings deviate from conventional thinking. For example, conventional wisdom might suggest that weak students suffer most from assessment in French. But our results indicate that testing in French may have a still more negative effect on evaluating the ability of the most able students.

It is important to proceed with careful experimentation in pilot projects to see how levels of student performance might be increased and variation reduced. Teachers and principals should play an important role in developing projects to answer questions such as the following: Which students should be allowed to repeat, at what grade level and how often? What modifications of the double shift system should be encouraged? How can one get principals who do not make enough classroom visits to make more of these visits and to monitor teaching more effectively? What changes in incentives are needed and feasible to increase teacher engagement, reducing absenteeism and lateness? And what combinations of French and Kirundi across subject-matters and grades would bring about the best balance of the two languages so that the foundations of literacy are established as much as possible in both languages?
Thomas Owen Eisecon, John Schwille, Robert Prouty, Francis Ukobizoba

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