African Educational Research Journal
Vol. 2(4), pp. 123-156, October 2014
ISSN: 2354-2160
Full Length Research Paper

Opportunity to learn and its consequences for student learning outcomes in basic education schools in Zambia

Mark Ginsburg[1]*, David Balwanz[2], Dennis Banda[3], Jeongin Park[4], Geoffrey Tambulukani[3] and Wei Yao[4]

[1]Global Learning Group, Washington, DC, 20009 USA.
[2]College of Education, University of Maryland, USA.
[3]School of Education, University of Zambia, Zambia.
[4]Teachers College, Columbia University, USA.

Accepted 29 September, 2014

ABSTRACT

This study investigates inter-school variations in several dimensions of opportunity to learn as well as examines the extent to which these measures significantly affect students' performance on grade 7 literacy and numeracy exams. After situating the study within the global discourse emphasizing the importance of providing access to quality education to all children and youth, the article reviews the theoretical and empirical literature on opportunity to learn. Data for this study come from the Annual School Census, national examination results, and a field study conducted in 2011 in 190 schools in all 9 provinces in Zambia. The findings indicate variation across schools in measures of opportunity to learn: a) days schools was open during year, b) hours schools was open during the day, c) teacher absenteeism, d) teacher late arrival/early departure, e) student absenteeism, and f) student late arrival/early departure. The regression analysis findings indicate that, of these dimensions of opportunity to learn, only student late arrival/early departure had significant and relatively large effects on both literacy and numeracy exam performance, when controlling for other sets of variables in the models (teacher quality, inservice education and supervisory support of teachers, and school/community context). The article concludes by considering why the findings do not strongly support the theory of opportunity to learn.

Keywords: Basic education, opportunity to learn, student learning outcomes, Zambia.

*Corresponding author. E-mail: mginsburg49@yahoo.com. Tel: +1-202-884-8849. Fax: +1-202-884-8408.

INTRODUCTION

This study, undertaken in February to March 2011, reflects concerns expressed internationally to improve access to as well as quality of education. For example, the *World Declaration on Education for All* called for "improving every aspect of quality of education, and ensuring excellence so that recognised and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills" (Inter-Agency Consortium, 1990). Ten years later, the *Dakar Framework for Action* (UNESCO, 2000) reaffirmed this goal of "improving all aspects of the quality of education and ensuring excellence of all so that recognized and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills."

Since the 1990 Jomtien conference and especially since the 2000 Dakar meeting, national governments and international organizations have signaled their commitment to education for all (EFA) by spending billions of dollars on programmes and reforms designed to improve equitable access to quality basic education. Nevertheless, although the amount of funds expended is sizeable, UNESCO (2014) reported that "even before the economic downturn, donors were off track to fulfil the promise they made in 2000" (p. 127) and that there is "no

sign" that "overall aid will stop declining before the 2015 deadline for education goals is reached" (p. 131).

Among other things, governments and international organizations sought to improve educational quality focusing on the following: school construction, administrator and teacher development, supervisory guidance and support of teachers, educator career structures, curriculum and materials development, examination reform, decentralization, and community participation. While one can assess educational quality by examining inputs, processes, outputs, and outcomes (Adams, 1993), there seems to be growing consensus to focus on outcomes, namely students' learning as measured by their performance on tests of cognitive knowledge and skills (literacy and mathematics) (UNESCO, 2008).

Zambia is certainly no exception to this trend. The Government of the Republic of Zambia promoted the goals of achieving universal access to basic education (grades 1 to 9) and improving educational quality in an initial policy document, *Focus on Learning* (GRZ, 1992), and then elaborated on this vision in *Educating our Future* (MoE, 1996). And in recent years Zambia has witnessed dramatic growth in access to basic education as well as some increases in government expenditures for education. The government has spent trillions of kwacha on the building of new schools to increase access. After a period of stagnation and decline in lower and middle basic education enrollments (grades 1 to 7) of approximately 1.5 million students between 1990 and 2001 (with net enrollment ratios [NERs] of 79, 75 and 63% in 1991, 1995, and 2001, respectively), the NER spiked to 92% in 2006 and continued to climb to 102% in 2009 (http://www.epdc.org) (Note that the NER for primary grades 1 to 7 exceed 100%, even in 2008, is a result of problems in population projection figures [MoE, 2008:32]). For junior secondary schooling and other students in grades 8-9, one witnessed a similar rapid expansion in enrollments, with 52,757 in 2001, 503,796 in 2006, and 580,782 in 2008.

Enrollment growth has been attributed to the "free basic education policy" implemented in 2002 (Bartholomew, 2010; de Kemp et al., 2008; MoE, 2010) and the liberalization policies that allowed for the growth of community schools (EQUIP2, 2005; Mwanza and Nkosha, 2009; Park, 2012). For example, in 1991 the government was basically the sole provider of lower and middle basic education (grades 1 to 7) and in 2001, 96.45% of schools were run by the government (while 0.13% were community, 0.67% were grant-aided, and 2.65 were private schools). However, in 2006 government schools enrolled 77% of students (with 16% in community, 4% in grant-aided, and 3% in private schools) and in 2008 government schools enrolled 74% of students (with 19% in community, 3% in grant-aided, and 3% in private schools) (MoE, 2008:39).

Increased access was also related to increases in the share of recurrent expenditure going to basic education. While the percentage of the government education budget devoted to basic education was 33% in 1991, the figure increased to 55% in 2000 and further increased 60% in 2006 (Balwanz and Chengo, 2009; Gillies, 2010). However, it should be noted that in 2006, public education expenditure as percentage of GDP was only 2% - the lowest among countries participating in the Southern and Eastern Consortium for Monitoring Educational Quality (SACMEQ, 2011b).

Increasing access and expanding the resource base, of course, does not necessarily lead to providing quality education. In this regard, as early as 1996, the Ministry of Education observed that "children who complete the lower and middle basic levels are not exhibiting the expected fundamental reading, writing and numeric skills" (MoE, 1996:25). One might conclude that Zambia made some progress during the next few years in that, although "the total number of students taking the grade 7 examination decreased by 7%, pass rates increased from 37% in 1997 to 50% in 2000" (de Kemp et al., 2008:121). However, given that pass rates for grade 7 examinations are determined by the capacity at the upper basic level" (that is, grades 8 to 9) (de Kemp et al., 2008:122), such results have more to do with increased construction of classrooms at the upper basic level than with increased quality of education at the middle basic level. Thus, the fact that "pass rates remained stable [49, 59, 52, 47, 50, and 53 for 2001, 2002, 2003, 2004, and 2005, respectively] … is [also largely] due to the fact that these are determined by the capacity at the upper basic level" (de Kemp et al., 2008:122).

Particularly relevant to measuring educational quality are the National Assessment Surveys conducted by the Examination Council of Zambia (ECZ) in 1999, 2001, 2003 and 2006. Based on the historical analysis reported up through 2006, ECZ (2007, p. ix) reports that "the findings … revealed that increased enrolments have not compromised the quality of the education system, in that the average scores on the National Assessment Surveys have *not* gone down. This in itself is a tremendous achievement." Moreover, "[t]here were minimum improvements in student performance in the 2006 survey compared to the 2003 survey … especially in numeracy and Zambian languages. However, it is important to note that learning achievement levels are still low across all level in all provinces" (ECZ, 2007, p. xiii). Using the same National Assessment Survey data, de Kemp et al. (2008:114-115) concludes that a "comparison of the average test figure confirms that performance in English had slightly improved by 2006 [33, 33, 35, and 34 for 1991, 2001, 2003, and 2006, respectively], while the improvement of math results was more [34, 36, 39, 38 for 1999, 2001, 2003, and 2006, respectively]" (de Kemp et al., 2008:114-115). Similarly, de Kemp et al. (2008:114), drawing on ECZ annual examinations data, reports that although "between 2000 and 2006, the total number of

pupils who took the grade 7 exam increased by 62%, … the average test and examination results did NOT deteriorate."

With regard to the more recent period, it is reported that:

> The growth in quantitative terms has been complemented with a renewed focus on issues of quality improvement. One of the goals of the Education and Skills Development Sector in the FNDP [Fifth National Development Plan, 2006-2010] period was to improve the quality and relevance of education and training. In this regard, the Ministry of Education implemented specific strategies that were meant to address quality issues such as teacher recruitment, procurement of education materials and infrastructure development (ECZ, 2008: 4).

Nevertheless, recent studies still show that the reading levels, for example, of many of Zambian children are still low compared to what is obtained in the neighboring countries. Notably, the 2007 SACMEQ studies showed that, among participating Southern and Eastern African countries, Zambia was ranked second from the bottom in terms of learning achievement at primary basic level of education (SACMEQ, 2010). As Musonda and Kaba (2011:116) conclude, for "Grade 6 learners … the average score for Zambia fell below the SACMEQ set minimum average in both reading and mathematics." Furthermore, the 2008 National Assessment results showed low levels of student performance in reading (in English and Zambian languages) and numeracy (ECZ, 2008).

Another indicator of educational quality in Zambia is that, among those young people who remain in the system until grade 7, a high proportion do not perform well enough on the examination given at the end of grade 7 to be able to move on to grade 8 (the first year of the upper basic level). For example, for the country as a whole, out of the 268,097 students who sat for the examinations in 2006, only 141,161 students "passed" and 126,936 students thus dropped out or were "pushed out" of the education system (Times of Zambia, 2007).

Focus of the study

Many Zambians as well as representatives of international organizations providing support to the Government of the Republic of Zambia have expressed interest in increasing students' opportunity to learn, with the expectation that doing so will enhance learning outcomes (that is, student literacy and numeracy achievement). Therefore, the study reported here was designed to: 1) identify variations in opportunity to learn provided by schools at the lower and middle basic education level (grades 1 to 7) as well as 2) analyze the impact of opportunity to learn on student learning outcomes, controlling for factors that influence opportunity to learn as well as student learning outcomes. More specifically, this study was designed to address the following research questions:

1. To what extent do basic education level schools vary in providing their students with opportunity to learn?
2. To what extent does a school's provision of opportunities to learn affect student learning outcomes (that is, performance in literacy and mathematics at grade 7), controlling for other variables that may influence opportunity to learn and student learning outcomes (that is, teacher quality, inservice education and supervisory support of teachers, school community context, and previous grade 5 learning outcomes)?

Conceptual model

Research findings indicate that student learning and test performance are influenced by factors such as student ability and background, teacher quality and behavior, the relevance and depth of the curriculum, the provision of professional development and supervisory support for teachers, the leadership of school administrators, as well as school community context characteristics. While these are critical factors, also important in affecting student learning outcomes is the degree to which students have *opportunities to learn* (Bloom, 1980; Carroll, 1963, 1989). For example, based on their "Global Study of Intended Instructional Time and Official School Curricula, 1985 to 2000", Benavot and Amadio (2004:67) conclude that "student achievement increases when students are given greater opportunities to learn, especially when 'engaged learning time' is maximized."

Importantly, limited opportunity to learn may be a critical factor in explaining the lower student learning outcomes in lower income countries, in that Abadzi (2007b:89) reports that in such countries "students were taught for only a fraction of the intended time… Losses were due to informal school closures, teacher absenteeism, delays, early departures, and sub-optimal use of time in the classroom" (Abadzi, 2007a). Similarly, based on case studies in Ethiopia, Guatemala, Honduras, Mozambique,and Nepal, Schuh Moore et al. (2012:8) concludes that "students are not succeeding because they lack the opportunity to learn … [defined in terms of] underlying elements … that add up to total instructional time, hours in school year, days school is open, teacher attendance and punctuality, student attendance and punctuality, …, [and] time in classroom on task" (DeStefano, 2012).

Gillies and Quijada (2008:3) observe that "investments in teachers, materials, curricula, and classrooms are wasted if they are not used for a reasonable period of time" and explain that the "thinking behind the opportunity to learn index starts from a relatively simple premise: learning is to some degree a function of time and effort.

Without adequate time on task, no learning is possible." The opportunity to learn index includes the following factors:

1. The number of days per year the school is open;
2. The number of hours per day the school is open;
3. The number of days per year the teacher is present (versus absent);
4. The number of hours per day the teacher is in school (versus being tardy or leaving early)
5. The number of days per year students are present (versus absent);
6. The number of hours per day students are in school (versus being tardy or leaving early); and
7. The amount of time during the school day devoted to instruction (or time on curriculum-relevant tasks).

It is worth noting, however, that efforts associated with cross-national investigations associated with the International Evaluation of Educational Achievement (IEA) have tended to focus research and policy initiatives concerning opportunity to learn in more developed countries on specific content areas included in the official and taught curricula (Burstein, 1993; McDonnell, 1995; Schmidt and Maier, 2009; Steiner-Khamsi et al., 2002).

Opportunity to learn not only likely has consequences for how students perform on tests of academic achievement (e.g., in the areas of literacy and numeracy). The extent to which such opportunities to learn are provided to students in a particular school likely is shaped by a range of antecedent factors. These may include the following sets of variables, which also may affect student learning outcomes (and thus need to be controlled for in examining the relationship between opportunities to learn and student achievement):

a) Teacher quality

i) Qualifications
ii) Experience
iii) Pedagogical expertise/effectiveness (in specific content areas)
iv) Student assessment expertise/effectiveness

b) Inservice education and supervisory support of teachers

i) Observation and lesson plan review by head teachers
ii) Observation and lesson plan review by standards officers
iii) Amount of teachers' inservice professional development
iv) Amount of administrators' inservice professional development

c) School community context

i) Class size
ii) Physical facilities (e.g., availability of electricity)
iii) Instructional materials (e.g., textbook/student ratio)
iv) Parental involvement (e.g., frequency of PTA meetings)
v) Rural/urban location

Figure 1 presents the overall conceptual model, focusing on various elements of opportunities to learn and identified consequences (student learning outcomes) as well as antecedent variables that need to be controlled (teacher quality, inservice education and supervisory support of teachers, and school community context).

METHODOLOGY

This study employed a survey research design, based on both existing data (from 2008 National Assessment Survey, 2009 annual school census or EMIS/ED*Assist, and 2010 examinations) as well as data collected in February-March 2011 (using teacher and head teacher questionnaires). The *unit of analysis* for this study is the school. That is, the study investigated the relationship between school-level variables (e.g., measures of opportunities to learn, average student learning and other outcomes, and antecedent factors).

Sampling schools and respondents

For this study, we initially selected 200 middle basic schools, using a multi-stage convenience sampling procedure, from the 400 schools included in the 2008 National Assessment Survey (NAS), which is considered to constitute a nationally representative sample. Within each of the nine provinces in Zambia we selected three districts, based on their accessibility to data collectors, considering their geographical location and distance from main or feeder roads. Within each of these 27 districts we sought to include in the study seven middle basic schools (that is, those with students in grades 1 to 7), again sampled to reflect a range of school community contexts but under constraints of accessibility. As shown in Table 1, we came close to having 21 schools in each province, but notably with somewhat more schools (23, 23 and 24) included from Copperbelt, Eastern, and Lusaka provinces and somewhat fewer schools (19 and 17, respectively) from Northern and Western provinces. This resulted in a sample of 190 schools, though the findings presented below usually are based on fewer schools because of missing data on one or more of the variables (examinations, EMIS, or questionnaires).

It should be noted that we collected data from 192 schools, but problems with the quality of data recording and entry for two of the schools led us to delete them from the sample. Furthermore, it is worth mentioning that our sample appropriately includes more rural schools (62.4%) than urban school (37.6%). Additionally, although we originally planned to stratify by and then sample within all types of schools (government, community, private, or grant-aided), we ended up with the following distribution of schools by type: 93.7% government, 5.8% community, 0.5% private, and 0.0% grant-aided. Thus, our sample underrepresents, particularly, community schools, in that in 2010, 59.7% of basic education schools were classified as government and 30.1% were classified as community schools (Appendix 1).

Head teachers in all the sampled schools participated in this study. With respect to teachers, we randomly selected one grade 2 teacher and one grade 6 teacher in each school. In any school which had only one grade 2 and/or one grade six teacher, no sampling was necessary.

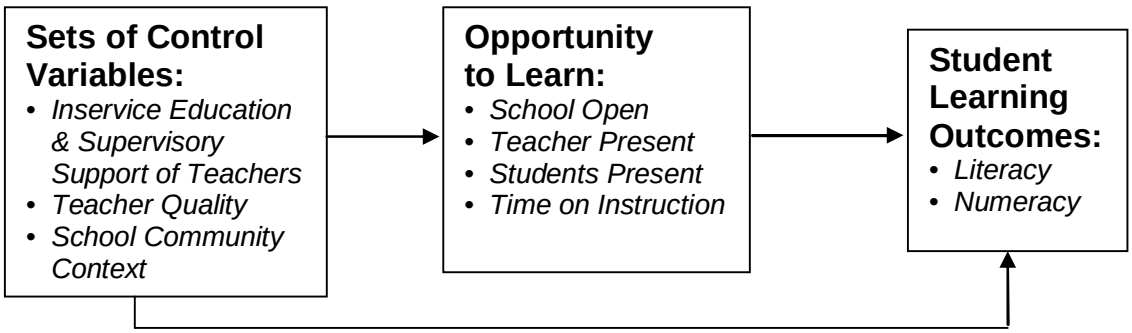

Figure 1. Conceptual model of consequences of school differences in providing students with opportunity to learn.

Table 1. Number of schools sampled by province.

Province	Frequency	Percent
Central	20	10.5
Copperbelt	23	12.1
Eastern	23	12.1
Luapula	21	11.1
Lusaka	24	12.6
Northern	19	10.0
Northwestern*	21	11.1
Southern	22	11.6
Western*	17	8.9
Total	190	100.0

***In Northern and Western provinces flooding prevented data collectors from reaching some schools that were selected as part of the original sample.

Measurement of key variables

Table 2A to E present the key variables included in this study, along with their operational definitions (and data source) as well as key descriptive statistics (viz., means and standard deviations). As one can see, most of the variables were measured using data collected via questionnaires administered to head teachers, grade 2 teachers, and grade 6 teachers (Appendices 3 and 4 for head teacher and teacher questionnaires, respectively). We should mention that we faced some challenges in collecting data about student and teacher attendance as well as students' and teachers' late arrival and early departure, in that some schools did not seem to effectively maintain registers and log books. In order to mitigate this limitation, and not to rely solely on a head teacher's memory, data collectors invited deputy head teachers and one or two senior teachers to be involved when the head teacher was providing such data.

Data collection procedures

The questionnaires were administered over a 4-week period in February-March 2011 by research assistants, using an interview process. Research assistants guided individual respondents through each question and filled in the requisite information provided by the respective teacher or head teacher. More specifically, data were collected by 18 district resource centre coordinators (2 from each of the nine provinces), under more direct supervision of nine senor provincial planning officers. The third and fifth author of this article organized the data collector training workshops and pilot testing of instruments as well as provided more indirect supervision of the data collection process.

Data entry and data analysis

Data entry was undertaken after all data were collected. The data from the head teachers and the two (grade 2 and grade 6) teachers were entered into one file, as were school-matched data from the Examinations Council of Zambia and from the annual school census (EMIS/ED*Assist). The file thus contained over 650 variables, both direct measures and recoded or computed measures. Two processes of data cleaning were also undertaken, first in Zambia and then in the United States.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS). In addition to calculating descriptive statistics (Tables 2A to E) and correlations (Appendix 2), the main approach to data analysis involved the use of step-wise, ordinary least square multiple regression analysis.

As specified below, two dependent variables (Grade 7 English Literacy and Grade 7 Numeracy, both for 2010 test scores) were regressed against a set of independent variables, which were entered as groups of variables in five steps. As specified below, the first step only the set of *opportunity to learn* variables were entered in the regression equation; the second step adds the group of *teacher quality* variables; the third step adds the set of *inservice education and supervisory guidance of teachers* variables; the fourth step adds the *school community context* variables; and the fifth step adds the relevant *previous exam performance* variable. (Note that in the fifth step for each regression we introduced the relevant learning outcome measure – English Literacy or Numeracy – that was collected two years prior to the dependent variable, thus providing a control for previous differences in pupil's learning outcomes.)

A. Dependent Variable: Grade 7 English Literacy (2010)
Independent Variables (in steps):

1. *Opportunity to Learn Variables*: School open, Teacher Absent, Students Absence, Official Daily Contact Hours, Teacher Partial Days, Students Partial Days [If data were available].
2. *Teacher Quality Variables*: Teacher Qualifications, Teacher Experience, Perceived Effectiveness in Teaching *English*, Perceived Effectiveness in Assessing Students.
3. *Inservice Education and Supervisory Guidance of Teachers Variables*: Teacher Observation by Head Teacher, Teacher

Table 2A. Operational definitions and descriptive statistics of opportunity to learn (2010 to 2011) variables.

Variable name	Operational definition (data source)	Mean	Standard deviation
School open	Total number of days in official school calendar (188) minus the number of days a school was not in session (OTL Head Teacher Survey)	186.5	2.70
Official daily contact hours	Official number of contact hours for school, averaging the figures for grades 1-4 and grades 5-7 (ED*Assist, 2009)*	4.47	0.73
Teacher absent	The percentage of days absent in the previous week, averaged across the two (grade 2 and grade 6) teacher respondents (OTL Teacher Questionnaire, 2011)	7.39%	0.12
Teacher partial days	Number of days teacher arrived late or left early during the previous week, averaged across the two (grade 2 and grade 6) teacher respondents (OTL Teacher Questionnaire, 2011)	0.64	0.94
Students absent	The percentage of students absent, averaged across the five days in the previous week (OTL Head Teacher Questionnaire, 2011)	8.97%	0.09
Student partial days	The percentage of students who arrived late or left early, averaged across the five days in the previous week (OTL Head Teacher Questionnaire, 2011)	4.0%	8.0

***** In almost every school this average combines usually different numbers of official contact hours for grades 1 to 4 and grades 5 to 7, with the latter generally being 1 to 2 h longer than the former.

Table 2B: Operational definitions and descriptive statistics of student learning outcome variables.

Variable name	Operational definition (data source)	Mean	Standard deviation
Grade 5 English Literacy (2008)	School average % correct of grade 5 students on National Assessment Survey English Test (ECZ, 2008)*	12.16	3.55
Grade 5 Numeracy (2008)	School average % correct of grade 5 students on National Assessment Survey Mathematics Test (ECZ, 2008)	17.03	3.74
Grade 7 English Literacy (2010)	School average student score on annual grade 7 English Examination (ECZ, 2010)	98.67	6.81
Grade 7 Numeracy (2010)	School average student score on annual grade 7 annual Mathematics Examination (ECZ, 2010)	98.94	6.60

***** The National Assessment Survey, which is administered to pupils in grade 5 approximately every three years, examines content drawn from the curriculum used in schools at the middle basic level and hence they are criterion referenced (MoE, 2010:4).

Observation by Standards Officer [*Teacher Questionnaire*], Lesson Plan Review by Head Teacher, Lesson Plan Review by Standards Officer, Teacher Inservice Education, Head Teacher Inservice Education.

4. *School Community Context Variables*: Class Size, School Infrastructure, Instructional Materials, Parental Participation, Rural/Urban Location

5. *Previous Exam Performance*: Grade 5 English Literacy (2008).

We focused our interpretation of the results on the significance of the standardized regression coefficients (betas) having p values less than or equal to .10. We also considered the explained variance (R2) for each equation of each model, again using p value of .10 as the criterion of significance. Note that in both cases we adopted a relatively less stringent significance level ($p < .10$ rather than the more standard p values of <.05 or <.01) because of the relatively small sample size (n = 190 schools).

RESULTS AND DISCUSSION

Here, we will report on the findings from the data analysis. In relation to the first research question, we describe the various elements of opportunities to learn, noting national averages as well as how schools vary with respect to: a) number of days school was open in 2010, b) the official number of contact hours (averaged across grades 1 to 7), c) percentage of days that teachers are absent, d) the percentage of days that students are absent, e) the percentage days that teachers either arrived late or left early, and f) the percentage of students who arrived late or left early. Then we discuss briefly the two outcome measures: 1)

Table 2C: Operational definitions and descriptive statistics of teacher quality (control) variables.

Variable name	Operational definition (data source)	Mean	Standard deviation
Teacher qualification	"What is your highest professional qualification" (OTL Teacher Questionnaire, 2011)	3.14	0.33
Teacher experience	Total number of years during teaching career, averaged across the two (grade 2 and grade 6) teacher respondents (OTL Teacher Questionnaire, 2011)	7.03	5.13
Perceived effectiveness teaching English	Response to question, "in general, how effective do you are in helping students to learn English," averaged across the two (grade 2 and grade 6) teacher respondents (OTL Teacher Questionnaire, 2011)	3.42	0.43
Perceived effectiveness teaching mathematics	Response to question, "in general, how effective do you are in helping students to learn mathematics," averaged across the two (grade 2 and grade 6) teacher respondents (OTL Teacher Questionnaire, 2011)	3.52	0.45
Perceived effectiveness assessing students	Response to question, "in general, how effective do you think you are at assessing student learning," averaged across the two (grade 2 and grade 6) teacher respondents (OTL Teacher Questionnaire, 2011)	3.10	0.54

school's average scores of students on grade 7 English literacy exam and 2) school's average scores of students on grade 7 mathematics/numeracy exam. Next, with respect to the second research question, we present the results of two sets of regression analyses. The first focuses on explaining the variance in students' performance on the Grade 7 English literacy exam, while the second set pertains to explaining students' performance on the Grade 7 numeracy exam.

Opportunities to learn

OTL: School open

This measure is based on the head teachers' recall of the number of days the school was closed when the official calendar indicated that it should be open. Subtracting this number from 188 (the number in the official calendar), the average number of days that lower and middle basic schools in Zambia were open during the 2010 school year was 186.5 (Table 2A), which suggests the potential for a high degree of opportunities to learn. However, note the standard deviation for this measure is 2.70. Thus, while 65 (42.5%) of the 153 head teachers reporting indicated their schools were open on all official school days, 58 (37.9%) of the head teachers reported their schools had been closed on one day, 28 (18.3%) of the head teachers reported their schools had been closed between 2 and 10 days, and 2 (1.3%) of the head teachers indicated their school had been closed for 15 or 18 days. For these latter two schools, this means that schools were open, respectively, approximately 92% and 90.4% of the official days.

OTL: Official daily contact hours

In addition to the limited, but potentially important, variation among schools in the number of days they were open, we need to consider how long the official school day is, since a longer school day potentially provides more opportunities to learn. We do not have a direct (observational) measure of the teacher-student contact time, but we instead rely on the offical number of contact hours reported by the head teacher in the 2009 annual school survey. As shown in Table 2A, the average official number of "contact hours" per day for grades 1 to 7 in our sample of schools (n = 182) is 4.47. Moreover, as signalled by the standard deviation of 0.73, the range of official contact hours varied from 1 to 8. More specifically, the number of official contact hours was 4 or less for 73 (40.1%) of the schools and 5 or more for 54 (29.7%) of the schools. Assuming a school was open on all official calendar scheduled days (that is, 188), this translates into substantial differences in potential opportunities to learn, from as few as 188 hours to more than 1504 hours during the 2010 school year.

OTL: Teacher absenteeism

Opportunities to learn also depend on the teacher being present. As indicated in Table 2A, however, the second and sixth grade teachers in our sample (n = 175) reported that on average they were absent 7.4% of the time during

Table 2D. Operational definitions and descriptive statistics of inservice education and supervisory support of teachers (control) variables.

Variable name	Operational definition (data source)	Mean	Standard deviation
Teacher Observation by Head Teacher	Response to question, "How often does the head teacher formally observe you teaching in your classroom", averaged across the two (grade 2 and grade 6) teacher respondents (OTL Teacher Questionnaire, 2011)	2.91	1.28
Teacher Observation by Standards Officer	Response to question, "How often does a standards officer formally observe you teaching in your classroom", averaged across the two (grade 2 and grade 6) teacher respondents (OTL Teacher Questionnaire, 2011)	1.37	0.55
Lesson Plan Review by Head Teacher	Response to question, "How often does the head teacher review your lesson plans", averaged across the two (grade 2 and grade 6) teacher respondents (OTL Teacher Questionnaire, 2011)	4.49	1.36
Lesson Plan Review by Head Teacher	"How often do you as the head teacher review a teacher's lesson plan?" (OTL Head Teacher Questionnaire, 2011)	4.62	1.46
Lesson Plan Review by Standards Officer	Response to question, "How often does a standards officer review your lesson plans", averaged across the two (grade 2 and grade 6) teacher respondents (OTL Teacher Questionnaire, 2011)	1.39	0.69
Lesson Plan Review by Standards Officer	"How often does a standards officer erview the lesson plans of teachers in this school?" (OTL Head Teacher Questionnaire, 2011)	2.96	2.44
Teacher Inservice Education	Number of inservice programs attended, averaged across the two (grade 2 and grade 6) teacher respondents (OTL Teacher Questionnaire, 2011)	2.30	1.29
Head Teacher Inservice Education	Number of inservice programs attended by head teacher in 2010 (OTL Head Teacher Questionnaire, 2011)	2.92	1.73

the previous week. While this represents just over one-third of a day per week, when projected over the full school year (188 days), this means that on average almost 14 school days are lost because of teacher absenteeism. Moreover, although the standard deviation is relatively small (0.12), we note that 47.3% of the schools had teachers reporting being absent on average 3% or less of the time, but 25% of the schools had teachers reporting being absent 10% or more of the time. This means that, because of teacher absenteeism, potential opportunities to learn were reduced, respectively, by less than 5.6 days or more than 18.8 days.

OTL: Teacher partial days

When teachers arrive late or leave early, they reduce students' potential opportunities to learn, even on the days they are present. According to Table 2A, on average the second and sixth grade teachers in our sample of schools (n = 169) reported that they arrived late or departed early on .64 (12.8%) of the five days in the previous week. For the school year (188 days) this translates into an average of approximately 24 days, on which a school has teachers who are not physically present for the full number of official contact hours. Moreover, as signalled by standard deviation (0.94), schools varied on this measure of opportunities to learn. That is, for the 188-day school year, we would project that while 79 (46.7%) of the schools would have teachers who never arrived late or departed early, 18 (10.7%) of the schools had teachers who would on average arrive late or depart early on approximately 75 days.

OTL: Student absenteeism

Of course, students being in school is critical for them to encounter such opportunities to learn. Table 2A, though, indicates that on average schools in our sample (n = 155) had almost 9% of their students absent during a given day of the previous week. Depending on how absenteeism is distributed across students in a given school, this represents a sizeable loss of opportunities to learn for some, many, or all students. Furthermore, although the standard deviation is relatively small (0.09), we note that 29.7% of the schools had student absenteeism rates of 3% or lower, but 32.9% of the schools had student absenteeism rates of 10% or higher. Thus, as a consequence of differences in student absenteeism, these two sets of schools provided

Table 2E. Operational definitions, and descriptive statistics of school community context (control) variables.

Variable name	Operational definition (data source)	Mean	Standard deviation
Class size	Ratio of number of students enrolled in school over the number of teachers (ED*Assist, 2009 and OTL Head Teacher Questionnaire, 2011)	48.7	41.6
School infrastructure	Whether or not school had source of electricity (main line, solar, or generator) (ED*Assist, 2009)	0.51**	0.50
Instructional materials	Ratio of number of textbooks (in all subjects) per student (ED*Assist, 2009)	2.17	1.74
Parental participation	Number of PTA meetings held in 2010 (OTL Head Teacher Questionnaire, 2011)	3.22	0.84
Rural/urban location	Official designation of school's location (OTL Head Teacher Questionnaire, 2011).	1.62**	0.49

substantially different level of potential opportunities to learn.

OTL: Student partial days

Furthermore, when students arrive late or leave early, they reduce the potential opportunities for them to learn, even on the days they are present. According to Table 2B, on average schools in our sample for which we have this information (n = 142) had 4% of their students arriving late or leaving early on a given day during the previous week. Nevertheless, as indicated by the standard deviation (8%), schools varied on this measure of opportunities to learn. While 46 (32.4%) of the schools had an average of fewer than 1% late-arriving or early-departing students, 38 (26.8%) of the schools had an average of 5% or more late-arriving or early-departing students.

Student learning outcomes

Grade 7 English literacy exam

Annually, the Examinations Council of Zambia administers a set of tests to grade 7 students. These tests include English Literacy, Mathematics/Numeracy, and other subjects. While there is not a pass-fail cutoff score, students need to sit for the exam in order to receive a certificate that makes them eligible to enter grade 8. As shown in Table 2B, the average score on the English Literacy test of schools in our sample (n = 168) was 98.7. Nevertheless, as indicated by the standard deviation (6.8), schools varied on this measure of student learning outcomes. The lowest average score for a school was 83.1, while the highest average score for a school was 117.1. Furthermore, 20% of the schools had average scores at or below 92.3, while 20% of schools had average scores of 104.2 or above.

Grade 7 Mathematics/numeracy exam

As presented in Table 2B, the average score on the Mathematics/Numeracy test of schools in our sample (n = 168) was 98.9. However, as indicated by the standard deviation (6.6), schools varied on this measure of student learning outcomes. The lowest average score for a school was 82.4, while the highest average score for a school was 124.2. Additionally, 20% of the schools had scores at or below 93.8, while 20% of schools had scores of 103.5 or above.

Regression analyses involving student learning outcomes, OTL, and other variables

OTL and student learning achievement: English literacy

Table 3 presents the findings for five models tested by regressing Grade 7 literacy exam scores on five sets of variables. Examining the R^2 values, one notes that the models explain between 10% and 39% of the variance in average test scores across schools, but only the model 2 to 5 reach our criterion of statistical significance ($p < .10$). Thus, particularly for models 2 to 5, we discuss the regression coefficients (betas) for individual variables, which satisfy our minimum criterion of significance (that is, $p < .10$).

First, focusing on OTL indicators,[1] we observe that

[1] As shown in Appendix 2, the only OTL indicator significantly correlated with schools' average grade 7 literacy exam scores was student absenteeism ($r=-.24$, $p < .01$). Thus, the observed signficant regression coefficients reported here – for teacher absenteeism and student partial days mean that their bivariate relationships with schools' average grade 7 literacy exam performance are suppressed by their relationshop with student absenteeism.

Table 3: OLS Estimates of *Grade 7 Literacy Exam Scores (2010)* by Groups of Variables.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Opportunity to learn					
School open	-.03	-.14	-.08	.01	.06
Teacher absenteeism	-.18*	-.20*	-.17	-.17	-.03
Student absenteeism	-.23**	-.12	-.13	-.01	.11
Time on instruction	-.03	-.08	-.15	-21	-.09
Teacher partial days	.04	.00	-.06	-.19	-.25
Student partial days	-.09	-.12	-.15	-.14	-.35*
Teacher quality					
Teacher qualification		.06	.01	.04	-.03
Teacher experience		.16	.25*	.30*	.35*
Effectiveness in teaching english		.20*	.22*	.28	.29
Effectiveness in assessing students		.07	.05	.00	-.13
Inservice education and supervisory support of teachers					
Teacher observation by head teacher			.09	.05	.05
Teacher observation by standards officer			-.16	-.10	-.05
Lesson plan review by head teacher			-.08	.08	-.30
Lesson plan review by standards officer			.08	-.08	-.02
Teacher inservice education			-.12	-.14	-.19
Head teacher inservice education			.03	-02	.10
School community context					
Class size				-.07	-.23
School infrastructure				.01	-.04
Instructional materials				-.13	-.13
Parental participation				-.05	-.03
Rural/urban location				.01	.11
Prior achievement test performance					
Grade 5 English literacy exam (2008)					.27
Constant	120.1**	167.3**	139.9*	86.6	27.0
R^2	.10	.21**	.25*	.31*	.39*

*p<.10, **p<.05, ***p<.01, ****p<.001

teacher absenteeism is significantly, though modestly and negatively, associated with the dependent variable in Models 1 and 2 (betas equal -.18 and -.20, respectively). This indicates that, before variables measuring teacher quality, inservice education and supervisory support of teachers, school community context, and prior test performance are included in the analysis, schools that had a *lower* degree of teacher absenteeism tended to have students who scored *higher* on the grade 7 literacy exam. Second, *student absenteeism* is also significantly related to literacy exam performance (beta equals -.23), but only in Model 1. This indicates that, before variables measuring teacher quality, inservice education and supervisory support of teachers, school community context, and prior test performance are included in the analysis, schools that had a *lower* degree of student absenteeism tended to have students who scored higher on the grade 7 literacy exam. The only other opportunity to learn variable that was found to have a significant effect on students' average grade 7 literacy exam scores was *student partial days* (beta equals -.35), and this was only the case in Model 5. This means that, when all other variables are controlled, schools that have a *lower* rate of students arriving late or leaving early tend to have *higher* average student literacy exam performance (Table 3).

Next, focusing on teacher quality variables,[2] we see that there are two that were found to be significantly

[2] As shown in Appendix 2, three teacher quality variables are significantly correlated with schools' average grade 7 literacy exam scores: teacher experience ($r = .17$, $p < .05$), effectiveness in teaching English ($r = .16$, $p < .05$), and effectiveness in assessing students ($r = .18$, $p < .05$). That the latter variable was not found to be significant in the regression analysis means that

related to literacy exam performance, *teacher experience* (models 3-5; betas range from .25 to .35) and *effectiveness in teaching English* (models 2-3; betas equal .20 and .22, respectively). These findings indicate that schools having teachers who have *more experience* and those who are *more likely* to perceive themselves as effective in teaching English tend to have students who *perform better* on the grade 7 English literacy exams, controlling for opportunity to learn measures and other variables included in the models (Table 3).

Interestingly, none of the variables measure inservice education and supervisory support of teachers, school community context, or prior exam performance is significantly related to grade 7 literacy exam scores, when opportunity to learn and other variables are included in the analysis (Table 3).[3]

OTL and student learning achievement: Numeracy

Table 4 presents the findings for five models tested by regressing Grade 7 Numeracy Exam scores on five sets of variables. Examining the R^2 values, one notes that the models explain between 6 and 30% of the variance in test scores across schools, but none of the models reaches our minimum criterion of significance ($p < .10$). Despite this situation, it seems worthwhile to look at the regression coefficients (betas) for individual variables, which satisfy our minimum criterion of significance (that is, $p < .10$).

First, focusing on OTL indicators,[4] we note that the only variable found to have a significant effect on schools' average grade 7 numeracy exam scores was *student partial days* (beta = -.41), and this was only the case in Model 5. This means that, when all other variables are controlled, schools that have *lower rates* of students arriving late or leaving early tend to have *higher* average student numeracy exam performance (Table 4).

Next, focusing on teacher quality variables,[5] we see that only *teacher experience* has a significant effect on schools' average grade 7 numeracy exam performance (betas equal .26, .33, and .37, respectively), and only for models 3 to 5. This finding indicates that schools having teachers who have *more experience* tend to have students who perform better on the grade 7 English literacy exams, controlling for opportunity to learn measures and other variables in the models (Table 4).

Of the variables measuring inservice education and supervisory support of teachers,[6] only two have a significant effect on schools' average grade 7 numeracy exam performance: teacher observation by the head teacher (model 3 only; beta equals .25) and teacher inservice education (models 3 and 5; betas equal -.23 and -.38, respectively). These findings indicate that schools where head teachers observe teachers *more frequently* and schools where on average teachers attend *fewer* inservice programs are more likely to have students with *higher* average scores on the grade 7 numeracy exam, controlling for opportunity to learn measures and other variables included in the models (Table 4).

It is also important to note that, when controlling for other variables in the model, none of the school/context or prior exam performance variables was found to be significantly related to student performance on the grade 7 numeracy exam (Models 4 and 5 in Table 4).[7]

CONCLUSIONS

To summarize our findings in relation to the first research question, based on this study of lower and middle basic schools in Zambia, we found that schools differed in various measures of opportunity to learn:

1. *Schools open*: On average schools lost 1.5 days (out of a 188-day school year) days of being open, with 42.5% of the schools being open on all official school days and 19.6% of the schools being closed between 2 and 18 days during the school year.
2. *Official contact hours*: The average official number of contact hours per day for grades 1 to 7 in our sample of schools was 4.47 h, with 40.1% of the schools having 4 or less official contact hours and 29.7% of the schools

part of the bivariate relationship is explained away when controlling for OTL measures and/or the other teacher quality measures.

[3] As shown in Appendix 2, three variables in these clusters are significantly correlated with schools' average grade 7 exam scores (in 2010): school infrastructure/electricity ($r = .35$, $p < .01$), rural/urban location ($r = .32$, $p < .01$), and grade 5 English exam score in 2008 ($r = .38$, $p < .01$). That these variable were not found to be significant in the regression analysis means that part of their bivariate relationships is explained away when controlling for OTL measures, teacher quality measures, and school community context variables.

[4] As shown in Appendix 2, the only OTL indicator significantly correlated with schools' average grade 7 numeracy exam scores was student absenteeism ($r = -.19$, $p < .05$). Thus, the observed signficant regression coefficient reported here – for student partial days – means that its bivariate relationship with schools' average grade 7 literacy exam performance is suppressed by its relationshop with student absenteeism.

[5] As shown in Appendix 2, only one teacher quality variables is significantly correlated with schools' average grade 7 literacy exam scores: effectiveness in assessing students ($r = .17$, $p < .05$). That the latter variable was not found to be significant in the regression analysis means that part of the bivariate relationship is explained away when controlling for OTL measures and/or the other teacher quality measures. The correlation and regression analysis findings also suggest that the bi-variate relationship between teacher experience and schools' average grade 7 numeracy exam performance is being suppressed by their relationship with effectiveness in assessing students.

[6] As shown in Appendix 2, none of the inservice education and teacher supervisory support variables are significantly correlated with schools' average grade 7 numeracy exam scores. This suggests that the bi-variate relationships between schools' average grade 7 numeracy exam performance and head teacher observation as well as teacher inservice are being suppressed by their relationship with OTL, teacher quality, and/or supervision/inservice measures.

[7] As shown in Appendix 2, both school infrastructre/electricity (r=) and rural/urban location (r=) are significantly correlated to schools' average grade 7 numeracy exam performance. This signals that these variables' relationships with schools' average grade 7 numeracy exam scores are explained away when controlling for OTL, teacher quality, supervision/inservice, and other school/context variables.

Table 4. OLS estimates of *Grade 7 Numeracy Exam Scores (2010)* by groups of variables.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Opportunity to learn					
School open	.10	-.07	-.03	-.12	-.07
Teacher absenteeism	-.10	-.10	-.08	-.11	-.01
Student absenteeism	-.18	-.09	-.06	-.06	.03
Time on instruction	-.05	-.08	-.13	-.11	-.01
Teacher partial days	.03	-.03	-.14	-.22	-.29
Student partial days	-.06	-.12	-.18	-.25	-.41*
Teacher quality					
Teacher qualification		.06	.03	.04	-.01
Teacher experience		.13	.26*	.33*	.37*
Effectiveness in teaching mathematics		.12	.15	.18	.18
Effectiveness in assessing students		.05	.05	-.03	-.13
Inservice education and supervisory support of teachers					
Teacher observation by head teacher			.25*	.22	.24
Teacher observation by standards officer			-.08	-.05	.01
Lesson plan review by head teacher			-.06	-.08	-.23
Lesson plan review by standards officer			-.07	-.06	-.13
Teacher inservice education			-.23*	-.29	-.38*
Head teacher inservice education			.02	.01	.07
School community context					
Class size				-.11	-.23
School infrastructure				-.04	-.07
Instructional materials				-.08	-.08
Parental participation				-.04	-.03
Rural/urban location				.11	.17
Prior achievement test performance					
Grade 5 English Numeracy Exam (2008)					.12
Constant	56.3	130.7*	111.2	213.4	173.2
R^2	.06	.09	.18	.25	.30

p<.10, **p<.05, ***p<.01, ****p<.001

having 5 or more official contact hours.

3. Teacher absenteeism: On average the second and sixth grade teachers in our sample of schools reported that they were absent 7.4% of the time (that is, one-third of a day) during the previous week, with. 47.3% of the schools having teachers being absent on average 3% or less of the time and 25% of the schools having teachers being absent on average 10% or more of the time.

4. *Teacher partial days*: On average the second and sixth grade teachers in our sample of schools reported that they arrived late or departed early on 0.64 (12.8%) of the five days in the previous week, with 46.7% of the schools having teachers who never arrived late or departed early and 10.7% of the schools having teachers who arrived late or depart early on approximately 75 of the 188 days in the school year.

5. *Student absenteeism*: On average schools in our sample had almost 9% of their students absent during a given day of the previous week, with 29.7% of the schools having student absenteism rates of 3% or lower and 32.9% of the schools having student absenteism rates of 10% or higher.

6. Student partial days: On average schools in our sample had 4% of their students arriving late or leaving early on a given day during the previous week, with 32.4% of the schools averaging fewer than 1% late-arriving or early-departing students and 26.8% of the schools averaging 5% or more late-arriving or early-

departing students.

Given the inter-school variation in these measures of opportunity to learn as well as in literacy and numeracy exam performance, we examined the extent to which the opportunity to learn measures contributed significantly to explaining the variation in exam performance. To address the second research question, therefore, we conducted regression analyses on the literacy and the numeracy exam performance using five models, one that included only the opportunity to learn measures and others that included sets of control variables (teacher quality, inservice education and supervisory support of teachers, school community context, and/or prior exam performance).

With respect to the results of the regression analysis findings focused on grade 7 literacy exam performance, the following opportunity to learn variables had significant betas in one or more of the models: *teacher absenteeism*, *student absenteeism*, and *student partial days*. In all cases these opportunity to learn measures were negatively related to exam performance, indicating that schools with lower losses of opportunity to learn (because of absenteeism or partial day attendance) had higher average exam scores. However, only the variable, *student partial days*, had a significant effect on grade 7 literacy exam performance when teacher quality, inservice education and supervisory support of teachers, and school community context variables were controlled for in the model. And this was also the only opportunity to learn variable that had a beta exceeding -.25 (viz., beta = -.35).

With respect to the regression analysis findings focused on grade 7 numeracy exam performance, only *student partial days* was observed to have a significant regression coefficient (beta = -.47). Moreover, this opportunity to learn measure had a significant effect on grade 7 numeracy exam performance when teacher quality, inservice education and supervisory support of teachers, and school community context variables were controlled for in the model. In this instance, the opportunity to learn measure, student partial days, was negatively related to exam performance, indicating that schools with lower rates of students being late or leaving early tended to have higher average exam scores. However, we should note that this model, as with the other regression analysis models focused on grade 7 numeracy exam performance, did not reach the fairly liberal level of significance ($p < .10$) in explaining variation in our dependent measure.

These findings do not match exactly what we expected based on the theoretical literature discussing opportunity to learn. Based on the ideas of educational psychologists (Bloom, 1980; Carroll, 1963, 1989), Abadzi (2007a and 2007b) as well as Gillies and Quijada (2008) theorized that all of the following opportunity to learn variables would affect student learning outcomes:

1. The number of days per year the school is open;
2. The number of hours per day the school is open;
3. The number of days per year the teacher is present (versus absent);
4. The number of hours per day the teacher is in school (versus being tardy or leaving early);
5. The number of days per year students are present (versus absent);
6. The number of hours per day students are in school (versus being tardy or leaving early); and
7. The amount of time during the school day devoted to instruction (or time on curriculum-relevant tasks).

We found no significant effect on either grade 7 literacy or grade 7 numeracy exam performance of the following variables: days per year school was open (#1) and hours per day school was open (#2), and teacher partial days (#4). Moreover, while we found some evidence of significant effects of teacher absenteeism (#3) and student absenteeism (#5) on grade 7 literacy exam performance (only), but the sizes of the effects were relatively small and the coefficients were not significant when we controlled for other variables in our models.

Student partial days (#6) was the one opportunity to learn variable that we found to have significant effects on both measures of learning outcomes – literacy and numeracy exam performance. The regression coefficients were reasonably large and the effects remained significant even when we controlled for other variables in our models.

That the majority of our opportunity to learn measures were not found to have a significant effect on student learning outcomes may stem from the fact that we used the school as the unit of analysis, rather than the student. In a sense, this limitation reflects the inverse of the ecological fallacy, which “consists in thinking that relationships observed for groups necessarily hold for individuals” (Freedman, 2001:4027). Much of the theorizing about opportunities to learn focuses on the individual student, rather than groups of students at the classroom, let alone school level. Thus, it may not be appropriate to anticipate that all of these opportunities to learn measures would affect student learning outcomes when we conduct the analyses using the school (rather than the individual student) as the unit of analysis.

The findings may also not match the theoretical predictions because of limitations in the way we measused some of these variables or the fact that we found relatively little variation across schools in some of the measures. Certainly, some head teachers may have had reasons to over-report the number of days their schools were actually open and some teachers may have been inclined to under-report the number of days they were absent. Furthermore, the number of official school hours per day provided only a rough estimate of the average hours per day that all schools in the sample were in fact open. And, unfortunately, we did not have a

good measure of the actual amount of time devoted to instruction (#7), and thus were not able to examine the effect of this dimension of opportunity to learn on students' learning outcomes. Future studies should include both self-report and researcher direct observation measures of these key opportunity to learn variables.

Nevertheless, the findings presented here are similar to other studies, thus raising questions about the predictive validity of the commonsense theories that all of these dimensions of opportunity to learn necessarily affect how students perform on tests of learning achievement. For example, based on their analysis of data from from 182 schools in four provinces Zambia in 2002, Das et al. (2007) conclude that *teacher absenteeism* did not have a significant effect on pupils' English and mathematics test performance, except for the subsample of pupils who had the same teacher during a two-year period. The lack of significant effect of teacher absenteeism parallels what we reported in the current study.

Additionally, the SACMEQ III findings for Zambia in 2007 indicate that *student absenteeism* only had very small coefficients (betas equal -.06 and -.04) in the regression equations predicting, respectively, reading and mathematics performance of sixth grade pupils (Hunji, 2011:9 and 11; SACMEQ, 2010:10). Moreover, the SACMEQ III findings for Zambia show that *teacher absenteeism* only had a very small coefficient (beta = -.04) in the regression equation for reading, but did not have a significant coeficient in the regression equation for mathematics of sixth grade pupils, despite the large sample size (Hunji, 2011:9 and 11; SACMEQ, 2010:10). In the study we report on here, we also found only very small regression coefficients for teacher absenteeism on literacy and numeracy test performance. That the SACMEQ III studies found these coefficients to be significant, while our current study did not, is likely to mainly be a consequence of the larger sample size involved in the SACMEQ III study ((SACMEQ, 2011a).

Schuh Moore et al. (2012) report, based on case studies in Ethiopia, Guatemala, Honduras, Mozambique and Nepal, that the percentage of equivalent days available for instruction" had a significant effect on individual students' performance on early grade reading assessment. However, it is important to note that this measure combined time lost due to school closing, teacher and student absence, daily time loss, and time-off-task" (p. 32), but they only found limited reductions in opportunity to learn with respect to percentage of days school is open, teacher attendance, and student attendance. Thus, it seems likely that other dimensions of opportunity to learn (that is, percentage of school day available for instruction and percentage of student time on task) most likely contributed to the effect on learning outcomes. These measures are similar to the one opportunity to learn measure in our current study that had a significant effect on literacy and numeracy exam performance – student partial days.

Thus, we conclude that to the extent that the concept of opportunity to learn is worthy of further investigation future studies should focus on the individual student level as the unit of analysis and should emphasize measures directly assess the amount of time teachers are actually engaged in instruction as well as the actual time that students are in fact paying attention and engaged in the activity of learning. However, it may be that, while appealing at a commonsense level, the notion of opportunity to learn *in school* is not as critical to explaining variation in student learning outcomes. Researchers, educators, and policy makers may need to focus as much, if not more, attention on opportunity to learn *outside of school*.

ACKNOWLEDGEMENTS

The authors would also like to acknowledge the advice and support of members of the Research Project Coordinating Team (Felix Phiri, Madrine Mbuta, John Kalokoni, Alex Kaba, and Oscar Shitima, Joe Kanyika, Saul Banda, and Justin Lupele) as well as other colleagues who contributed to the investigation: 9 provincial senior planning officers (data collector supervision), 18 district resource centre coordinators (data collectors), and 2 lecturers from the School of Education at the University of Zambia (data entry). The USAID-funded EQUIP2/Zambia associate award supported the design of the study as well as data collection and data entry. A preliminary analysis of the data was presented in a project report (MoE and EQUIP2/Zambia, 2011). The USAID-funded EQUIP2 Leader Award supported the work to refine and extend the analysis of the data, on which the findings presented herein are based. The Department of International and Transcultural Studies, Teachers College, Columbia University also provided support for the data analysis.

REFERENCES

Abadzi, H. (**2007a**). Absenteeism and Beyond: Instructional Time Loss and Consequences. Policy Research Working Paper No. 4376. Washington, DC: World Bank.

Abadzi, H. (**2007b**). Efficient Learning for the Poor: Insights from the Frontiers of Neuroscience. Washington, D.C.: The World Bank.

Balwanz, D., and **Chengo**, A. (**2009**). Zambia Capstone Case Summary. Unpublished manuscript developed for EQUIP2 Project. Washington, DC: Academy for Educational Development.

Bartholomew, J. (**2010**). Country Desk Study: Zambia. Mid-Term Evaluation of the EFA Fast Track Initiative. http://www.camb-ed.com/fasttrackinitiative/download/FTI_DS_Zambia_(Feb2010x).pdf.

Benavot, A., and **Amadio**, M. (**2004**). A Global Study of Intended Instructional Time and Official School Curricula, 1980-2000. Background paper commissioned by the International Bureau of Education for the UNESCO-EFA Global Monitoring Report (2005).

Bloom, B. (**1980**). All Our Children Are Learning. New York: McGraw-Hill.

Burstein, L. (**1993**). Studying Learning, Growth, and Instruction Cross-Nationally: Lessons Learned about Why and Why Not to Engage in Cross-National Studies. In L. Burstein (ed.), The IEA Study of Mathematics III: Student Growth and Classroom Processes (pp. xxvii-ili). New York: Pergamon Press.

Carroll, J. (**1963**). A Model of School Learning. Teachers College Record, 64:723-733.
Carroll, J. (**1989**). The Carroll model: A 25-year retrospective and prospective view. Educational Researcher, 18(1):26-31.
Das, J., Dercon, S., Habyarimana, J., and Krishnan, P. (**2007**). Teacher Shocks and Student Learning: Evidence from Zambia. The Journal of Human Resources, 42(4):820-862.
de Kemp, A., Elbers, C., and Gunning, J. W. (**2008**). Primary Education in Zambia: IOB Impact Evaluation. No. 312. The Hague: Policy and Operations Evaluation Department, Government of the Netherlands.
DeStefano, J. (**2012**). EQUIP2 State-of-the-Art Knowledge in Education – Opportunity: A Guide to Education Project Design Based on a Comprehensive Literature and Project Review. Washington, DC: EQUIP2 and USAID. Retrieved on 3 August 2014 from http://www.epdc.org/sites/default/files/documents/EQUIP2%20SOAK%20-%20OTL.pdf.
Educational Quality Improvement Program 2 (**EQUIP2**) (**2005**). *Meeting EFA: Zambia Community Schools*. Washington, DC: EQUIP2/USAID. Retrieved from http://www.equip123.net/docs/e2-ZambiaCaseStudy.pdf.
Examinations Council of Zambia (**ECZ**) (**2007**). *Learning Achievement at the Middle Basic Level: Zambia's National Assessment Survey Report, 2006.* Lusaka: Ministry of Education, Government of the Republic of Zambia.
Examinations Council of Zambia (**ECZ**) (**2008**). *Learning Achievement at the Middle Basic Level: Zambia's National Assessment Survey Report, 2007.* Lusaka: Ministry of Education, Government of the Republic of Zambia.
Freedman, D. (**2001**). Ecological Inference and the Ecological Fallacy. International Encyclopedia for the Social and Behavioral Sciences 6:4027-4030.
Gillies, J. (**2010**). Zambia: Lessons from the Case Study. In: The Power of Persistence: Education System Reform and Aid Effectiveness. Case Studies in Long-Term Educational Reform. Washington, DC: EQUIP2 and USAID.
Gillies, J., and **Quijada**, J. J. (**2008**). Opportunity to Learn: A High Impact Strategy for Improving Educational Outcomes in Developing Countries. EQUIP2 Working Paper. Washington, DC: USAID.
Government of the Republic Zambia (**GRZ**) (**1992**). Focus on Learning. Lusaka: GRZ.
Hunji, N. (**2011**). *Accounting for Variations in the Quality of Primary School Education*. Working Paper 7. Southern and Eastern Africa Consortium for Measuring Educational Quality (SACMEQ). Retrieved on 3 August 2014 from http://www.sacmeq.org/sites/default/files/sacmeq/publications/07_multivariate_final.pdf.
Inter-Agency Commission (**1990**). *World Declaration on Education for All*. (Document adopted by the World Conference on Education for All: Meeting Basic Learning Needs, Jomtien, Thailand, 5-9 March, 1990). New York: Inter-Agency Commission.
McDonnell, L. (**1995**). Opportunity to learn as a research concept and a policy instrument. Educational Evaluation and Policy Analysis, 17(3):305-322.
Ministry of Education (**MoE**) (**1996**). Educating Our Future. Lusaka: MoE, Repubic of Zambia.
Ministry of Education (**MoE**) (**2008**). Zambia's National Assessment Survey Report 2008: Learning Achievement at the Middle Basic Level. Lusaka, Zambia: Printech (Z) Ltd.
Ministry of Education (**MoE**) (**2010**). Education Sector: National Implementation Framework III: 2011-2015. Lusaka: Republic of Zambia.
Ministry of Education (**MoE**) and **EQUIP2** (**2011**). *Factors Affecting Opportunities to Learn (OTL) and Pupils Achievement*. Lusaka: MoE and EQUIP2 Project.
Musonda, B., and **Kaba**, A. (**2011**). The SACMEQ III Project in Zambia: A Study of the Conditions of Schooling and the Quality of Education Southern and Eastern Africa Consortium for Monitoring Educational Quality. Lusaka: Ministry of Education. Retrieved 3 August 2014 from http://www.sacmeq.org/sites/default/files/sacmeq/reports/sacmeq-iii/national-reports/s3_zambia_final.pdf.
Mwanza, K., and **Nkosha**, D. (**2009**). Quality of basic education provided by rural community and regular schools in the Northern Province of Zambia. Journal of International Cooperation in Education, 12:19-32.
Park, J. (**2012**). Primary Education in Zambia: A Subsector Review. Unpublished paper prepared for class on Comparative Policy Studies, Teachers College, Columbia University.
Schmidt, W., and **Maier**, A. (**2009**). Opportunity to Learn. In G. Sykes, B.. Schneider, D. Plank (eds.), Handbook on Education Policy Research (pages 551-552). New York, New York: Routledge.
Schuh Moore, A., DeStefano, J., and Adelman, E. (**2012**). Opportunity to Learn: A High Impact Strategy for Improving Educational Outcomes in Developing Countries. Washington, DC: EQUIP2 and USAID. Retrieved on 3 August 2014 from http://www.epdc.org/sites/default/files/documents/EQUIP2%20OTL%20Book.pdf.
Southern and Eastern Africa Consortium for Monitoring Educational Quality (**SACMEQ**) (**2010**). SACMEQ III Project Results: Student achievement levels in reading and mathematics. SACMEQ: Working Document Number 1. Retrieved from http://www.sacmeq.org/downloads/sacmeqIII/WD01_SACMEQ_III_Results_Student_Achievement.pdf.
Southern and Eastern Africa Consortium for Monitoring Educational Quality (**SACMEQ**) (**2011a**). Accounting for Variations in the Quality of Primary School Education. *Working Paper 7*. Retrieved from http://www.sacmeq.org/downloads/Working%20Papers/07_Multivariate_Final.pdf.
Southern and Eastern Africa Consortium for Monitoring Educational Quality (**SACMEQ**) (**2011b**). SACMEQ III Project Results: Levels and Trends in School Resources among SACMEQ School Systems. *Working Document Number 2*. Retrieved from http://www.sacmeq.org/downloads/sacmeqIII/Levels_and_Trends_in_School_Resources_FIN2.pdf.
Steiner-Khamsi, G., Torney-Purta, J., and Schwille, J. (**2002**). New Paradigms and Recurring Paradoxes in Education for Citizenship. An International Comparison. Oxford: Elsevier Science.
Times of Zambia (**2007**). Grade 7 Examination results for 2006. Lusaka, Zambia: Times of Zambia.
UNESCO (**2000**). The Dakar Framework for Action: Education for All: Meeting Our Collective Commitments. Text adopted by the World Education Forum Dakar, Senegal, 26-28 April.
UNESCO (**2008**). Education for All by 2015: Will We Make It? (EFA Global Monitoring Report, 2008). Paris: UNESCO.
UNESCO (**2014**). Teaching and Learning: Achieving Quality Education for All (EFA Global Monitoring Report, 2013/4). Paris: UNESCO.

Citation: Ginsburg, M., Balwanz, D., Banda, D., Park, J., Tambulukani, G., and Yao, W. (2014). Opportunity to learn and its consequences for student learning outcomes in basic education schools in Zambia. African Educational Research Journal, 2(4):123-156.

APPENDICES

Appendix 1: Number of basic education schools by category and province.

Category	Central	Copperbelt	Eastern	Luapula	Lusaka	North Western	Northern	Southern	Western	Total	Total %
Community	407	282	332	187	314	190	426	351	173	2662	30.1%
Grant-aided	32	35	49	20	17	43	41	64	24	325	3.7%
Government	511	503	740	434	261	498	969	740	615	5271	59.7%
Private	49	216	22	18	140	14	24	70	19	572	6.5%
Total	999	1036	1143	659	732	745	1460	1225	831	8830	100.0%

Appendix 2: Correlation matrix

VARIABLES	Grade 5 English Literacy (2008)	Grade 5 Numeracy (2008)	Grade 7 English Literacy (2010)	Grade 7 Numeracy (2010)	Days School Open	Teacher Absent	Student Absent	Official daily contact hours	Teacher partial days	Student partial days	Teacher qual's	Teacher experience	English teaching effectiveness	Math teaching effectiveness	Effectiveness assessing students	Observation by head teacher	Observation by standards officer	Lesson plan review by head teacher	Lesson plan review by standards officer	Teacher inservice education	Head teacher inservice education	Class size	School infrastructure (electricity)	Instructional materials	Parental participation	Rural/urban location
Grade 5 English Literacy (2008)	1																									
Grade 5 Numeracy (2008)	.709**	1																								
Grade 7 English Literacy (2010)	.378**	.199*	1																							
Grade 7 Numeracy (2010)	.376**	.234**	.853**	1																						
Days School Open	.050	.110	.068	.119	1																					
Teacher Absenteeism	-.162*	-.121	-.151	-.055	-.056	1																				
Student Absenteeism	-.251**	-.257**	-.242**	-.188*	-.059	.000	1																			
Official daily contact hours	-.004	-.011	-.028	-.056	-.013	-.081	.016	1																		
Teacher partial days	.050	.073	-.014	-.031	-.102	-.033	.148	-.028	1																	
Student partial days	-.181*	-.165	-.141	-.134	-.311**	.037	.203*	-.029	.091	1																
Teacher qualifications	.071	.074	.056	.048	.039	-.035	-.088	.019	-.047	-.067	1															
Teacher experience	.054	.079	.167*	.071	.134	-.041	-.158	.004	-.041	-.045	.418**	1														
English teaching effectiveness	.065	.157*	.158*	.145	.042	.013	-.133	.013	.051	.015	.131	.217**	1													
Math teaching effectiveness	.041	.083	.093	.102	.082	.047	.023	.081	.169*	.027	.007	.123	.768**	1												
Effectiveness assessing students	.095	.182*	.177*	.173*	.036	-.030	-.239**	.138	.008	-.158	-.207**	.065	.355**	.361**	1											
Observation by head teacher	.072	-.025	.043	.099	-.196*	-.061	.078	.106	.101	.116	-.050	-.322**	-.106	-.079	-.095	1										
Observation by standards officer	.040	.052	-.091	-.107	-.060	.019	-.166*	-.029	.016	.049	.003	-.102	-.014	-.018	.134	.207**	1									
Lesson plan review by head teacher	.252**	.249**	-.097	-.070	.039	-.083	.035	.076	-.176*	-.146	-.118	.037	.102	.084	.284**	.034	.166*	1								
Lesson plan review by standards officer	.035	.087	-.010	-.045	.038	.042	-.011	.022	-.042	-.098	.074	.025	.063	.009	.118	.139	.362**	.262**	1							
Teacher inservice education	.038	.074	-.025	-.093	.109	-.142	-.005	.087	-.143	-.094	-.059	.061	.074	.043	.137	.105	.094	.224**	.121	1						
Head teacher inservice education	.036	.039	-.011	.020	.017	.047	.052	.028	.047	.049	.044	-.004	.063	.150*	.036	.046	.059	.006	.013	.107	1					
Class size	-.118	-.132	-.129	-.103	.009	.199**	-.105	.015	-.011	.086	-.069	-.095	.059	.042	-.144	.093	.005	-.038	-.005	-.072	-.051	1				
School infrastructure (electricity)	.176*	.162*	.353**	.164*	.083	-.131	-.231**	-.030	-.009	-.058	.053	.273**	.188*	.085	.133	-.135	-.085	-.078	.052	.118	.154*	-.247**	1			
Instructional materials	.044	.045	-.065	-.024	-.145	.020	.083	-.021	.125	.107	.003	.039	-.097	-.094	-.070	-.015	.020	.040	-.176*	.039	.014	-.070	-.082	1		
Parental participation	-.091	-.189*	-.026	.007	-.011	-.199*	.076	.210**	-.014	.020	-.017	-.106	.017	.016	-.029	.060	-.123	-.011	-.127	-.047	-.076	-.113	-.143	.085	1	
Rural/urban location	-.221*	-.356**	-.315**	-.195*	.087	.008	.294**	-.049	-.038	-.147	-.124	-.306**	-.165	-.108	-.146	.166	.007	.169*	.034	-.029	-.111	.188*	-.517**	.019	.156	1

Appendix 3: OTL Head teacher survey/interview instrument

Instructions:

1. When interviewing the head teacher, begin by engaging in informal conversation for a few minutes. Be sure to obtain the basic identifying information and record that on the first sheet.
2. Then ask if the school keeps records on *student* enrollment, attendance, late arrival, and early departure as well as records on *teacher* attendance, late arrival, and early departure. Ask to see those records for the current year (and for up to two previous years if available).
3. If these records are available, you will need to set aside time later in the day to comb through them and note *for each month*: a) the number of students enrolled, b) absent, c) tardy, and d) leaving early as well as the e) number of teachers employed, f) absent, g) tardy, and h) leaving early.
4. In addition to the records you may obtain, systematically work through the questions presented on the following pages. Skip the questions that ask for information that is covered by the records you have obtained (for these questions, it states, ask only if the school did not have the appropriate records).
5. For some of the questions, you should use a calendar to help people answer questions about the school being open, student attendance, and teacher attendance.

The questionnaire below is divided into the following sections:

1. Availability and Turnover of School Personnel
2. Supervisory Guidance and Support for Teachers
3. Head Teachers Professional Development
4. Supervisory Support and Guidance for Head Teacher
5. School Year and School Days
6. Teacher and Student Attendance
7. Head Teacher Presence in the School
8. School Governance and Management

SCHOOL IDENTIFYING INFORMATION

101. Interviewer's Name: _____

102. Date of School Visit: _____

103. Name of the School: _____

104. District: _____

105. Province: _____

106. Year the School was founded: _____

107. Head Teacher/Other Person Interviewed: _____

Section 1: Availability and turnover of education personnel

1. How many teachers currently work at this school (including respondent)? _____

2. How many teachers have changed (moved out) since the start of the school year? _____

3. How many teachers are different (moved in) this year from last school year? _____

4. At present, does the school have all the teachers it needs? □1 Yes □2 No

a) If no to question #4, how many teaching positions are unfilled? _____
b) If no to question #4, for which of the following grades are you missing a teacher? *Circle each grade mentioned*.

1 2 3 4 5 6 7 8 9

5. By the date when students began attending classes this year, how many *teaching positions for various grades* at this school were filled and how many were not filled?

Grade	Filled	Not Filled
1		
2		
3		
3		
5		
6		
7		

6. By the date when students began attending classes this year, how many of the assigned teachers for various grades at your school had (or had not) arrived and started working?

Grade	Arrived	Not arrived
1		
2		
3		
3		
5		
6		
7		

7. What do you normally do about unfilled teaching positions (check one box below)?

□1 Leave class without a teacher
□2 Have other teaches cover more than one class
□3 Combine students into a single class (with one teacher)
□4 Use a volunteer
□5 Send the students away
□6 Unenroll the students
□7 Other _____

8. How many head teachers have there been in this school in the last 3 years? (If the school has been operating less than 3 years, then how many heads has it had since it has been open?) _____

Section 2: Supervisory guidance and support for *teachers* (focus on teachers of Grades 1 to 7)

9. How many standards officers visited this school during the current school year? _____
a) How many standards officers visited the school during the *previous school year*? ----------
b) How many standards officers visited the school *two* years ago? _____
c) How many standards officers visited the school *three* years ago? _____

10. On average, how often do you (as the head teacher) *formally* observe how a teacher in your school performs in her/his classroom?

□1 Never □2 1 x per year □3 1 x per term □4 1 x per month
□5 2 x per month □6 Weekly □7 Daily

[IF NEVER FORMALLY OBSERVE ANY TEACHERS, SKIP TO QUESTION #13]

11. On average (on each occasion), for how much time do you (as the head teacher) *formally* observe a teacher's classroom performance in your school? _____minutes (or N/A)

12. When you as head teacher are not able to observe a teacher perform in her/his classroom, do you delegate the responsibility to other officers in the school? □1 Yes □2 No

13. If the answer to (12) was YES which other officers observe teachers perform?
_____
_____

14. Generally, what are the main purposes/foci of such observations?
_____
_____ (or N/A)

15. Normally, do you (as the head teacher) notify teachers in advance of *formally* observing them?
□1 Yes □2 No (or N/A)

16. Normally, do you (as the head teacher) engage in a post-observation discussion with the teacher you have observed? □1 Yes □2 No (or NA)

17. On average, how often have you (as the head teacher*)* conducted Action Research with your teachers to focus on pedagogical or curricula issues to improve lesson delivery at your school?

□1 Never □2 1 x per year □3 1 x per term □4 1 x per month
□5 2 x per month □6 Weekly □7 Daily

[IF NEVER INFORMALLY OBSERVED BY THE HEAD TEACHER, GO TO QUESTION #16]

18. On average, for how much time do you (as the head teacher) *informally* observe how each teacher in your school performs in her/his classroom? _____minutes (or N/A)

19. Normally, do you (as the head teacher) engage in a post-observation discussion with the teacher you have observed? □1 Yes □2 No (or N/A)

20. On average, how often do you (as the head teacher) review a teacher's lesson plans?
□1 Never □2 1 x per year □3 1 x per term □4 1 x per month
□5 2 x per month □6 Weekly □7 Daily □8 N/A

21. How often do you (as the head teacher) meet *formally* with a group of teachers at this school?
□1 Never □2 1 x per year □3 1 x per term □4 1 x per month
□5 2 x per month □6 Weekly □7 Daily □8 NA

22. On average, how often does a standards officer *formally* observe in the classroom of one of this school's teachers?
□1 Never □2 1 x per year □3 1 x per semester □4 1 x per month
□5 2 x per month □6 Weekly □7 Daily

[IF NEVER FORMALLY OBSERVED BY A STANDARDS OFFICER, SKIP TO QUESTION #21]

23. Normally, for how much time does a standards officer *formally* observe in the classroom of one of this school's teachers? _____ (or N/A)

24. Normally, does the standards officer engage in a post-observation discussion with the teacher that he/she *formally* observes? □1 Yes □2 No (or NA)

25. Generally, what are the main purposes/foci of such *formal* observations by standards officers?
_____
_____ (or N/A)

26. Normally, does the standards officer notify the teacher in advance of such *formal* observations?
□1 Yes □2 No (or N/A)

27. Do teachers in this school maintain lesson plan books or files of lesson plans?
□1 Yes □2 No

[IF "NO", SKIP TO QUESTION #24]

28. How often does a standards officer review the lesson plans of teachers in this school?
□1 Never □2 1 x per year □3 1 x per term □4 1 x per month □5 2 x per month
□6 Weekly □7 Daily □8 per visit □9 N/A

29. How often does a standards officer meet *formally* with a group of teachers at this school?
□1 Never □2 1 x per year □3 1 x per term □4 1 x per month
□5 2 x per month □6 Weekly □7 Daily □8 NA

30. Generally, how useful for *improving teaching* do you perceive the ideas and feedback that teachers at this school receive from each of the following categories of individuals (place an "X" in the appropriate boxes)?

Category of individuals	Not at all	Only somewhat	About average	Very	Not applicable
(You) Head Teacher	□1	□2	□3	□4	□8
Standards Officers	□1	□2	□3	□4	□8
Other Teachers	□1	□2	□3	□4	□8

Section 3: *Head teacher's* in-service professional development

31. During the last 12 months, *how many* in-service training or professional development workshops/seminars have you attended (check the appropriate box)?
□0 □1 □2 □3 □4 □5+

[IF NONE/ZERO, GO TO QUESTION #32]

32. For each training program (up to five programmes), *how long* was it?
a) Number of days (1st in-service): _____
b) Number of days (2nd in-service): _____
c) Number of days (3rd in-service): _____
d) Number of days (4th in-service): _____
e) Number of days (5th in-service): _____

33. For each training program (up to five), what was its main *objective*?
a) Topic (1st): _____
b) Topic (2nd): _____
c) Topic (3rd): _____
d) Topic (4th): _____
e) Topic (5th): _____

34. For each training program (up to five), *how useful* do you think it was (place an "X" in the appropriate boxes)?

Training program	Not at all	Only somewhat	About average	Very	*Not applicable*
a. 1st in-service	□1	□2	□3	□4	□8
b. 2nd in-service	□1	□2	□3	□4	□8
c. 3rd in-service	□1	□2	□3	□4	□8
d. 4th in-service	□1	□2	□3	□4	□8
e. 5th in-service	□1	□2	□3	□4	□8

35. Please describe for each training program (up to five) something specific that you *learned* and have *applied* in your work as a head teacher.

a) Learned/Applied (1st): _____
b) Learned/Applied (2nd): _____
c) Learned/Applied (3rd): _____
d) Learned/Applied (4th): _____
e) Learned/Applied (5th): _____

Section 4: Supervisory support and guidance for *Head Teacher*

36. On average, how often does a standards officer visit this school?

□1 Never □2 1 x per year □3 1 x per term □4 1 x per month
□5 2 x per month □6 Weekly □7 Daily

[IF NEVER, GO TO QUESTION #36]

37. Normally, how much time does a standards officer spend when visiting this school? _____minutes (or NA)

38. Normally, where do the standard officers spend more time?

Focus area	More time	Less time
Inspecting School Admin, infrastructure, and environment		
With teachers in class and discussion of lessons		
With staff in staff meeting		

39. Normally, how much time, if at all, does the standards officer engage in a formal discussion with you (as the head teacher) when visiting this school? _____minutes (or NA)

40. Generally, what are the main purposes/foci of such discussions between you and standards officers? _____
_____

41. In addition to standards officers who else supports you in your work as head of the school? List them using their titles:
_____
_____

42. How often, if at all, do you meet *formally* with other head teachers in your district or province?
□1 Never □2 1 x per year □3 1 x per term □4 1 x per month
□5 2 x per month □6 Weekly □7 Daily

[IF NEVER, GO TO QUESTION #39]

43. Normally, how long are such *formal meetings* with other head teachers? _____minutes (or NA)

44. Generally, what are the main topics for discussion at such *formal meetings* with other head teachers? _____
_____

44. How often, if at all, do you meet *informally* with other head teachers in your district or province?
□1 Never □2 1 x per year □3 1 x per term □4 1 x per month
□5 2 x per month □6 Weekly □7 Daily

[IF NEVER, GO TO QUESTION #42]

45. Normally, how long are such *informal meetings* with other head teachers? _____ minutes (or NA)

46. Generally, what are the main topics for discussion at such *informal meetings* with other head teachers? _____
_____

47. Generally, how useful for *improving your performance as a head teacher* do you perceive the ideas and feedback that you receive from each of the following categories of individuals (place an "X" in the appropriate cells)?

Category of Individuals	Not at all	Only somewhat	About average	Very	*Not applicable*
Other Head Teachers	□1	□2	□3	□4	□8
Standards Officers	□1	□2	□3	□4	□8
Teachers in this school	□1	□2	□3	□4	□8
Parents/Community	□1	□2	□3	□4	□8

Section 5: School year and school days

48. *Using a calendar*, please show me the date your school officially opened this school year? _____

49. On what date did you (as head teacher) arrive at school for this school year? _____

50. On what date did students begin attending classes this school year? _____

51. Please show me *on the calendar* any dates, other than official holidays, since the start of this school year when this school was closed. (*number of dates indicated*): _____

52. Now, for the 2010 calendar, please show me *on the calendar* any dates, other than official holidays, since the start of the school year when this school was closed. (*number of dates indicated*):
_____
_____
_____

53. Does this school operate more than one shift/session? □1 Yes □2 No

[IF NO, GO TO QUESTION 52]

54. If yes, please indicate the *official* starting time and ending time for each shift/session:

Shift	Starting Time	Ending time
1		
2		
3		

55. If the school does not operate more than one shift/session, at what time does the school day *officially* start and end?
Starting Time _____ Ending Time _____

Section 6: Teacher and student attendance

56. Teachers' lives are complicated by other responsibilities. We would like to have an idea about how this may affect their presence in the school during the school day. For each day during the past week, please tell me how many TEACHERS *arrived on time, were absent*, arrived *late* to school, or left school *early* (in other words, before the end of the day).

i) First, tell me how many teachers were officially assigned to this school last week: _____
ii) Next, starting with Monday and the "absent" cell, tell me (so I can *write in) the appropriate number of teachers for*

each cell in the chart below:

Day last week	Absent	Arrived late	Left early	Arrived on time
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				

57. Reasons that teachers gave for being absent from school included:

	Number
Illness of the teacher	
Illness in the family	
Funeral in the family or neighborhood	
Following salaries and other work related issues	
Differed with fellow teacher or head teacher	
Simple truancy	
Mother's day for female teachers	

58. Reasons that teachers gave for coming to school late or leaving early included:

	Number
Illness of the teacher	
Illness in the family	
Funeral in the family or neighborhood	
Following salaries and other work related issues	
Differed with fellow teacher or head teacher	
Simple truancy	

59. Students' lives are sometimes also complicated by other chores and responsibilities. We would like to have an idea about how this may affect their presence in the school during the school day. For each day during the past week, please tell me how many STUDENTS *arrived on time*, were *absent*, arrived *late* to school, left school *early* (in other words, before the end of the day).

i) First, tell me how many students were officially enrolled in this school last week: _____
ii) Next, starting with Monday and the "absent" cell, tell me (so I can *write in) the appropriate number of students for each cell in the chart below*:

Day last week	Absent	Arrived Late	Left early	Arrived on time
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				

60. Reasons that students gave for being absent from school included:

	Number
Illness of the student	
Illness in the family	
Funeral in the family or neighborhood	
Long distance from school and other dangers(wild animals)	
Differed with fellow student, teacher or head teacher	
Simple truancy	
Bad weather	
Home chores	

61. Reasons that students gave for coming to school late or leaving early included:

	Number
Illness of the student	
Illness in the family	
Funeral in the family or neighborhood	
Long distance from school and other dangers (wild animals)	
Bad weather	
Simple truancy	
Home chores	

Section 7: Head teacher presence in the school

62. What date was your first day at school this school year? _____

63. How many days during this school year, other than holidays, have you been away from school, either for *official* (that is, work-related) or *personal* reasons?

Total no. of days away from school	Away for official reasons	Away for personal reasons

64. Now, for the 2010 school year, how many days, other than holidays, were you away from school, either for *official* (that is, work-related) or *personal* reasons?

Total no. of days away from school	Away for official reasons	Away for personal reasons

65. Your life, like those of other professionals, can be complicated by other responsibilities. We would like to have an idea about how this may affect your presence in the school during the school day. For each day during the past week, please tell me whether you were *absent*, arrived *late* to school, left school *early* (in other words, before the end of the day). Starting with Monday and the "absent" cell, *circle "yes" or "no" for each cell in the chart below*:

Day last week	Absent		Arrived late		Left early	
Monday	□1 Yes	□2 No	□1 Yes	□2 No	□1 Yes	□2 No
Tuesday	□1 Yes	□2 No	□1 Yes	□2 No	□1 Yes	□2 No
Wednesday	□1 Yes	□2 No	□1 Yes	□2 No	□1 Yes	□2 No
Thursday	□1 Yes	□2 No	□1 Yes	□2 No	□1 Yes	□2 No
Friday	□1 Yes	□2 No	□1 Yes	□2 No	□1 Yes	□2 No

66. Reasons you had for being absent from school included:

	Number
Illness	
Illness in the family	
Funeral in the family or neighborhood	
Long distance from school and other dangers (wild animals)	
Differed with deputy head or teacher, parent	
Mothers day for female heads	
Bad weather	
Home chores	
Other	

67. Reasons that you had for coming to school late or leaving early included:

	Number
Illness	
Illness in the family	
Funeral in the family or neighborhood	
Long distance from school and other dangers (wild animals)	
Bad weather	
Differed with someone at work or home	
Home chores	

Section 8: School governance and management

68. Does the school have a PTA or other similar organization/committee? □1 Yes □2 No

[IF NO, GO TO QUESTION # 62]

69. What categories of people are members of the PTA or similar organization (check all that apply)?

□1 Parents
□2 Community Members
□3 Head Teacher
□4 Teachers
□5 Students
□6 Other: _____
□7 Other: _____

70. How often does the PTA (or other similar organization) meet?

□1 Never □2 1 x per Year □3 1 x per term □4 Monthly □5 Weekly □6 Daily

71. In what specific ways do parents participate in school-related activities?
(*Circle "yes" or "no" for each of the following activities as appropriate*)

Category of activity		
Raising funds	□1 Yes	□2 No
Managing funds	□1 Yes	□2 No
Building and maintaining property and infrastructure	□1 Yes	□2 No
Purchasing equipment and materials	□1 Yes	□2 No
Managing equipment and materials	□1 Yes	□2 No
Hiring/firing school personnel	□1 Yes	□2 No
Determining salary increase for school personnel	□1 Yes	□2 No
Monitoring *head teacher* attendance	□1 Yes	□2 No
Monitoring *teacher* attendance	□1 Yes	□2 No
Monitoring *student* attendance	□1 Yes	□2 No
Resolving conflicts	□1 Yes	□2 No
Monitoring school quality e.g., exam results/ learner achievement)	□1 Yes	□2 No
Setting calendar and schedule	□1 Yes	□2 No
Curriculum review	□1 Yes	□2 No
Disciplinary cases	□1 Yes	□2 No
Other	□1 Yes	□2 No

Appendix 4: OTL teacher survey/interview instrument

Introduction

This survey includes the following sections:

1. Teacher characteristics
2. Teacher in-service professional development
3. Supervisory guidance and support for teachers
4. Teacher and student attendance
5. Assessment of student learning

With information from the head teacher about the names of teachers teaching grades 2 and 6 during the morning/afternoon session in the specific school, select one teacher in each grade with whom to conduct the interview.

SURVEY IDENTIFYING INFORMATION

101. Enumerator's name: _____

102. Date of school visit: _____

103. Name of the school: _____

104. District: _____

105. Province: _____

106. Teacher's name: _____

Section 1: Teacher characteristics

1. Teacher's gender: □1 Male □2 Female

2. Session that teacher is working: □1 Morning □2 Afternoon

3. What is your *age*? (circle appropriate age range below)

4. Are you a college trained teacher? □1 Yes □2 No

5. Give the name of the college you trained at: _____

6. How long was your college training? _____ years

7. What *grade(s)* do you currently teach? (circle the appropriate grade below):

Question 3. Age of teacher (*circle the age range*)	**Question 7. Grade(s) currently taught** (*circle all that apply*)
20 to 25 years old	1
26 to 30 years old	2
31 to 35 years old	3
36 to 40 years old	4
41 to 45 years old	5
46 to 50 years old	6
51 to 55 years old	7
56 to 60 years old	8
Over 60 years old	9

8. Have you been teaching the same grade(s) since the beginning of the school year?
□1 Yes □2 No

a) If no, what grade(s) did you teach earlier in the school year? _____

9. Did you teach the same grade(s) last year? (*check one*):
□1 YES, same grade □2 NO, different grade

a) If no, what grade(s) did you teach last year? _____

10. How much *teaching experience* do you have? (*write in the number of years for each category of experience*)

	# years
Total during teaching career	
Total at this school	

11. In general, as a teacher, how *effective* do you think you are in helping students to learn English and mathematics? *Place and "X" in the appropriate cell for each subject area*:

Subject	**Not at all**	**Only somewhat**	**About average**	**Very**
English	□1	□2	□3	□4
Reading	□1	□2	□3	□4

Section 2: Teacher in-service professional development

12. During the last 12 months, *how many* in-service training or professional development workshops/seminars have you attended (check the appropriate box)?
□0 □1 □2 □3 □4 □5+

[IF NONE/ZERO, SKIP AHEAD TO QUESTION #13]

13. For each training program (up to five), *how long* was it?
a) Number of days (1st in-service): _____
b) Number of days (2nd in-service): _____

c) Number of days (3rd in-service): _____
d) Number of days (4th in-service): _____
e) Number of days (5th in-service): _____

14. For each training program (up to five), what was its main *topic*?
a) Topic (1st): _____
b) Topic (2nd): _____
c) Topic (3rd): _____
d) Topic (4th):_____
e) Topic (5th):_____

15. For each training program (up to five), *how useful* do you think it was (place an "X" in the appropriate boxes)?

Training program	Not at all	Only somewhat	About average	Very	*Not applicable*
a. 1st in-service	□1	□2	□3	□4	□8
b. 2nd in-service	□1	□2	□3	□4	□8
c. 3rd in-service	□1	□2	□3	□4	□8
d. 4th in-service	□1	□2	□3	□4	□8
e. 5th in-service	□1	□2	□3	□4	□8

16. Please describe for each training program (up to five) something specific that you l*earned* and have *applied* in your work as a teacher.
a) Learned/Applied (1st): _____
b) Learned/Applied (2nd): _____
c) Learned/Applied (3rd): _____
d) Learned/Applied (4th): _____
e) Learned/Applied (5th): _____

Section 3: Supervisory guidance and support for teachers

17. How many different **head teachers** has this school had in the last 3 years? (If the school has been operating less than 3 years, then how many directors has it had since it has been open?) _____

18. How often does the **head teacher** *formally* observe you teaching in your classroom?
□1 Never □2 1 x per year □3 1 x per semester □4 1 x per month
□5 2 x per month □6 Weekly □7 Daily

[IF NEVER FORMALLY OBSERVED BY THE HEAD TEACHER, SKIP TO QUESTION #21]

19. When was the last time you were *formally* observed by the **head teacher**? Date _____ (or NA)

20. For how much time did the **head teacher** *formally* observe you teaching in your classroom? _____minutes (or NA)

21. What was purpose/focus of that observation? _____ _____ (or NA)

22. Were you notified in advance that you would be observed? □1 Yes □2 No (or NA)

23. Did you have a post-observation discussion with the **head teacher** about the observation?
□1 Yes □2 No (or NA)

24. How often does the **head teacher** *informally* observe you teaching?
□1 Never □2 1 x year □3 1 x semester □4 1 x month
□5 2 x per month □6 Weekly □7 Daily

[IF NEVER INFORMALLY OBSERVED BY THE HEAD TEACHER, SKIP TO QUESTION #25]

25. When was the last time you were *informally* observed by the **head teacher**?
Date: _____ (or NA)

26. For how much time did the **head teacher** *informally* observe you teaching in your classroom? _____minutes (or NA)

27. Did you have a post-observation discussion with the **head teacher** about the observation? □1 Yes □2 No (or NA)

28. How many **standards officers** visited this school during the current school year? _____
a) How many standards officers visited the school during the *previous school year*? _____
b) How many standards officers visited the school *two* years ago? _____
c) How many standards officers visited the school *three* years ago? _____

29. How often does a **standards officer** *formally* observe you teaching in your classroom?
□1 Never □2 1 x per year □3 1 x per semester □4 1 x per month
□5 2 x per month □6 Weekly □7 Daily

[IF NEVER FORMALLY OBSERVED BY A STANDARDS OFFICER, SKIP TO QUESTION #32]

30. When was the last time you were *formally* observed by a **standards officer**?
Date _____ (or NA)

31. For how much time did a **standards officer** *formally* observe you teaching in your classroom? _____minutes (or NA)

32. Did you have a post-observation discussion with a **standards officer** about the observation?
□1 Yes □2 No (or NA)

33. What was purpose of that observation? _____
_____ (or NA)

34. Were you notified in advance that you would be observed?
□1 Yes □2 No (or NA)

35. How often does a **standards officer** *informally* observe you teaching?
□1 Never □2 1 x per year □3 1 x per semester □4 1 x per month
□5 2 x per month □6 Weekly □7 Daily

[IF NEVER INFORMALLY OBSERVED BY A STANDARDS OFFICER, SKIP TO QUESTION #36]

36. When was the last time you were *informally* observed by a **standards officer**? Date _____ (or NA)

37. For how much time did a **standards officer** *informally* observe you teaching in your classroom? ____minutes (or NA)

38. Did you have a post-observation discussion with a **standards officer** about the observation?
□1 Yes □2 No (or NA)

39. After the standards officer left, did you feel that you were professionally helped by the visit?
□1 Yes □2 No (or NA)

40. If the answer is NO to question 39, which of the following explain why you found the visit unhelpful? Tick choice(s).

A	wasted time talking about himself/herself	
B	concentrated on admonishing me and the modern trained teachers	
C	Spent time threatening me	
D	Made me feel very small hence uncomfortable	
E	Did not comment on my teaching or lesson	
F	Spent time talking about general weakness of the school	
G	Did not seem to know the subject well	
H	Was in hurry to go away so no time to discuss	
I	Did not leave any notes on the observation for me to learn from	

41. Do you maintain a lesson plan book or a file of lesson plans?
□1 Yes □2 No

42. How often does the **head teacher** review your lesson plans?
□1 Never □2 1 x per year □3 1 x per semester □4 1 x per month
□5 2 x per month □6 Weekly □7 Daily □8 NA

43. When is the last time the **head teacher** reviewed your lesson plans? Date_____

44. How often does a **standards officer** review your lesson plans?
□1 Never □2 1 x per year □3 1 x per semester □4 1 x per month
□5 2 x per month □6 Weekly □7 Daily □8 NA

45. When is the last time a **standards officer** reviewed your lesson plans?
Date _____ (or NA)

46. How often do you plan lessons together with **other teachers**, exchange ideas, share teaching plans or share materials and experiences?
□1 Never □2 1 x per year □3 1 x per semester □4 1 x per month
□5 2 x per month □6 Weekly □7 Daily □8 NA

47. How often does the **head teacher** meet formally with a group of teachers at this school?
□1 Never □2 1 x per year □3 1 x per semester □4 1 x per month
□5 2 x per month □6 Weekly □7 Daily

48. How often does a **standards officer** meet *formally* with a group of teachers at this school?
□1 Never □2 1 x per year □3 1 x per semester □4 1 x per month
□5 2 x per month □6 Weekly □7 Daily

49. How often do you meet *formally* as a group of **teachers (only) at this school**?
□1 Never □2 1 x per year □3 1 x per semester □4 1 x per month
□5 2 x per month □6 Weekly □7 Daily

50. Generally, **how useful** for *improving your teaching* are the ideas and feedback you have received from each of the following categories of individuals (place an "X" in the appropriate boxes)?

Category of individuals	**Not at all**	**Only somewhat**	**About average**	**Very**	***Not applicable***
Head Teacher	□1	□2	□3	□4	□8
Standards Officers	□1	□2	□3	□4	□8
TRC Coordinators	□1	□2	□3	□4	□8
Other teachers	□1	□2	□3	□4	□8

Section 4: Teacher and student attendance

51. Your life, like those of other teachers, can be complicated by other responsibilities. We would like to have an idea

about how this may affect your presence in the school during the school day. For each day during the past week, please tell me whether you were *absent*, arrived *late* to school, left school *early* (in other words, before the end of the day). Starting with Monday and the "absent" cell, *check "yes" or "no" for each cell in the chart below*:

Day last week	Absent		Arrived late		Left early		Arrived early	
Monday	□1 Yes	□2 No	□1 Yes	□2 No	□1 Yes	□2 No	□1 Yes	□2 No
Tuesday	□1 Yes	□2 No	□1 Yes	□2 No	□1 Yes	□2 No	□1 Yes	□2 No
Wednesday	□1 Yes	□2 No	□1 Yes	□2 No	□1 Yes	□2 No	□1 Yes	□2 No
Thursday	□1 Yes	□2 No	□1 Yes	□2 No	□1 Yes	□2 No	□1 Yes	□2 No
Friday	□1 Yes	□2 No	□1 Yes	□2 No	□1 Yes	□2 No	□1 Yes	□2 No

52. Which of the following factors do you think interrupt students' time spent on learning in the classroom? (Tick)

A	School assemblies	
B	Movement after break time is rather slow	
C	Teachers answering phones	
D	Teachers too slow to move to classes between lessons or from break	
E	Punishment of students during lesson time	
F	Student late coming to school	
G	Sporting activities	
H	District, national programmes such as dignitaries visiting the school or other programmes	
I	Teacher illnesses	
J	Funerals	
K	General school atmosphere, environment, location and culture in school does not support learning	
L	Poor health and nutrition among students	

53. Is discipline a problem which might affect teaching and learning in your school?
□1 Yes □2 No

54. Are the parents involved in the management of discipline in the school?
□1 Yes □2 No

55. Are parents and other community members involved in general school management in your school?
□1 Yes □2 No

Section 6: Assessment of student learning

56. During *the current school year* and during the *previous school year*, how often would you say you formally evaluated student learning in your class? *Circle one in each row*.

School year	Frequency of evaluating student learning					
Current year	□1 Never	□2 1 x per Year	□3 1 x per Semester	□4 Monthly	□5 Weekly	□6 Daily
Previous year	□1 Never	□2 1 x per Year	□3 1 x per Semester	□4 Monthly	□5 Weekly	□6 Daily

57. During *this school year* and the *previous school year, how often would you say you used the following* strategies to evaluate student performance in your class? Starting with the first listed strategy for the current year, *insert the appropriate number in each cell using the following scale:*
1. Never
2. Once a year
3. Once a semester
4. Monthly
5. Weekly
6. Daily
7. Hourly

Strategy for evaluating student learning	Current year	Previous year
Individual written test		
Group written test		
Individual oral test		
Group oral test		
Individual in-class assignment		
Group in-class assignment		
Individual one-day homework assignment		
Group one-day homework assignment		
Individual multi-day project/homework assignment		
Group multi-day project/homework assignment		
Individual multi-project assignment		
Group multi-project assignment		
Class quiz		
Other:		

58. In general, how effective do you think you are at evaluating student learning? *Check one of the following*:
□1 Not at all effective
□2 Only somewhat effective
□3 Effective
□4 Highly effective

Section 7: Teaching and learning materials and teaching aids

59. Do you use teaching aids during lessons in class? □1 Yes □2 No

60. Are there adequate textbooks (teachers' and students) for use in your class in all subjects? Please answer per subject area:

S/N	Subject	Yes	No
A	Literacy		
B	Numeracy/mathematics		
C	Science		
D	English language		
E	Zambian language		
F	Social, Spiritual and Moral Education (SSME)		
G	Practical subjects		
H	Cross-cutting subjects such as HIV and AIDS, SGBV in school, Environmental Education etc		

61. Does your school have adequate support teaching and learning materials such as charts, paper, markers, chalk, Boards, etc.? □1 Yes □2 No

62. Do most of your student's possess exercise books, pens, pencils and mathematical sets?
□1 Yes □2 No

63. Do you use the Teachers' Resource Centre near you for teaching/learning materials production?
□1 Yes □2 No

64. If the answer to question 59 was NO, which of the following reasons would explain it?

S/N	Reason	Yes	No
A	Do not know the role of TRCs		
B	Lack of time		
C	Long distance to TRC		
D	Negative attitudes of TRC Coordinators		
E	TRCs have no materials, such as paper, manila, marker etc		
F	Difficult to get permission from head teacher		
G	I don't need to use TRC, I am fine on my own.		
H	No one from the school to work with, it's too much work alone.		
I	No motivation to do it		