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Assessment for learning in Africa: insights from classrooms in Tanzania

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This paper reports on teachers' practice regarding Assessment for Learning (AfL) mathematics in a study where AfL pedagogy was used to improve the quality of teaching. It draws on a multi-country research project entitled 'Assessment for Learning in Africa' that aimed to generate knowledge about how to develop and sustain teacher capacity in integration and use of assessment for improving learning in mathematics in challenging educational settings such as those in Tanzania. While AfL has the potential to significantly impact on improving student learning outcomes, there is a policy blind spot in international development on teachers' assessment in particular in low-income countries. Results showed that teachers' had developed contextually relevant approaches to assessment for learning. However, certain structural barriers in the classroom environment hindered the potential of AfL in the classroom.

INTRODUCTION

Tanzania including mainland and Zanzibar islands is a country of more than 42 million. Rapid urbanization is a demographic trend in Tanzania and the increase in the urban population is much higher in proportion to the region's rural population. Currently, the proportion of the country's urban population grows at a rate of approximately 5% per year as compared to the national average growth rate of 2.7% (UNDP 2015). Dar es Salaam is a rapidly expanding city and, in spite of its higher HDI score, it has within it huge disparities with acute poverty in unplanned dwellings (UNDP 2015; Lugalla & Mbwambo 1999).

Formal Education in Tanzania constitutes two years of pre-primary education, seven years of primary education, four years of Junior Secondary (ordinary Level), two years of Senior Secondary (Advanced Level). The country has made strides in providing access to primary education primarily due to strong policy commitment to education since its independence in 1960, where successive governments have seen education as necessary for development. However, the quality of learning processes and outcomes is low (Uwezo 2011, p.7). In a study of the plight of young children and youth in cities in Tanzania, UNICEF (2012) maintains that Dar es Salaam has one of the highest proportions of children living in unplanned settlements in sub-Saharan Africa (UNICEF 2012 p.64).

METHODOLOGY

‘Assessment for Learning in Africa’ is a three-year (2016-2019) project being carried out in six purposively selected schools in an informal settlement in Dar es Salaam Tanzania. The selected schools were under-resourced and class sizes were large (average $n > 80$). The study included quantitative data from baseline and end line tests of students’ performance in a specially designed mathematics test administered to more than 500 students. Along side a teacher development program was offered to all the mathematics teachers in the six selected schools. It comprised of workshops to explore teachers’ perspectives about AfL; introduction of selected strategies and approaches for AfL in challenging contexts; and engage teaches in reflection on issues arising for AfL. Lesson observation and post-observation meetings of teachers with their mentors focused on analysis and evaluation of the lesson to understand issues in implementing AfL in their classroom. This paper draws on qualitative data from the teacher development component as follows:

No	Activity	Number	Data generated
1.	Lessons Observed (grade 4)	48	Observation schedule, fieldnotes, artefacts
2.	Mentor’s Visits	48	Mentors notes
3.	Workshops	08	Workshop plans and reports
4.	Teachers’ reflection	48	Teachers’ writing on lesson evaluation

Framework of analysis was mainly drawn from the works of Wiliam (2006) and Hopfenbeck (2015) as discussed below. Research team across Tanzania and UK developed a coding scheme that included the key principle of AfL.

LITERATURE

Assessment in education is typically seen with a focus on outcomes in high stakes testing. Assessment *of* learning from such an evaluator position typically occurs at the end of a teaching unit or at the end of an academic year and is summative in nature. On the other hand assessment *for* learning is formative in nature as it is essentially concerned with how assessment can take forward the process of learning. In their seminal work Black and Wiliam (1998) looked into the ‘black box’ of classroom to look at formative assessment in the course of teaching and learning in the classroom and maintained that assessment becomes formative in nature when, “evidence is actually used to adapt the teaching to meet the needs of the students”(p. 2). Wiliam (2006) proposes five key strategies that underpin good practice in assessment for learning:

Clarifying and understanding learning intentions and criteria for success

Engineering effective classroom discussions, questions and tasks that elicit evidence of learning

Providing feedback that moves learners forward

Activating students as instructional resources for each other, and

Activating students as owners of their own learning” (Wiliam, 2006)

Along similar lines but in the context of Norway, Hopfenbeck (2015) maintains that in the Norway Education Act the main purpose of assessment is for learning based on the following principles:

(1) Students should be able to understand what they are going to learn and what is expected of them.

(2) Students should get feedback that informs them about the quality of their work and their level of achievement.

(3) Students should be advised on how to improve their learning outcome.

(4) Students should be involved in their own learning process and in self-assessment. (Hopfenbeck, 2015, p.45).

A significant element of the above principles of assessment *for* learning is that the onus of learning is on the students and the teachers’ role is to create a facilitative environment for students’ learning.

RESULTS AND DISCUSSION

The project is ongoing and analysis is still at a very preliminary stage. However, some trends and patterns emerge in the results. Lessons observed had a three-phased delivery structure. In the first phase the teacher introduced the topic, shared the objectives of the lesson often making reference to the previous lesson. The main body of the lesson followed where the teacher explained a mathematical procedure or the concept. During this phase the textbook and the chalkboard were the main resource for teaching. In the third phase students worked in their notebooks at ‘exercises’ taken from the textbook. Teachers were seen to employ a range of strategies to elicit evidence of students’ learning and to provide them feedback on their learning. What follows is a brief description of the main strategies used. For consistency all data excerpts are from School Six.

Use of chalkboard: The classrooms were crowded and a large chalkboard along the width of one wall was found in each classroom. Teachers used the chalkboard creatively for a variety of purposes. In all cases the chalkboard was divided in to three sections, with the main and sub-topic written in the left hand column. Teachers wrote on the chalkboard exercises taken from the textbook, as many students did not have the textbooks. They would demonstrate worked examples on the chalkboard. In case they assigned individual or group tasks to the students, they were invited to present their work on the chalkboard. To accommodate the demands of the large class size, two or three students would be invited simultaneously to present their work on the chalkboard divided into columns to let each students work be represented separately. They invited students to check whether or not their peer’s ‘answer was correct’.

Use of tasks: Mostly teachers set tasks that were closed ended with only one correct answer. However, sometimes they also set open-ended tasks. For example in the lesson on addition of money (Tanzanian Shillings and cents) she asked the students, “Provide a word problem that entails use of multiplication of money”. One student gave the example, “If One class has 25 pupils, how many pupils are in 3 classes?” The teacher wrote this on the chalkboard, applauded the student for giving the word problem, and went on to clarify that the particular example did not involve multiplication of money. She then invited another student to provide such a word problem.

Use of questioning: Teachers often used questions to help students move forward with mathematical procedures. For example a number of multiplication tasks involving carry-over with only one digit for the multiplicand.

$$\begin{array}{r} 312 \\ \times 5 \\ \hline 1560 \end{array} \qquad \begin{array}{r} 144 \\ \times 4 \\ \hline 576 \end{array}$$

Students were invited in turn to the chalkboard to present their work and the teacher asked questions in order to make explicit the process of thinking when multiplying.

T: 2 times 5 equals 10, how much do we take in head? Students chorus: 1

The above process of question and answer went on until the multiplication was complete. However, if a student made a mistake such as providing wrong multiplication facts (e.g. $4 \times 4 = 12$) she corrected the mistake but gave a general kind of feedback “she made a mistake because she does not know the tables” (*amekosea kwa sababu hajui tebo*).

Group work: Use of group work was observed in all the classes, partly because group work could be a useful strategy to promote students’ discussion

Due to large number of pupils, noise and other distractions were generated, since the classroom was small and did not allow many movements for pupils to attend to the activities given. As a result, the teacher spent more time in trying to stop the distractions, but the pupils did not stop until the teacher went outside and came back with a stick, she threatened to beat them. Seeing the stick, most of the students stopped making noise, however, few continued, not until the teacher called them by name.

The illustrative examples above show that teachers used a variety of strategies to elicit evidence of students’ learning. However, the extent to which the information received was used to provide feedback to the students’ about their learning remained a question. For instance, in the case of multiplication of money, multiplication with carry over (e.g. ‘holding in your head’), not knowing the tables for multiplication facts, it was not apparent if students’ understood the place-value of digits. Teachers identified what was the mistake or the wrong answer but there was little evidence of probing why the students had provided the wrong answer.

Concluding remarks

To conclude, teachers employed different strategies to seek evidence of students' learning within the constraints of large class size and limited resources. However, teachers' creativity was constrained by a limited use of information drawn from interactions with the students. Moreover, issues of discipline and management of a large number of children in a confined space raised several challenges for them. The paper illustrates well the tensions in ensuring access and quality of students' learning in mathematics. It raises questions for policy and practice in improvement of mathematics teaching and learning in Tanzania and other low-income countries.

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