

Science Teachers' Perceptions of Classroom Assessment in Tanzania: An Exploratory Study

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Abstract: *This paper presents an exploratory study that focused on teachers' perceptions about different types of test items when written tests are used for both classroom and end of the course or programme assessment. This study has come about after the "explosion" of very hot debate among education stakeholders in Tanzania about what test items are suitable for both classroom and end of the course assessment. The debate was incited on the realization that some pupils who join secondary education without mastering the three Rs. By using experience survey, teachers' perceptions about different test item types were explored. Results revealed that majority of teachers' preferred short answers and essay questions to multiple-choice, true-false (alternative response) and matching items as they argued that the former could measure higher-level cognitive abilities than the later.*

Keywords: *Classroom Assessment, Learning, Science Teachers, Teachers' Perceptions*

1. INTRODUCTION

In the recent years, there have been hot debates among education stakeholders such parents, policy makers and politicians in Tanzania about what types of items should be used for both classroom and end of the course assessment. These debates have been incited by the claim that there are pupils who are selected to join secondary school education who are deficient in 3Rs, that is, who cannot read, write and do arithmetic. Though there are many parameters that might have contributed to this situation, many stakeholders' arguments are zoomed into the types of items that are used for preparing the end of primary school examinations that are officially known as Primary School Leaving Examinations (PSLE). Most of the stakeholders are against the National Examinations Council of Tanzania (NECTA) which is responsible for preparing PSLE to use multiple-choice items. They argue that by using multiple choice items, examinees can guess correct answers and easily pass the examination. The NECTA has resorted to this type of test items for preparing PSLE, whose main purpose is for selecting pupils to join ordinary level secondary school education for a number of fundamental reasons. One of the reasons is that multiple choice items are very versatile, that is they can measure learning outcome from simple to complex (Gronlund, 1990). Besides, multiple choice items are very objectives, though difficult to construct.

Good multiple choice items are difficult to prepare but can be scored easily and objectively. Essay tests, on the other hand, are relatively easy to prepare but extremely difficult to score (Elliott, Kratochwill, Cook, & Travers, 2000).

Another reason that prompted NECTA to go for multiple-choice items is the number of primary school pupils which has been increasing year after year, thus the need for objective items which can be easily machine-scored.

This paper attempts to highlight the importance of assessment in teaching and learning and then explore teachers' perceptions about different test items especially when written (paper-and-pencil exams are used).

2. ASSESSMENT AND LEARNING

Teachers play a very crucial role in shaping children's future lives through interacting with them. The most common type of interaction between teachers and pupils is through classroom

instructions. Assessing learners' achievement is an integral part of instruction. According to Koyalik (2002, as cited in Eggen & Kauchak, 2004), assessment is one of the most basic and difficult tasks that teachers face in their work. Classroom assessment includes all the process involved in making decisions about students learning progress. It provides valuable information that allows teachers to adapt instructional procedures to learning needs of their students (Koyalik, 2002 as cited in Eggen & Kauchak, 2004). It facilitates teachers in decision making about learning progress through systematic information gathering. Besides that, assessment also accomplishes two other important goals; increasing learning and increasing motivation.

The relationship between learning and assessment is very strong. Students learn more in classes where assessment is an integral part of instruction than in those where it is not. Brief assessment that provides frequent feedback about learning progress is more effective than long, infrequent ones, like once-a-term tests.

2.1. Purposes of Assessment

Assessment results serve a number of purposes (Kellaghan & Greaney, 2001) of both individual student and institution or system levels. At the individual level it is used (a) to describe student's learning, to identify and diagnose learning problems, and to plan further teaching and learning; (b) to provide guidance for students in selecting further courses of study or in deciding on vocational options; (c) to motivate students by providing goals or targets by clarifying the nature of learning tasks, and by letting students, and their teachers, know how they are progressing; (d) to certify that individual have reached a certain level of competence; and (e) to select individuals for the next level of the education system or for a job.

For Kellaghan and Greaney (2001), the main purposes of assessment of an institution or system are to reach a judgement about the effectiveness of a school, and to reach a judgement about the adequacy of the performance of an education system or of a part of it. According to them, even in these cases, assessment is based on the performances of individual students, which are aggregated to the level of the institution or system, usually to provide information for policy makers and others.

2.2. Types of Assessment

There are many ways in which assessment can be conducted (Kellaghan & Greaney, (2001). It may be oral, aural, written, practical or observational. It can be conducted in one-to-one, small group or large group settings, or on a computer. If a holistic view of achievement is adopted, assessment will be based on student's complete performance on a computer task (for example a wooden object, arguing a position in an extended essay, etc.). If, on the other hand, analytic view, in which achievement is broken down into a series of small chunks, is adopted, assessment will comprise a variety of short-answer responses to questions. Degree of formality may also vary, from one or prompts under controlled conditions within a limited time frame, to a situation in which an individual's behaviors is observed in a non-intrusive way over an extended period of time.

The purpose of this study was to explore science and mathematics teachers' perception about different test item types. It is asserted that teachers' perceptions influence their choice of item types would use for assessing their students' achievements.

3. METHODOLOGY

In order to determine teachers' perceptions about different types of test items, an exploratory study was conducted. The purpose of this kind of study, which is also known as formulative study (Kothari, 2004), was to formulate a problem for more precise investigation or of developing the working hypotheses from an operational point of view. The major emphasis in such studies is on the discovery of ideas and insights. This study is particularly an experience survey (Kothari, 2004), which means the survey of people who have had practical experience with the problem to be studied. This type of survey, demand people who are competent who can contribute ideas and they represent different types of experience. This study had involved expert teachers in science

(Biology, Chemistry and Physics) and Mathematics from different regions in Tanzania. The next section of the people present the composition of participant involved in the study.

3.1. Participants

The participants of this study were drawn from 11 regions of Tanzania. These were experts teachers who were selected from different parts of the country so as to receive special training that would enable them conduct similar training to other teachers at zonal level. They were divided in four subject panels namely Biology, Chemistry, Mathematics and Physics (Table 1).

Table1. *Participants from subject Panels*

Subject	Participants (N=36)	
	Number	Percentage
Biology	11	29.7
Chemistry	6	16.2
Mathematics	9	24.3
Physics	10	27.0

Given the role that they were going to play, participants' educational background was very important. Table 2 shows participants' educational qualifications that warranted them to be selected for the task.

Table2. *Participants' educational qualifications*

Qualification	Participants	
	Number	Percentage
Diploma in Education	2	5.4
Bachelor of Science with Education	19	51.4
Bachelor of Education in Science	9	24.3
Master of Science	2	5.4
Master of Education in Science	4	10.8

3.2. Data Collection

In order to collection information about this study, two data collection techniques were used. First, data were collected through questionnaires. The questionnaires, among other things, centred on instruments teachers used for assessment, preferred test item types and challenges teachers faced in preparing the items. Second, focused group discussion was used so as to supplement information gathered through questionnaires.

4. RESULTS AND DISCUSSION

This section presents the results and discussions about the study. The presentation highlights the instruments teachers were using for assessment. The presentation also focuses on preferred written test items types and why they were preferred. The section culminates by looking at the perceived challenges teachers were facing in preparing different test items.

4.1. Instruments Used for Assessment

Participants were asked about the instruments they use for assessment. This question was geared towards finding out whether teachers were using variety of assessment instruments to gather evidence about their students learning. Table 3 shows the types of assessment techniques participants were using.

Table3. *Frequently used evaluation techniques*

Instrument	Users	
	Number	Percentage
Written tests	33	89.2
Portfolio	6	16.2
Observation	9	24.3

Table 3 indicates that written tests were most frequently used by teachers for assessing their students' achievement. Portfolio was least frequently used. Written tests being popular is not a unique case for Tanzania. Beckmann, Senk and Thompson (1997) studied the assessment and

grading practices of 19 high school mathematics teachers. Their study revealed that the most frequently used assessment tools were tests and quizzes and these determined about 77% of students' grades. The findings of this study are also supported by Morgan and Watson (2002) who reported that most middle and high school teachers use teacher-constructed tests to assess students' achievement.

4.2. Preferred Test Items

In using written tests, participants were asked to indicate the item types they preferred most. Figure 1 shows participants' preferences.

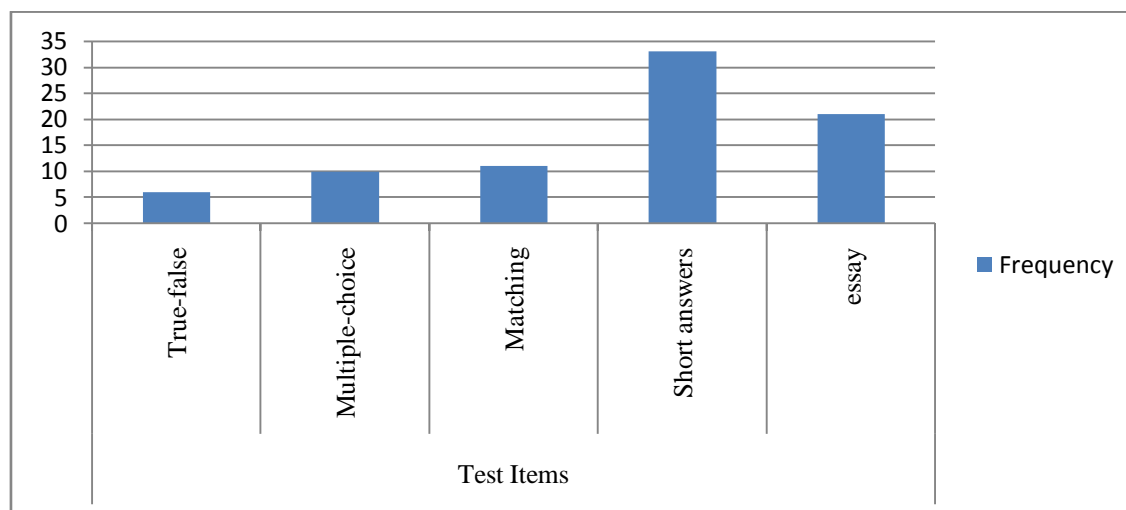


Fig1. Teachers' preferences test item types

Figure 1 shows that the most preferred test item type is short-answer followed by essays. The least preferred item type is True-false. Participants were asked to give reasons behind their preferences. Short-answer items were preferred most because the participants perceived them as having ability to measure high-level cognitive objectives. They also said that these items were easy to construct and were not victims of guessing. One the part of essay questions, the participants argued that they were very strong in measuring complex learning outcomes, though they admitted that they fell short on content validity and difficult to score them objectively. Results of this study concur with what Cooney (1992) and Garet and Mills (1995) found in their studies. Cooney (1992) surveyed high school mathematics teachers' assessment practices while Garet and Mills (1995) surveyed grade 4 to 12 mathematics teachers across the United States. Both studies reported that teachers mostly used short-answer tests for assessment.

Apart from showing their perceived preferences on the test item types, participants were also required to give challenges that they had been facing in developing different test items (see Table 4).

Table4. Challenges in preparing different test items

s/n	Item type	Challenge
1	True-false	<ul style="list-style-type: none"> ▪ Difficulty of fitting them to the table of specifications. ▪ Difficulty of getting items that can measure high level cognitive abilities
2	Matching	<ul style="list-style-type: none"> ▪ Difficulty to construct. ▪ Difficulty of fitting to the table of specifications.
3	Multiple-choice	<ul style="list-style-type: none"> ▪ Difficulty of getting plausible distracters. ▪ Difficulty of preparing good items. ▪ Time consuming to prepare. ▪ Lack of knowledge to prepare good items.
4	Short answers	<ul style="list-style-type: none"> ▪ Difficulty of getting items that measure high order thinking skills.
5	Essay	<ul style="list-style-type: none"> ▪ Difficulty of marking.

From Table 1 it can be observed the challenges teachers were encountering in preparing different test items. Multiple choice items appear to have more challenges. There is dire need to train teachers adequately so as to help them address the challenges.

5. CONCLUSIONS

The purpose of this study was to explore the perceptions of science and mathematics teachers about different test item types. From what has been found, teachers perceived supply test items (short answer and essay) as the most appropriate for science and mathematics subjects. They argued that by using these items, students could demonstrate their competences and the mastery of subject matter. Teachers perceived selection type of test items as being prone to guessing and learners cannot demonstrate their competence in the subject.

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