Investigation of the Procedures for Test Construction Employed by Primary School Teachers

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Abstract
This paper investigated the procedures for test construction employed by primary school Teachers in Sumbawanga district, Tanzania.Item constructivism research paradigm, qualitative research approach and descriptive research design guided the study. The study employed purposive sampling technique. The data collected through interview, questionnaires and documentary review. Data analyzed by using content and narrative analysis techniques. The findings identified that procedures for test construction employed by teachers were selecting covered topics in a particular class, collecting question sources, setting number of questions in each section, writing test items, preparing marking scheme and submitting test to academic teacher. The study concluded that, teachers are not aware with syllabus content analysis and developing table of specification. The researcher recommendations are designing test construction capacity building program and assessment of the quality of school tests by educational quality assurance. The researcher invites more studies to be undertaken for similar or related part of this paper as a way to improve test construction process.

ORIGINAL ARTICLE

ARTICLE HISTORY

Received: 17th August 2021

Revised: 30th September 2021

Accepted: 19th October 2021

Published: 29th Nov. 2021

ISSN: 2453 – 6016

Volume 7,

Issue 2,

pp. 225 – 232.

CITATION: Kinyaga, O. (2021). Investigation of the Procedures for Test Construction Employed by Primary School Teachers. *Ruaha Journal of Arts and Social Sciences, 7*(2), 225 – 232.

Keywords: Test, Assessment, Table of Specification and Content Analysis.

Introduction

Tamakloe and Amedahe (1996) described a test as a device or procedure for measuring a sample of an individual's behavior in a specific learned activity or discipline. Crooker and Algina (2008) further gave a description of test to be a standard procedure for obtaining a sample of behavior from a specified domain. Concisely, test refers to a set of questions or activities systematically planned, designed, and presented to be performed by a leaner, individually or in-group under specified conditions to demonstrate an intended attributes or characteristics for

obtaining information about learning progress. It provides answers on how does a learner perform, either in comparison with others or in comparison with standards.

Teachers started to use tests in 19th C to assess students' understanding of specific contents or the effective application of specific skills (Brink, 2011). They tested their students at the end of the period, topic, program or school year to see if they had mastered what was taught. If students failed, they held back or retained. In 20th C, the use of tests to assess student's aptitude and mastery of content continued. The use of these tests expanded to other areas including judgment of students' levels of aptitude, students' mastery of content and students' potential to move to higher levels of education or tracking students to different areas of specialization. Only students who passed the examination selected to the next level of education (Shepard, 2000). The exams are still given and passing the examination is required for the pupils' selection for secondary education. To be eligible to attend public secondary schools in Tanzania, a pupil is supposed to pass with the average of grade A to C the Primary School Leaving Examination (PSLE) at the end of Standard seven (URT, 2018). Pupils' academic performance in PSLE depends on how they are prepared by classroom teachers through classroom tests.

In order to prepare pupils effectively for PSLE, according to Phye (1997) teachers should be skilled in the procedures for developing classroom tests. Emphasizing on this, Osadebe (2015) identified that, the systematic planning of the test requires identifying the instructional and behavioral objectives, identifying the content areas for the test, deciding on the test format and table of specifications. The table of specifications helped to establish high content validity (Osadebe, 2013; Ukwuije & Opara, 2012). The study by Hussain and Sajid (2015) showed that, analyzing content, specifying the objectives, preparing table of specification, deciding test length and fixing types of test items are the most important procedures to be employed by classroom teachers in school test construction.

The study by NECTA (2009) indicated that, during the conduct of PSLE, teachers employed different techniques to help candidates to pass such examination. Some of the techniques were, to inform candidates about certain sounds outside which symbolized examination answers such as the use of local drums, for example when drum hit twice, it means the answer is "B". The use of thermos brought to the invigilator containing answers written in pieces of paper was another technique. Other techniques were fixing in pens' top-covers pieces of paper containing answers then given to targeted candidates while in remote area school teachers passed through examination rooms helping intended candidates. It was described by NECTA (2009) that, poor preparation of candidates was the main reason for cheating in PSLE. This indicates that, teachers' preparation of their candidates through school tests was inadequate to include procedures for test construction employed by classroom teachers.

Statements of the Problem

Tests are very crucial tools in education used by educators to assess what students have learned. They are used as a means for grading, selection and placement of candidates in different levels of education (Sariay, 2017). School tests usually serves several purposes including communicating expectations such as what knowledge is important to learn, what skills are valued and what expected in the summative assessment. Teachers are vital and important practitioners in the learning process trusted by Ministry of Education for designing, administering and scoring school tests to ensure effective preparation of pupils for summative assessment and evaluation. To meet these functions, teachers' needs to be competent and skilled in classroom tests construction procedures. Studies available indicate that, low pupils academic performance is due to teachers' preparation of pupils through school tests. This can be addressed by improving teachers test construction practices. This study assessed the procedures for test construction employed by primary school teachers in Sumbawanga district.

Research Methodology

The paper assessed procedures for test construction employed by classroom teachers in Sumbawanga district. This area chosen purposively because it is reported by NECTA that, PSLE results is a barrier to most of pupils' selection to access secondary education. The study employed constructivism research paradigm, qualitative research approach and descriptive research design. The targeted population for this study was primary school classroom teachers in Sumbawanga district. Teachers chosen simply because they are practitioners trusted by Ministry of Education for designing, administering and scoring school tests to ensure effective preparation of pupils for summative assessment and evaluation. The study involved seven schools with 54 primary school teachers. The study employed purposive technique. The data collected through interview, questionnaires and documentary review and analyzed by using content and narrative analysis.

Presentation of the Findings, Analysis and Discussion

The paper assessed procedures for test construction employed by classroom teachers in Sumbawanga district. The data was analyzed by using content and narrative analysis as explained at this part.

Procedures for Test Construction Employed by Classroom Teachers

The focus of this objective was to investigate the procedures for test construction employed by classroom teachers in Sumbawanga district, Tanzania. Interview, questionnaires and documentary review methods employed to collect information. The findings in this paper show that procedures for test construction employed by classroom teachers were selecting covered topics, collecting question sources, writing test items, and submitting test to academic teacher for further processes.

Selecting Covered Topics

The findings indicated that, teachers employed selection of the covered topics and competences as the first procedure for test construction process. The responses from respondents in different schools indicated that teachers started with the identification of the covered topics. For example, the response of T2A through interview indicated that, the first procedure for test construction employed by teachers was selecting covered topics. T2A explained that:

> I always start with observing and analyzing covered topics. Questions from covered topics selected to be included in the test (Interviewee T2A: December 18, 2020).

Another response from T4H indicated that, the first procedure for test construction employed by public primary schools was identifying topics to be tested. T4H through questionnaires in Kiswahili language reported that:

> On my side, after the timetable, I started with identifying topics to be tested. Only covered topic included in school test (Interviewee T4H: December 18, 2020).

The responses from participants indicated that the first procedure for test construction employed by public primary school teachers was identification and selection of covered topics. The findings tally with the study by Osadebe (2015) who suggested that, the first procedure for test construction is to identify the content area. The findings do not concurs with the study by Hussain and Sajid (2015) who pointed out that the first procedure for test construction is analyzing content. The findings indicate that school tests should include details of test content in the specific course. Each content area should be weighted roughly in proportion to its judged importance. Usually, the weights assigned according to the relative emphasis placed upon each topic in the curriculum and textbook. This is possible only through analyzing content. With a similar thought, Izard (1997) attests that the first procedure for test construction is content analysis. Through content analysis, teachers will be aware with the content supposed to be covered in the curriculum and the number of items from these content areas to be representative in school tests.

Collecting Question Sources

The findings in this study showed that, the second procedure for test construction employed by classroom teachers was collecting question sources. The sources collected were textbooks, past papers, lesson notes and pupils exercise books. For example, T3B declared that after selecting covered topics to be included in the test, then I collected question sources such as subject textbook, past papers as well as class lesson notes (Interviewee T3B: December 21, 2020).In addition, T8G response indicated that the second procedure employed by classroom teachers in test construction process was collecting examination sources. Through questionnaire, T8G wrote:

> The second procedure was assembling sources of test items to include textbooks, past papers, lesson notes, supplementary books and references (Interviewee T2A: December 21, 2020).

The responses from participants indicated that, the second procedure for test construction employed by public primary school teachers was collection of test item sources. The sources identified by the participants were textbooks, pupils' exercise books, past papers, lesson notes, supplementary books and references. Teachers recommended using syllabus as an appropriate source for test construction.

The findings do not concurs with Wiggins (1998) and Riaz (2008) who suggested that the second procedure should be preparing table of specifications. Table of specifications is a two-way table that represents along one axis the content topics that the teacher has taught during the specified period and the cognitive level at which it is to be measured, along the other axis. In other words, the table of specifications highlights how much emphasis is to be given to each objective or topic. While writing the test items, it may not be possible to attempt to adhere very rigorously to the weights assigned in each cell. The weights indicated in the original table may need to be slightly changed during the course of test construction, if the teacher encounters sound reasons for such a change.

With a similar opinion, Mbunda (1996) asserted that the second task in planning a test is to produce a table of specification as it helps teachers to make decision and determine how much to allocate space to certain topics and to different levels of student cognitive processes like knowledge, comprehension, application, analysis, synthesis and evaluation. It is further suggested by Osadebe (2013) and Ukwuije and Opara (2012) that table of specifications is very important procedure as it helps to establish high content validity. Gichuhi (2014) conclusively reaffirmed that developing table of specification is very important step in test construction. Primary school teachers in Sumbawanga district do not apply this step.

Item Writing

The findings in this study showed that, the third procedure for test construction employed by classroom teachers in Sumbawanga district was item writing. The response from T1E indicated that the third procedure for test construction employed by public primary school teachers was combining test items to form an examination. For example T1E through interview reported that:

> I employed five procedures in test construction process. The third procedure was combining test items to form an examination according to NECTA format (TIE: December 18, 2020).

The findings concur with the study conducted by Osadebe (2015) who suggested that after planning the test, the third procedure is item writing according to the proposed format. Withers (1997) pointed out that the third procedure for test construction is

item writing. In this procedure, teachers' prepare assessment tasks which can reveal the knowledge and skill of students when their responses to these tasks inspected. Tasks which confuse which do not engage the students, or which offend, always obscure important evidence by either failing to gather appropriate information or by distracting the student from the intended task. In this stage according to McMillan (2001) an attempt would be made to examine the guidelines to be followed while designing major types of items like true-false, gap filling, matching, multiple-choice and essay types.

Moderating Items

The findings in this study showed that, after item writing to form examination, subject teachers submitted it to the academic teacher for quality assurance or moderation. For example, the response from T5D indicated that, after combining test items to form an examination, lastly subject teachers submitted examination to academic teacher for quality assurance. Through questionnaire, T5DG wrote that:

> After combining test items to form an examination, the last procedure was to submit an examination to academic teacher for quality assurance (Interviewee T5DG: December 16, 2020).

The responses from participants indicate that, in each school academic teachers are responsible for test and examination moderation. The findings is supported by HakiElimu (2012) which indicated moderating item as the fourth procedure followed by NECTA when setting up national examinations in Tanzania. The findings indicated that, competent educationists recruited by NECTA to moderate the set items to ensure validity and reliability of the set items according to the prescribed level of candidates and syllabus. This is in agreement with what NFER (2020) described as, moderation ensure that teachers are making consistent judgments about standards, so that assessment judgments made for any one pupil are accurate, fair and comparable with those made for all other pupils. Moderation is essential to the integrity of teacher assessment judgments, ensuring that all those accessing assessment judgments, be it teachers, pupils, parents, local authorities, or inspectors, can have confidence in the information and uses it effectively.

The discussion of the findings in this study indicates that, competences allocated with different weight in the syllabus. Therefore, content analysis and developing table of specification are very important procedures during test construction process. These procedures help teachers to make decision and determine how much to allocate space to certain topics and to different levels of student cognitive processes like knowledge, comprehension, application, analysis, synthesis and evaluation. This shows that, teachers are required to be skilled on content analysis and developing table of specification.

Conclusion and Recommendation

The findings from this study lead to conclude that, teachers are not aware with content analysis because during test construction process, teachers selected randomly the

number of test items from each competence/topic. However, topics are allocated with different weight in the syllabus It is also concluded that, teachers are not aware with developing and applying table of specification as one of the procedure for test construction. This is very important procedure in test construction process as it helps teachers to make decision and determine how much to allocate space to certain topics and to different levels of student cognitive processes like knowledge, comprehension, application, analysis, synthesis and evaluation.

According to the findings and conclusion, there is a great need of designing and providing capacity-building program on test construction procedures to teachers, specifically about syllabus content analysis as well as how to prepare and use table of specification. This is the responsibility of head teachers, ward educational officers, district educational officers and school quality assurance. School quality assurances should include quality ofschool tests. Therefore, external quality assurance should focus also on the quality of school tests given to pupils. They should not only focus on teaching and learning processes through scheme of work, lesson plan, lesson notes, student written exercises, administration issues, school infrastructures, and environments.

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