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Examinations Council of Zambia

Research Title

**Are our teachers capable? A validation study of School-Based Assessments from selected Primary Schools in the Western, North-Western and Lusaka provinces of Zambia**

The topic of the research is highly relevant to educational assessment and to the conference topic: Reliability and validity of assessments in decision-making

**Key words:** Content Validity Ratio, Representative, Skill level

This paper investigated the ability of primary school teachers to prepare quality items that are representative of the demands of syllabus of a curriculum. This investigation was motivated by: (1) The introduction of a weighting on School Based Assessment (SBA) by the Examinations Council of Zambia (ECZ) in Primary schools beginning 2020, that will contribute 30 percent to the learners' final scores, in respective subjects of the Primary School Composite Examination and; (2) Stakeholders' concerns as to whether teachers are capable of preparing quality assessments that are able to measure the expected content and skill levels demanded by the curriculum.

Using expert judgement of 10 trained ECZ item writers, 301 Grade 5, 6 & 7 teacher made Social Studies (from 9 Assessments) assessment items from three (3) conveniently sampled schools in 3 different provinces of Zambia were reviewed and analyzed using: the Zambian Primary School Social Studies Syllabus; Teacher made Teaching and Assessment Specification tables; the Examinations Council of Zambia (2016) Primary School Composite Examination Syllabus and; quantitatively using Lawshe's (1975) Content Validity Ratio (CVR).

The analysis of content validity revealed that the items in the social studies teacher made assessments were representative, as at least 80 percent of the items across assessments and grade level rated above the minimum acceptable CVR value of 0.62 (for 10 Experts). Further analysis of the items in terms of skill level demonstrated teachers' capability to match the items of the assessments to the demands of the topics in the syllabus. However, with the picture obtained from the analysis that the social studies syllabus is skewed towards the low level demands of knowledge and comprehension, there is need for teachers to be skillful so as to ensure that higher level demands of the syllabus are well covered when dealing with topics demanding such levels.

Overall, the findings of this study provide evidence of the higher capability of primary school teachers in Zambia, to prepare items that can measure the expected outcomes of a syllabus of the curriculum.

## **1. Introduction**

In a bid to enhance efficiency in the administration of examinations and quality of education in Zambia (Mabumba, 2019), the Ministry of General Education (MoGE) through the Examinations Council of Zambia (ECZ) embarked on examination reforms. The reforms include strengthening of the already existing School-Based Assessment (SBA) in upper primary schools by allocating it a 30 percent weighting on the final scores of learners in respective subjects of the Grade 7 Composite Examination.

Stakeholders however, raised concerns as to whether teachers in primary schools have the capacity and competence to prepare quality assessments that are able to measure the expected outcomes of the curriculum. For instance, the Zambia Conference of Catholic Bishops (ZCCB) among their concerns was the subject of validity of SBA. Similar concerns on the quality of assessments vis-a-vis quality education were raised by other stakeholders such as the United States Agency for International Development (USAID) and Zambia National Education Coalition (ZANEC), (ECZ, 2019).

These concerns however, are not new. The 1992 National Education Policy document in Zambia, Focus on Learning, explained that, a “great deal of groundwork such as ensuring teachers’ competence in assessment, developing a system of record keeping and obtaining stakeholders’ support, should be laid before extensive use of SBA”, (Ministry of Education (MOE), 1992, p.47). Correspondingly, the 1996 Policy document, Educating Our Future, recognised the need to ensure teacher readiness and competence in assessment before the use of SBA as part of the overall evaluation of learners and for its inclusion as a component for certification and selection procedures”, (MOE, 1996, pp.41-42).

It is notable from the stakeholders concerns and National Education Policy documents that teacher competence in assessment is a cornerstone of any effective and successful school-based assessment system. Therefore, using school level teacher made classroom assessments; this research assessed the capability of Zambian upper primary school teachers to prepare items that are able to measure the expected outcomes of the curriculum. This study though not comprehensive in terms of study area coverage, provides a valuable picture of teachers’ competence in formulating valid items. Further, this study adds to the repository of literature on studies on validity of items in Zambia, which is presently in paucity.

The research was guided by the following objectives:

1. To estimate the content validity of selected teacher made classroom assessments.
2. To analyse the proportions of skill level demands covered by the assessments.

## **2. Review of Literature**

### **2.1 School Based Assessment (SBA) in Zambia**

SBA is not a new thing in the Zambian education system. Educational reforms, Frameworks and National policy documents such as the 1977 Education Reforms, the 1992 ‘Focus on Learning’ and the 1996 ‘Educating Our Future’, contains information in this regard. For instance, the 1977 Education Reforms recognized the inherent benefits that continuous assessment has in improving

the quality of education, (Ministry of General Education, 1996, p. 4; Kapambwe, 2010, p.99). Similarly, 'Focus on Learning' noted that, SBA reduces the stress induced on learners by high stakes examinations, increases the quality of classroom experiences and allows close monitoring of learners over several months, (MOE, 1992, pp. 46 - 48). Consistently, the 1996 'Educating Our Future' (MOE, 1996, pp. 41 - 42) recognised the importance of ongoing informal and formal processes of assessment. The policy document regards SBA as an integral part of the teaching and learning process as it provides immediate diagnostic feedback on learning difficulties, achievements, potentialities and effectiveness of the teaching undertaken, upon which decisions for progress or remedial action can be based on.

In terms of actual implementation on the ground, Swallow, Nielson & Chakufyali (2009, p. 24) and Kapambwe (2000, p. 100) explains that, the implementation of the SBA pilot programme in Zambia began with grade 5 in 2006, grade 6 in 2007 and grade 7 in 2008 and the eventual scaling up to all parts of the country, was completed in 2010. The SBA Teachers' guide (MESVTEE, 2015, pp. 3 -15) identified four types of assessment which must be administered to learners. These were; Daily, Weekly, Monthly (Week 5 &10) and Termly (Week 12 – 13). The SBA Guide views the first two types as informal and formative, and the last two formal and summative.

It is this existent SBA in schools, that the 2019 reforms has reinforced by allocating to it a 30 percent weighting on the learners' final total score. This implies that, learners' final marks in the Grade 7 Composite Examination in respective subjects will be a combination of a maximum total of 70 percent from the high stake composite examination and a 30 percent from SBA. The SBA marks will be accumulated by learners' over 3 years - that is, 10 percent at each grade level 5, 6 and 7. Teachers' guidelines have since been developed in this regard.

It is expected that, this reinforcement, will turn around the vague attention that was given to SBA, both in terms of "how it was expected to happen and resource commitments made to support it", (Chipoma, 2014, p. 9). This reinforcement therefore, will raise teachers spirits and deliver to them a valuable opportunity to reliably and validly monitor learners' progress, abilities and challenges, (Rimfield et. al, 2019; Mweemba and Chilala; 2007:31). It will also allow them, to monitor their own progress and improve classroom instruction.

### **Validity of Assessments**

Effective use of assessment however, begins with the formulation of assessments that comprehensively measure the outcomes (content and skill level) demanded by a syllabus of a curriculum. "For example, a comprehensive math achievement test would lack content validity if good scores depended primarily on knowledge of English, or if it only had questions about one aspect of math, for instance algebra", (MathCs, n.d.).

For classroom assessments to become beneficial to teaching and learning, they need to be "matched with the aims and objectives and the required content and competencies" (MoGE, 2013, pp 13-14). In this way, assessments will be able to create a favorable environment for deep and meaningful learning as teachers' will be able to closely monitor and identify learners' abilities and areas needing remedial work. Therefore, teachers should be encouraged to obtain

‘masterly of the prescribed syllabus, particularly in their subjects of specialization, if their competence in formulating valid assessments is to be enhanced.

## 2.2 Social Studies in the Zambian Curriculum

Social Studies is a core learning area both at lower and upper primary levels. The subject, aims “at developing among learners’, the ability to understand and appreciate the moral, social and cultural values as well as the ability to intepret positively the political, economic, environmental and civic issues”, MESVTEE (2013). The syllabus covers grade levels 1 -7 and contains the following topics: Living together in the Community; Governance; Learning about Money; Religion; Weather and Envrnoment and; Transport and Communication. Each of the topics has in subsequent columns, sub-topic/s, specific outcomes and content (knowledge, skills and values), outlined.

Primary school teachers’ are expected to utilise the syllabus as well as the SBA guidelines and Primary School Examination Syllabus among other resources when teaching and, when drafting assessments. By using these resources, teachers’ will be able to set assessments that are matched to the content and skill levels demanded by the syllabus.

## 3. Methodology

**Study Approach:** A quantitative approach was employed in this study. **Research Data:** 301 items obtained from Nine (9) School-Based Assessments administered between 2017 and 2019 were analysed. These assessments were obtained from three (3) conveniently sampled schools in 3 different provinces of Zambia. Each of the 3 sampled schools provided 3 assessments, one (1) at each upper grade level (5, 6 & 7). All the assessments analysed in this study, were drafted by teachers without in-service formal training in assessment. For identification purposes, grade 5 assessments were labelled 1 - 3, grade 6, 4 - 6 and the grade 7 ones 7 - 9. **Data Analysis:** 10 experts with an average of 5 years’ experience in item writing were selected to analyse and rate the representativeness of the 301 items. Each of the experts were provided with the following: (I) Copies of each of the 9 assessments; (II) Primary School Social Studies Syllabus (III) Assessment Specification tables in the form of termly scheme of work, corresponding to each assessment and; (IV) Bloom Taxonomy framework with examples of each skill level. Using the documents, the experts were asked to: (I) Acquaint themselves with the items and rate each item on a scale of 0 - 2 (0 –Not Representative, 1– Representative 2 –Very Representative) in relation to the outcome it represents and, (II) Map for each item, the skill level (1 – Knowledge, 2 – Comprehension, 3 – Application, 4 – Analysis, 5 – Synthesis and 6 – Evaluation).

Using experts’ ratings, Content Validity Ratio (CVR) which is the extent to which items of an assessment are representative of the outcomes, content or subject matter they seek to measure (Newman, Lim & Pineda, 2011), was calculated using Lawshe’s (1975) formula:

$$CVR = \frac{n_e - N/2}{N/2}$$

$n_e$  = the number of experts who rated an item either 1 or 2.

N = total number of experts

The minimum acceptable CVR Value of 0.62 was used as a benchmark for representativeness of an item. Therefore, an item required a rating 1 or 2 from at least 9 of the 10 experts for it to be considered valid. An item rated representative by all the 10 experts scored a CVR of 1.00.

Using the skill level mapping of items, frequencies were generated. A skill level accepted for an item was one mapped by at least 9 of the experts. Where there were less than 9 in agreement, the experts were engaged to agree on which skill level is represented by an item.

#### 4. Results

##### 4.1 Content validity of the Assessments

The CVR calculations at each grade level (5, 6 & 7) revealed the following.

##### 4.1.1 Grade 5(Assessment 1,2 & 3)

At grade 5 level, as shown in Table 1, all the items in Assessment 1 were rated representative by the experts. CVR for the 50 items ranged from 0.80 to 1.00. Assessment 2 and 3 had 93.3 and 80 percent respectively of their items with CVR values above the minimum CVR of 0.62. The CVR values for Assessment 1 and 2 ranged from 0.20 to 1.00 and -1.00 to 1.00 respectively.

Table 1: Expert Ratings of the Grade 5 Assessments

Grade 5				
Assessment	No. of Items	Minimum CVR	Maximum CVR	No. of Items below CVR 0.62
1	50	0.80	1.00	0
2	30	0.20	1.00	2
3	10	-1.00	1.00	2

##### 4.1.2 Grade 6(Assessment 4,5& 6)

At grade 6 level, as shown in Table 2, all the 30 and 20 items in Assessment 4 and 6 respectively, had CVR values of 1.00. CVR values for Assessment 5 ranged from 0.80 to 1.00. No item in all the 3 Assessments at this grade level fell below the acceptable CVR of 0.62.

Table 2: Expert Ratings of the Grade 6 Assessments

Grade 6				
Assessment	No. of Items	Minimum CVR	Maximum CVR	No. of Items below CVR 0.62
4	30	1.00	1.00	0
5	40	0.80	1.00	0
6	20	1.00	1.00	0

#### 4.1.3 Grade 7(Assessment 7, 8& 9)

At grade 7 level, all the items in Assessment 8 were rated representative by at least 8 of the 10 experts (See Table 3). CVR for the 60 items ranged from 0.80 to 1.00. Assessments 7 and 9 had 5 and 2 items respectively that were rated representative by less than the minimum acceptable number of 9 experts, for an item to be representative.

Table 3: Expert Ratings of the Grade 7 Assessments

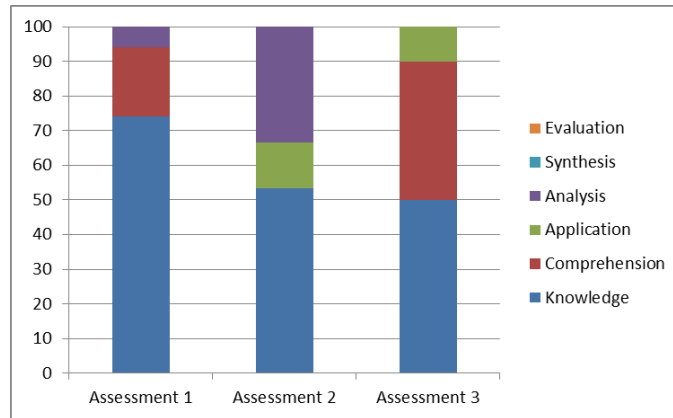
Grade 7				
Assessment	No. of Items	Minimum CVR	Maximum CVR	No. of Items below CVR 0.62
7	41	0.20	1.00	5
8	60	0.80	1.00	0
9	20	-1.00	1.00	2

## 4.2 Proportions of skill level demands covered by the Assessments

### 4.2.1 Grade 5

The findings from the analysis of proportions of skill levels covered by the assessments at this level showed that more than half of the items across all the assessments were on the skill level of Knowledge (See Figure 1). All the assessments did not have items on the skill levels Synthesis and Evaluation. In addition, Assessment 1 did not have any item on Application while Assessment 2 on Comprehension.

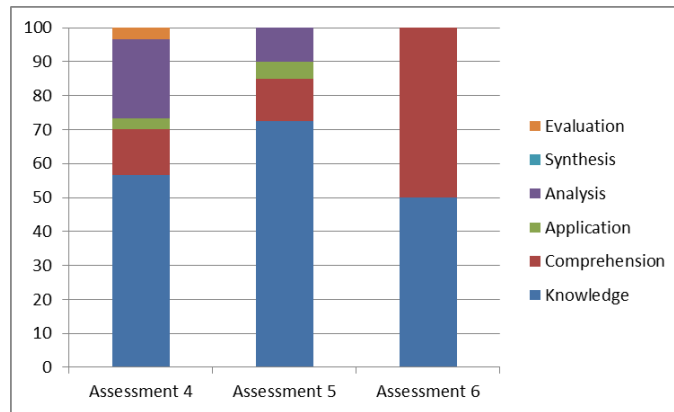
Figure 1: Skill levels coverage - Grade 5 Assessments



### 4.2.2 Grade 6

A similar picture manifested at grade 6 level. More than half of the items across all the assessments were on the skill level of Knowledge (See Figure 2). All the assessments did not have any item on Synthesis. Assessments 5 and 6 had no items requiring evaluation skills (See Figure 2). In addition, Assessment 6 had no items requiring Analysis and Application skills.

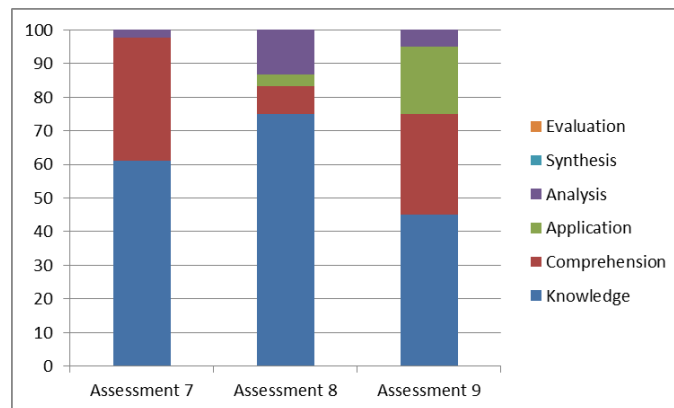
Figure 2: Skill levels coverage - Grade 6 Assessments



#### 4.2.3 Grade 7

Likewise, the findings at this grade level showed that items requiring knowledge level skills dominated across the assessments. All the assessments did not have items requiring synthesis or evaluation skills (See Figure 3) in addition to Application skills for Assessment 7.

Figure 3: Skill levels coverage - Grade 7 Assessments



### 5. Discussion of the results

The findings from the CVR calculations indicate high content validity of the majority of the items across assessments and the grade levels. All the items for Assessments 1,4,5,6 and 8 were rated as representative while Assessments 2 and 9 had at least 90 percent of their items. Assessments 3 and 7 had at least 80 percent. The results demonstrated an admirable ability that upper primary school teachers have in drafting items that are aligned to the outcomes of the topics of the social studies syllabus. This ability is also demonstrated by the outcome that, all the items across the assessments, except for 4 (two each in Assessment 3 and 9) had positive CVR values. This shows that the majority of the items across assessments and grades were rated by half or more of the experts as being representative of the specific outcomes of the curriculum they sought to measure.

These findings corresponds to other findings of larger scale longitudinal studies on teacher made assessments. Rimfied et al. (2019) for example, found out that teachers, using teacher made assessments have the ability to reliably and validly monitor students progress, abilities and

inclinations. It is through valid teacher made assessments that important learning achievements can be measured and observed over time.

The findings of this study, can make it possible to argue that, the competence of upper primary school teachers in formulating valid items was one of the noteworthy factor among the interventions (Chitanda, 2013) attributed to the improvement in the performance of learners in CA pilot schools of Zambia, (Swallow, Nielson, & Chakufyali, 2009; Kapambwe, 2010). The construct of this viewpoint is that, assessments that contain items that “that match well the curriculum and standards set, obtains results that have a greater value in judging how well students are learning and, in diagnosing school or learners needs”, (Organisation for Economic Co-operation and Development (OECD), n.d., p. 3). It is important therefore, that teachers develop familiarity with the syllabus in their subjects of specialisation, if they are to adequately match assessments to the outcomes.

The analysis of the skill levels covered by the items of the 9 assessments revealed two noticeable representations. 1. The dominance across assessments and grade levels of items based on knowledge level skills and 2. The characterisitc absense or minimal proportions of higher skill levels of Application, Analysis, Synthesis and Evaluation. The two characteristic representations could be tied to the the nature of the social studies syllabus. An analysis of the Social Studies syllabus Grade 1 – 7, displayed the skewness of the syllabus towards lower skill level outcomes of knowledge and comprehension. A further look at the Primary School Composite Examination syllabus, which is a blueprint for the Primary School Social Studies examination and based on the Social Studies Syllabus Grades 1 – 7 (Examination Council of Zambia, 2016, p. 23) revealed a matching picture (See Table 4).

Table 4: Table of Specification for Social Studies Examination

Topic/Theme	Knowledge	Comprehension	Application	Analysis	Evaluation	%
Living Together in the Community	5	6	2		2	15
Good Governance	8	6	3			17
Religion/Christian Living	10	8	2	3	2	25
Transport and Communication	2	5	3			10
Learning about Money	3	5	5		2	15
Environment	6	5	5	2		18
<b>Percentages</b>	<b>34</b>	<b>35</b>	<b>20</b>	<b>5</b>	<b>6</b>	<b>100</b>

Source: ECZ (2016, p. 23)

This similarity in skill level proportions between the teacher made assessments and social studies syllabus, further demonstrates the ability of teachers to match the assessments with a syllabus of a curriculum.

This picture of teacher competence however, should not blind us from the threats that a uneven syllabus in terms skill level demand poses to assessment. Greatorex et al. (2013, p.31) points out that, “if all questions are of similar demand or skewed more towards some, low ability learners may lack sufficient low-demand questions to demonstrate their abilities. On the other hand, higher ability learners may not be stretched by sufficently demanding questions.” Skewed assessments in addition, can provide insufficient and misleaing feedback that may misrepresent



learners abilities. It is important therefore, that teachers concentrate not only on formulation of valid items but also adequate coverage of all skill levels, if deep learning is to take place.

As Burge (2012) argued, that many teachers do not either have time, or lack the knowledge, skills or confidence required to develop their own classroom assessments, Continuous Professional Development (CPD) for In-service and strengthening of pre-service teacher training in assessment should therefore, be promoted and reinforced as away of improving teacher competence in assessment.

### **Conclusion and Recommendations**

This study investigated the capability of upper primary school teachers in formulating assessment items that are representative of the demands of the curriculum. An analysis of 301 items from 9 assessments using Lawshe's 1975 CVR, revealed high capability of the teachers. All the items in Assessments 1,4,5,6 and 8 were rated as representative. Assessments 2 and 9 had at least 90 percent of their items and Assessments 3 and 7 had at least 80 percent.

The analysis of skill level coverage of the items, further exhibited teachers' capability to match assessment items to the syllabus of a curriculum. The picture of the skill level coverage across assessments and grade levels, resonates with that in syllabus and examination blueprint. There is need however, for the teachers to be uptight and ensure that, the uneven representation of skill levels in the curriculum does not blind them from formulating assessments that cover all the skill levels and content required.

With the 2014 revised curriculum concluding its first five years this year 2019, this is a call to the curriculum developers to ensure that the syllabus is reviewed thoroughly in an effort to even skill level representation.

Assessment being a dynamic area and with School-Based Assessment (SBA) here to stay, teachers' are explored to constantly enhance their capacity in assessment so as to keep abreast with new practices particularly in the area of SBA. Schools should ensure that deliberate interventions that promote sustainable capacity building activities in schools, such as School Based Continuous Professional Development are encouraged. Sustainable localised capacity building activities, will enable teachers' stay afloat with the ever changing knowledge and best practises in assessment.

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