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An Evaluation Of Formative Assessment Techniques Employed At Higher Education Institutions in Zimbabwe During The Covid-19 Pandemic.

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Abstract

The study focused on evaluating the effectiveness of formative assessments at Higher Education Institutions in Zimbabwe during the covid-19 pandemic. A case study research design was employed, where one department at Midlands State University was selected for analysis. The research adopted a qualitative research approach where interviews and focus group discussions were conducted to collect primary data. The study sample included 120 final-year undergraduate students and 11 lecturers in the department of Risk and Insurance. Thematic analysis of qualitative data revealed that the most common formative assessment methods that were used during the covid-19 pandemic were online quizzes, group work/presentations; work-related learning technology enhanced assessments, in-class tests, and lastly dissertations. The study established that group work, in-class tests, and online quizzes were the most effective formative assessment techniques employed during the covid-19 pandemic. However, lack of technological resources, delay in providing assessment feedback, and students' attitudes were the major challenges that affected the effectiveness of the formative assessment. The study recommends the training of lecturers and the use of informal methods of assessments.

Keywords: Formative assessments; assessment; assessment techniques

1. Introduction

Assessment of students` performance is a crucial component in higher education as the primary duty of universities is to produce graduates who are useful assets in the country as well as skilled in cognitive, affirmative, and psychomotor abilities. The learning of students is enhanced by the assessment techniques that are employed in the classroom to determine the mastering of the student's skills and performance. Bloom's mastery learning strategy advocated for a series of formative assessments for each and every learning unit to provide feedback on student learning so that intervention strategies can be planned (Bloom, Hastings and Madaus, 1971).

Although formative assessments are an accepted phenomenon in pedagogy, the application of it in andragogy or adult learning at tertiary institutions requires the application of expert andragogic styles of teaching and assessment. Knowels (1980) argued that adults have accumulated life experiences and therefore bring a wealth of experience to the educational setting. He further argued that adults are intrinsically motivated, autonomous and self-directed, practical and problem-solvers and they enter educational settings ready to learn. These assumptions of andragogy contrast sharply with the assumptions of pedagogy, which are that learners are dependent personalities who bring little or no experience to the educational activity and learners attend to educational activities because they have been told they need to do so whereas in andragogic learners independence, self-direction and collaboration are key. Therefore, these differences in the characteristics of adults and children also pose challenges in the effective formative assessment techniques that should be used to effectively monitor learners' progress in higher education.

Furthermore, the covid-19 pandemic aggravated the challenge of administering formative assessments as learning and assessment moved from traditional face-to-face methods to online teaching and learning. Higher Education institutions introduced blended teaching and learning and the use of online modes of formative assessments during the Covid-19 pandemic. However, Cleofas and Rocha (2021) observed that students from poorer backgrounds who cannot afford laptops and desktop computers, and with limited or no internet connection faced challenges in accessing formative assignments on time. Hence, online learning requires such gadgets without them it means the learning and assessment process is impossible. Guangul, Suhail, Khalit, and Khidhir (2020) added that remote online assessments resulted in challenges like academic cheating, non-accomplishment of given tasks, shortage of assessment resources, and failure of instructors to finish the intended learning goals due to technological gaps.

Generally, assessment is grouped into two; the assessment of learning, which is evaluating what has been learned (summative), and the assessment for learning (formative) which evaluates what has been learned in the educational community (Caroline Gipps, 1994).

Formative assessments can be categorised into formal or informal formative assessments where formal formative assessment is planned and designed by teachers to monitor student learning and requires students to answer assessment tasks in writing (Griffin, Casagan, Care, Vista and Nava, 2016). Whilst informal assessments include discussions, dialogues, and conversations, where instructions were given informally and feedback is given promptly during the learning session (Muhonen, Verma, Von Suchodelerts and Rasku-Puttonen, 2022). Informal methods also include demonstration, discussion, checklist, dramas, narration, puzzles, oral examination, and group tasks (Ababio and Dumba 2013, Oz 2014).

At higher education institutions in Zimbabwe, formative assessments are an important component that contributes significantly to the final grade at the end of every semester. The contribution of continuous assessment marks is usually 30% - 40% whilst the contribution of examination marks is usually 60% - 70% depending on faculty regulations and level of study (undergraduate vs postgraduate). Formative assessments are usually done to identify learning gaps and prepare the student for their final examinations. However, lower pass rates across various disciplines during the covid-19 pandemic were observed, reflecting that formative assessments have not been effective. Therefore, the need for this study to assess the effectiveness of formative assessments employed at higher educational institutions during the covid-19 pandemic.

1.1 Problem Statement

Formative assessments are usually conducted to prepare students and ensure that effective learning has taken place before the final summative assessment at the end of the semester. The introduction of blended learning during the covid-19 pandemic has brought changes in the way formative assessments are scheduled and conducted. However, lower pass rates from the summative end-of-semester assessments have been observed, indicating the need to assess blended learning formative assessment techniques' effectiveness in preparing students for summative examinations and informing lecturers on concepts that need improvement. Therefore, this research seeks to find out the effectiveness of the formative techniques used in Higher Education and proffer strategies that can enhance effective learning through continuous assessments.

1.2 Research Objectives/Aims

The major aim of this study was to assess the effectiveness of formative assessment techniques employed at Higher Education Institutions in Zimbabwe during the covid-19 pandemic.

Specifically, the study sought to;

a)   To determine the effectiveness of the formative assessment methods at tertiary institutions during the covid-19 pandemic.

b)   To identify the challenges in the implementation of the formative assessment methods at tertiary institutions during the covid-19 pandemic

c)   To recommend suggested strategies that can enhance quality learning through the formative assessments

2. Literature review

The concept of assessment is hinged on Bloom's taxonomy of educational objectives namely the cognitive domain, affective domain, and psychomotor domain. The cognitive domain relates to the development of the mental capabilities of an individual whilst the affective domain was related to the attitudes, interests, values, and beliefs of an individual. Lastly, the psychomotor domain relates to practical skill aspects of the personality of an individual. Bloom argued that the domains were arranged in the order of increasing complexity/ hierarchical order where higher levels of expertise require more teaching that is effective and more sophisticated classroom techniques and method of teaching. In terms of assessment, the cognitive domain relates to the assessment of (1) remembering, (2) understanding, (3) application, (4) analysis, (5) synthesis/creating, and (6) evaluation (Anderson, Krathwohl and Cruikshank 2001, Bloom 1971). The psychomotor domain relates to observation, imitation, manipulation, precision, articulation, and naturalization. That is the learner observes the expert performer/ the teacher repeatedly in order to imitate, articulate and naturalize the skills. Lastly, the affirmative domain relates to the assessment of individual affective abilities.

Formative assessment is a crucial component of teaching and learning since there is feedback from students and a provision of modifying instructions and teaching methods as compared to summative assessment (Andersson and Palm 2017, Torres 2019; Vogelzang and Admiraal 2017, McCallum and Milner 2021). Formative assessments are generally categorised into formal and informal assessments. Formal formative assessment techniques are prepared by the instructor beforehand (Bales, 2019), and they follow the set feedback cycle while informal assessment is redetermined and mostly comprises of dialogues and conversations between the instructor and the students during learning (Muhonen et al., 2020; Ruiz-Primo, 2011). On the other hand, Aji and Hartono (2019) observed that a combination of both assessment techniques is necessary for student learning, and one should not be a replacement for the other. Formal formative assessment techniques such as quizzes, mid-term tests, exercises, and computer adaptive tests allow instructors the time to plan assessment tasks ahead of time and students to respond in writing (Bales, 2019). Formative assessment`s main thrust is to enhance student learning (Wu and Jessop 2018), by providing information on areas that students must improve. This means that assessment

and feedback are inseparable; one cannot work in the absence of the other. On that note, the formative assessment can be viewed as a platform that permits dialogue and encourages communication between lecturers and students in a bid to come up with ways in which learning can be improved (Oyinloye and Imenda, 2019).

2.1 Effectiveness of formative assessment methods in Higher Education Institutions

Harlen and James (1997) argued that formative assessments should focus on the following principles; promoting learning, providing diagnostic information, and allowing students to understand strengths and weaknesses and how they might deal with them. They further argued that any assessment of the effectiveness of formative assessments should be based on the cited principles. In the same vein, Yorke (2003) agreed that the effectiveness of formative assessment is anchored on feedback during teaching and learning and on its impact on influencing student behavior.

In contrast, Perera, Nguyen, and Watty (2014) postulated that formative assessment effectiveness could be measured by looking at student results on summative assessment. Thus, lower pass rates are an indication of ineffective formative assessment whilst good results are a reflection of effective formative assessments. Muhonen et al., (2020) added that apart from formal formative assessments, informal formative assessment has the ability to encourage creativity among students and prompt feedback due to students' participation in conversations and classroom dialogues. However, the effectiveness of informal formative assessments is limited by the lecturer`s skills and enabling infrastructure to support their use. While a range of different methods have been developed, measuring affective learning has proved to be difficult (Buissink-Smith et al. 2011). This is because effective attributes are wide-ranging and often involve complex interactions with each other and with cognitive aspects of learning.

2.2 Challenges in implementing Formative assessments

Technological Resources: Kasani, Mourkani, Seraji, and Abedi (2020) argued that communication in e-learning is usually hindered by low Internet speed, bandwidth limitations, and telephone and Internet outages. On that note, (Akhmedina 2017) pointed out that some researchers observed that the use of formative assessment strategies demands adequate experience and 'noteworthy effort and knowledge. Shavelson, (2008).

Time and Size of the class: The applicability of the formative process is a difficult process (Akhmedina, 2017). Tan (2004) noted that due to Covid-19 drastic changes have been brought about in higher education institutions where the ability of instructors to make use of appropriate formative assessment techniques is compromised. Yorke (2003) observed the adjustments in the structure of curricula, the raising of standards aimed at improving results, the increasing ratio of students in the classroom, and the mounting pressure on

academic staff to produce research conflicts with the time they need to dedicate to teaching. The workload pressures are resulting in lectures concentrating more on summative where there is assessment and grading of scores only.

Weakness in Giving and Receiving Feedback: Gibbs and Simpson (2004) argued that sometimes feedback is not effective because it is delivered too late for the students to be able to act on it. Furthermore, it may relate to issues that have passed and will not crop up again, or the students may simply ignore the feedback and not take any action to improve their ongoing learning. Feedback from formative assessments should be availed to students on time for them to be of importance.

2.3 Strategies that can assist the lecturer to enhance formative assessment:

Lectures training: According to Watanabe-Crockett, (2017) lectures ought to master how to scrutinise students' work and come up with instructions that can transform/enhance students learning. Thus, training is crucial for lecturers for them to be experts in assessments. Facilitators ought to be assessment literate; this will allow them to use assessments that precisely reflect students' advancement. Another effective formative assessment strategy includes suitable communication methods in which feedback is conveyed from lecturers and to students that enable continuous feedback (Watanabe-Crockett, 2017).

The technology: The capacity of technology in obtaining and processing extensive data swiftly helps teachers reduce their workload in undergoing formative assessment practice (Dalby and Swan, 2019; Ningsih and Mulyono, 2019). One particular example of such a document is a rubric, a coherent set of criteria for students' work that include descriptions of level of performance quality (Brookhart, 2013). Research has shown that one of the key benefits of using rubrics is that they provide transparency in assessment, making expectations explicit (Jonsson and Svingby 2007). Although rubrics may be used for marking, their main advantage for formative assessment is that they match the students' actual performance to the description of the levels of performance expected. Given the student/teacher ratios that tend to exist in higher education, the use of new technologies can enable feedback to be delivered to all students immediately after their performance, and in this way, it can be used to improve their learning. Furthermore, computer-assisted assessment enables more complex tasks to be designed in comparison to paper-based assessments, as   resources can be used to achieve a deeper interaction between student and the computer (Conole and Warburton 2005)

Informal techniques: From the two formal assessment techniques, informal techniques have been found to be the most ideal in instructional learning as it brings out permanent learning as compared to formal techniques (López-Pastor and Sicilia-Camacho, 2015; Ruiz-Primo and Furtak, 2006). Informal formative assessment techniques create an environment that facilitates creativity, total involvement, and prompt feedback from the students in the classroom discussions. Muhonen et al., 2020 On the other hand, pointed out that a

combination of both assessment techniques is necessary for student learning, and one should not be a replacement by another.

Peer Assessment: Here learner involvement in a reflective process of assessment has been found to be a valuable part of the formative assessment process (Rogers et al. 2017). Relatively simple use of IT to facilitate this process is seen in the use of reflective blogs (Olofsson et al. 2011). Feedback from peer assessments can assist the lecturer to improve teaching methods, assessment techniques, and teaching material.

3. Research methodology

 A case study research design was employed for this study to allow an in-depth analysis of assessment techniques employed at Higher Education Institutions. One academic department, the department of Risk and Insurance was selected through purposive sampling for analysis. The population of the study included level 4.2 final year students and lecturers in the Risk Management and Insurance department. The level 4.2 students were selected as they have been through university assessment for four years and were well versed with the type of formative assessments conducted, including the final year dissertation. The class was comprised of 120 students and lecturers in the department were 11. All the students in the final year class and all the lecturers in the department were considered for the research.

Data was collected through interviews and focus group discussions. Eleven face-to-face interviews were conducted among departmental lecturers whilst focus group discussions were conducted among students. Focus groups were clustered in groups of 15-20 individuals. The researcher used the thematic analysis to analyze qualitative data and the results were encoded and then presented in themes where responses were grouped under each theme. Thematic analysis is the process of identifying patterns or themes within qualitative data.

4. Discussion of results

Data presentations and analysis were guided by the research objectives, which were focused on the effectiveness of the techniques used, challenges, and lastly, strategies that can be used to enhance effective learning. The interview response rate was 82% as only 9 Lectures were available for the interview out of the 11 lecturers in the department whilst only 100 out of the 120 students (83%) attended the focus group discussions. About 60% of the students were males among the students whilst 70% of the lecturers were females in the department of Risk and Insurance. The majority of the students were aged between 20-25 (90%). Whilst the age range of lecturers varies from 30-55.

4.1 Effectiveness of formative assessment techniques

Theme 1: Group work

Group work was considered the most effective formative assessment technique. Lecturers

advocated that during a discussion students collaborate and share ideas so that even the slow learners learn from shared experiences. The lecturers also favor the method since it reduces the burden of marking individual assignments. However, other Lecturers argued that results from this method of assessment were at times misleading because not all group members participate or add their contributions. Therefore, there is the risk of assigning students who contributed and those who did not contribute the same mark. The results concurred with Muhonen et al (2020) who argued that a combination of both informal and formal formative assessments is crucial for learning.

Theme 2: Online quizzes

Quizzes answered online for students were also considered effective in formative assessment as tests and quizzes were easily administered to students through google classroom during the covid-19 pandemic. However, cases, where students gather and write as a group was noted, and also cases where students cracked the system and viewed the lecturer`s answers, were also noted in focus groups with students. Dalby and Swa, (2019), also argued that the use of technology reduces the workload of the lecturer, especially where the technology can administer, mark, and provide feedback to the lecturer.

Theme 3: Inclass test

Lecturers advocated that classroom in-class tests were effective in assessing students' mastery of concepts and encouraged students to revise their work. However, they indicated that students tend to copy each other thereby giving a false assumption of mastery. Students concurred that copying was very common when the multiple-choice test was administered and they usually make use of people who were well versed with the module. Lectures further advocated that although work from the class tests was easy to mark, cheating from students cannot be ruled out, as their numbers were large in such a way that they out-number the lecturers. Technology further facilitates the sharing of answers by making use of screenshots where students make use of their mobile phones.

Theme 3: Dissertations

Dissertation supervisions were conducted via email to students from the first chapter until the completion of the document during the covid-19 pandemic. Lecturers highlighted that the number of students who were supervised by a single lecturer was too many as they exceed thirty considering that a lecturer has other duties besides dissertation supervision. Due to covid-19, the communications were done via email, so some cited network changes for sending the corrections in time and some fail to interpret the instruction. On the other hand, students pointed out that the time frame given for the dissertation was too short, so many will just do it in order to fulfill the degree program. Lecturers further highlighted that plagiarism was on the rise. However, the use of Turnitin and vivas assist in assessing the authenticity of students' work.

Theme 4: Work-related learning

Lecturers indicated that students in their department were required to fulfill work-related learning during their course of study. During this period students gain practical experience and exposure in respect of their area of specialisation. However, lecturers pointed out that due to Covid-19 the physical assessment was replaced by online technology-enhanced assessments. Students indicated that work-related learning assessment was crucial in gaining practical experience and putting into practice what they would have learned.

4.2 Challenges faced in formative assessments

Lectures in the department were more confined to formal assessment techniques, however, it is best to use other informal assessment techniques that encourage collaboration, and these also make learning interesting and at the same time, students get new ideas. Training of lecturer was also important on how to give instruction using technology and Mark on line and available feedback to the students online.

Theme 1: Weakness in infrastructure and technology resources

Students indicated that they sometimes faced network and data challenges during online assessments. Other students further argued that online quizzes and in-class tests were not that efficient since they were time framed, and some students failed to write those assessments in the stipulated time because of the unavailability of data and network connectivity. **One student Shamaine** indicated that "data *for online lectures and assessments are very expensive and sometimes the network is poor since we live in rural areas, if possible the university can incorporate money for purchasing data in their fees structure so that every student can be allocated data at a reasonable price*." Lectures indicated that there were low attendance rates in online lectures. One lecturer indicated, *"it is very discouraging to have twenty students participating online in a class of 128"*.

Theme 2: The Attitude of learners toward learning

The Attitude of learners toward learning was also noted as a major challenge to formative as students tend to plagiarise other people's work on the internet. Tatenda a student indicated, "*Students procrastinate to carry out their work hence they resort to plagiarism and sometimes hire people to do the work on their behalf, especially on dissertations."* Other students also indicated that higher coursework marks make them reluctant to prepare for the examinations.

Theme 3: Feedback

Students indicated that formative assessment feedback from lecturers is usually slow and not easy to come by from the lecturer. Tino a student, indicated that **"***Lectures delay to give feedback of continuous assessments up to the writing of the examinations, you just see your mark when examinations are about to be written"*. Yorke (2003) advocated for effective and timely feedback on formative assessment results. Feedback allows the students to make corrective measures pertaining to their work and hence preparing them for summative examinations. Time factor on the part of lecturer in the preparation of formative assessments was also limited. Students also reiterated that time due to the disturbances of

coved-19 has been shortened hence affecting the quality of work produced.

5. Recommendations

Informal methods of formative assessment should be widely used since the collaboration of students is key in their learning since feedback is given promptly as compared to formal assessments where written work is marked and then feedback is provided. This feedback does not come in time or may not come thus affecting learning.

Training of lecturers- should have refresher courses on the methods of teaching particularly on the assessment. Programs like Post Graduate Diploma in Tertiary Education must be introduced to new lecturers as soon as the Institution engages them. Training on technological aspects, especially on instructional technology is key, so as assist most lecturers since they are falling short on technological aspects

Employment of additional staff members -The University must employ other lecturers to ease the load on the lecturers in the department; quality is continuously deteriorating as envisaged by the statistics of the number of first-class degrees in the department. This will solve the problems that the lecturers highlighted that it is hindering them to execute their duties efficiently.

The university should provide resources for online lectures, and may liaise with mobile telecommunications companies to get cheaper and special reliable network connections. Students` data can also be incorporated into the fees so that all the students afford to get access internet services easily.

6. Scope of further study

Evaluation of the effectiveness of summative techniques in tertiary education.

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