

A Learning Management System as an Assessment Tool: A Case of MUELE

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Abstract: Great transformations in technology have affected the education sector in the recent years. The mode of teaching, learning and assessment have been transformed from brick and mortar enabling Several Universities to utilize the Learning Management System to reach out to distance learners. Whereas student centered distance learning requires that students collaborate on their learning tasks and obtain timely feedback; this is not the practice with lecturers at universities. Their practice of using LMS does not meet students' requirements in distance learning because it is not adquently authentic. While distance learners are on the LMS, they should be able to engage with content that stimulates authentic context, authentic activity, expert performance and multiple perspectives. However, the content we see on the LMS that these distance students engage with does not portray authentic context, authentic activity, expert performance and multiple perspectives. This research seeks to answer the following question: How is content designed on MUELE platform? An action research case study was adopted where six course units were observed online and eight participants interviewed, guided by Herrington and Oliver (2000) framework for authentic learning. Data was analyzed and findings revealed that most content was not designed in line with authentic principles especially in theoretical courses which contradicts the framework for authentic learning. In conclusion, authentic learning principles provide effective guidelines for implementing teaching and assessments online. Therefore, the study recommends that; the design of content in all courses should follow the authentic learning principles, such as authentic context, authentic activity, multiple perspectives and expert performances. Lastly, teacher motivation and training on how to assess students in an online environment needs to be encouraged.

Keywords: Assessment, formative assessment, summative, MUELE, learning management system.

1. Introduction

In many Universities, traditional assessment practices have mainly perpetuated the assessment practices online. According to Speck (2002) [1], traditional assessment practices make learners to become passive making the teacher the only source of knowledge. In other words, it limits students' higher order thinking skills like evaluation, synthesis and analysis. This has necessitated a shift from traditional teacher centered assessment practices to student centered formative assessment practices where learners are given opportunity to be part of the assessment of their own learning system and become lifelong learners.

Different scholars have argued that assessment

started seven centuries ago with traditional oral examinations [2]. Between the year 1510 and 1702 written examinations were introduced based on essay questions emphasizing recalling, determining admission and graduation. During the 19th century, textbooks were designed to guide the setting of exams based on judging whether what was taught was grasped and around the 1960s, exams became more attributed to accountability. In 1967, Scriven developed a new form of assessment known as formative assessment. It was developed to assess the effectiveness of the curriculum, improve and guide the school system and to supplement the traditional assessment practice. Archbald and Newman in 1988 introduced the standardized testing that measured real life problems. In 1989 Sadler developed the theory of formative assessment to emphasize the role of the student in the assessment process and how

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self-assessment could improve learning. From the 1970s to 1990s, several assessment centers went paperless with transitioning from paper assessment to phone assessment.

Around the 20th century, standardized tests arose by an educational psychologist Giordano to judge the mastery of content, continuation to higher education, shape students' attitudes for employment, immigration and defense [3]. From 1996 to 2010, internet distributed assessments were introduced; Nathan Mondragon developed the first online assessment system. During that time online computer marked assessments were used to reach out to distant locations, students would access assessment materials, upload them and complete the assessments from anywhere using internet-connected devices. Over 1.6 million students studied online by Elaine Allen and Wellesley M. A. (2003) [4]. Both summative and formative assessment strategies have continued to be used in online learning up to date.

Jorge Larreamendy-Joerns (2006) [5], review of literature "observed two corresponding movements in the educational landscape: the integration of technology in teaching, learning and assessment and the gradual appropriate role of distance programs in institutions of higher education". Meaning that distance learning is increasingly becoming a new focus in higher education especially in developing countries, which results into the growing need for online teaching, learning and assessment. According to Elumalai et al. (2020) [6] technology is transforming teaching learning practices in Universities. Prior, learning was more traditional where an instructor would observe the students learning progress in the classroom. Makerere University which is the researchers' case study became a dual mode university when it started offering distance learning education in 1991 [7]. Students were offered printed modules as they went to the University for residential sessions. However, with time, printed materials became an outdated system of

teaching and learning and this prompted Makerere University to introduce its first generation distance education offering both online and traditional learning [8]. This mode of teaching was first used at the College of Education and External Studies, which later shifted to other colleges [9]. The present state of digital age is compelling schools to experience a new reality in online learning and assessment.

In the conference on Best practices in Assessment, Ozcan-deniz (2017) [10] expressed concern that "Online delivery lacks prompt feedback while using technology". I concur with the above statement because analyzing the current situation where traditional education institutions especially Universities have shifted their mode of instructional delivery and assessment practices from brick and mortar to online learning systems, they have not adequately transformed their ways of assessment to meet the newly emerging student centered distance learning requirements. There still exist significant gaps in teacher- to student collaboration as well as timely feedback to improve learning. This shows a gap and shows a need to design a teacher's guide for implementing authentic learning assessments on a MUELE platform.

According to statistics from the International Conference on Computer Science and Computational Intelligence in 2017, it is recorded that Moodle was the most widespread LMS with 80,364 registered sites in 235 countries. It hosted 12,380,436 courses with 1,071,007,222 users. Universities in Uganda in particular like Makerere University, Uganda Technology and Management University (UTAMU), Uganda Management Institute (UMI), Virtual university of Uganda among others are using Open Source LMS. Makerere University, which is the researchers' case study, is using MUELE to support blended learning. MUELE is Makerere University Electronic Learning Environment. It is a web-based course management system designed to help educators to create quality online courses. MUELE is free, with

features like discussion forums, glossaries, assignments, choices, SCORM (Sharable Content Object Reference Model), wikis, databases, blogs, messages and quizzes that are customized to Makerere University to support of learning. More to that it allows “asynchronous communication to facilitate in-depth communication where learners can exhibit skills and receive support [11, 12]. In addition to that, Bower (2008) [13] adds that technology supports the design of content due to the affordances it provides to education like read-ability, write-ability, view-ability, listen-ability, watch-ability, resize-ability, move-ability, playback-ability, access-ability, browse-ability, data manipulation-ability, search-ability, highlight-ability, integrate-ability, write-ability, speak-ability, video-ability, focus-ability, share-ability, permission-ability, link-ability and synchronous-ability. MUELE affords teaching, and assessment from anywhere anytime like in a taxi, church, hospital, bar, market and garden. In other words, it makes learning flexible as a learner can study as well as engage in work [14]. Therefore, Taylor et al. (2014) [8] recommends that technology should change the way we design content for students.

According to Herrington and Oliver (2000) [15], Learning Content or Resources is defined through authentic context, authentic activity, expert performance and multiple perspectives.

Authentic context reflects the way knowledge should be used in real life. The teacher needs to design learning content that reflects realistic or virtual contexts that are meaningful. These should be situated in a particular context or environment where knowledge can be explored to solve real problems. For instance, when teaching and assessing learners on a poultry concept, learners should be taken to the context of a farm, for mechanical engineering, they should be taken to the garage. In other words, what is taught and assessed should have a connection to the real context to equip students with practical and useful skills relevant in a particular context.

Authentic activity as a principle of authentic learning involves tasks given to students in the real world in order to apply knowledge learnt to solve problems. According to Reeves et al. (2002) [16], authentic activities should be designed in a way that they “have real-world relevance, well-defined requiring students to define the tasks and sub-tasks needed to finish the activity. They comprise of difficult tasks to be examined by learners over a given period of time, offer the opportunity for students to examine the task from different perspectives using a variety of resources. They afford the opportunity to collaborate, reflect, integrate and applied across different subject areas, lead beyond domain-specific outcomes, integrated with assessment, and create polished products valuable in their own right rather than as a preparation for something else.” MUELE has features that can support the design of authentic activities to promote learning.

Expert performance as a principle of authentic learning involves providing access to expert thinking and modeling of processes. Students learn best when they are provided with knowledgeable persons who are experienced in the subject. This can be achieved on MUELE.

Multiple perspectives is another principle of authentic learning that instructors need to adopt when designing assessments in an online environment. This involves giving students an opportunity to explore topics from multiple perspectives from different points of view, which will help them express different ideas through collaboration and non-collaborative context.

MUELE as a learning technology affords extra ordinary abilities that can support all the nine principles of authentic learning in order to motivate learning and prepare students to solve problems currently available in the labor market. MUELE has tools lectures can use to create activities and content so that students are able to share experiences, receive inspirations, collaborate, compare themselves with

experts and learn from real and live stories.

2. Research Method

A qualitative research methodology was used in this study because it permitted the researcher to have a deeper understanding of the phenomenon in its natural setting and make meaning about the problem by relating. The research approach used was an action research case study. The study was guided by the constructivism research paradigm where people construct their own understanding and knowledge of the world through experiencing things and reflecting on those experiences. The constructivist paradigm enabled the researcher to understand that learners have potential to construct their own knowledge from the learning environment. This guided the researcher in creating meaning out of the data collected. The Study population consisted of lecturers and students from six course units, specifically year two Students and lecturers on; Bachelor of Industrial and Fine Arts (BIFA) and Bachelor of Youth in Development Work (BYDW). The sample size that participated in the research was eight participants. Four instructors handling the six course and four students from both schools.

Data collection methods used included interviews and online observations. The tools used were online observation guides and interview guides. To ensure validity of the instruments, the researcher obtained opinions of supervisors and knowledgeable researchers on assessment, and technology enhanced teaching and learning. An external person was used to evaluate the accuracy of the findings in order to ensure the reliability of the data. In addition to that, field notes were gathered as the researcher listened to the interviews and observed MUELE platform. Data was organized, and there was transcription of recorded interviews from audio into textual form, then arranged and grouped. For instance, similar data was arranged together using tables or themes based on the research objectives and used codes to link data to research

questions. Reading and re-reading of written text was done to check for meaning and relationships to avoid errors that could lead to inaccurate data analytics results.

3. Results and Conclusions

3.1 How Content Is Designed on MUELE Platform

The study aimed at finding out how content is designed on the MUELE platform. The researcher observed six course units online from Bachelor of Industrial and Fine Arts (BIFA) and Bachelor of Youth in Development Work (BYDW). Facilitators were interviewed to find out how they are using the principle of authentic context, authentic activities, expert performances and multiple perspectives to design content. The findings are in agreement with the literature reviewed in this research, in particular with Larreamendy-Joerns (2006) who observed that it was essential to incorporate technology in teaching, learning, and assessment with the gradual appropriate role of distance programs in institutions of higher education. It is also in line with Queiros and Villiers (2016) who argued that technology was changing the teaching and learning practices in universities. Previously, learning was more traditional with an instructor who would observe the students' learning progress in the classroom. The present state of digital age is compelling schools to experience a new reality in online learning and assessment where there is need to make sure that content is designed in an authentic way.

The results showed that content in some course units especially theoretical courses does not reflect authentic context. They are more inclined towards traditional methods of teaching and learning where a textbook is uploaded for students and yet an LMS has features and tools that support the design of authentic content like blogs, folders, files, and media collections to support learning. Embedding traditional teaching methods in an online context is against the principles of authentic learning because knowledge should be

positioned in a particular context where it can be explored to solve real problems as supported by Herrington and Oliver (2000) [15]. For instance, when teaching engineering, students should be exposed to virtual contexts in order to understand the content well. Adom (2016) quoted Confucius, a renowned Chinese philosopher who asserted, "I hear and I forget. I see and I remember. I do and I understand." Therefore, this means that when students see how activities are done virtually, they understand well and acquire innovative skills of constructing knowledge.

The findings reveal that some activities designed on MUELE were authentic. In other words, they were work related which means that students can never forget skills acquired when their learning is integrated with work based experiences. In the same way, Reeves et al. (2002) [16], asserted that: "learning activities should have real-world relevance. They should be well-defined, requiring students to define the tasks and sub-tasks needed to complete the activity. They comprise of complex tasks to be investigated by students over a given period of time with opportunity for students to observe the task from different perspectives using a variety of resources. Provide opportunity to collaborate, reflect, integrate and applied across different subject areas. They lead beyond domain-specific outcomes, integrate with assessment, and create polished products valuable in their own right rather than as a preparation for something else." Though collaboration is one of the important principles that should not be ignored in designing authentic activities, findings indicate that collaboration on MUELE is practiced but to a smaller extent. A study on foreign languages by Stoytcheva (2018) identifies collaboration too as a problem in online distance learning. Therefore, collaboration needs to be worked on to achieve authentic learning.

The findings also revealed that students faced challenges of data and low bandwidth, which limited them from handing in work on time. This finding was in agreement with Alqiam (2021) and Saminathan

(2020) who noted that online learning requires high bandwidth which sometimes they fail to achieve, hence, they miss out on classes and discussions. In addition to that, time management is also a challenge to students. In cases where students fail to manage their time well, they will not be able to submit work on time. Therefore, students should be given enough time to accomplish the activity for assessments.

The study further found out that multiple perspectives was an important principle, however, in some course units; it was not given much value. Herrington et al. (2010) [17] reported that technology such as the internet had a variety of resources teachers can choose from to get different perspectives on a particular topic instead of using only a textbook or a teacher's guide. Technology helps a teacher to design content and learning tasks that are linked to the needs of the society.

The study also found out that all the facilitators in the six course units on the MUELE platform designed their content in relation to expert performances like websites, online resources and PDFs, which were supported by the Learning Management System. However the aspect of involving knowledgeable peers is ignored by all lecturers, yet Herrington et al. (2010) [16] support it. In addition to that, student acquire and learn to perform skills from experts and able peers who are knowledgeable in the subject, which motivates their learning.

In order to concretize the design of content on MUELE, it was considered useful to involve users fully at all levels of activity and put emphasis on the use of authentic learning and assessment on MUELE. This is because authentic learning and assessment can help students to contribute in the creation of knowledge, improve problem solving skills, share ideas and opinions, and be able to gain essential experience.

3.2 Conclusion

Following the findings and discussions of the study,

the following conclusions were obtained. The framework for authentic learning portrays that teaching and assessment are important components of learning in a digital age.

The findings in the study show that content in some course units is authentic. However, most courses especially theoretical courses are more inclined towards traditional methods of teaching and learning where a textbook is uploaded for students, and yet MUELE has features that support the design of authentic contexts like blogs, folders, files, and media collections. In the same way, content is based on a single perspective, which is against the principles of authentic learning. Therefore, more emphasis is needed when designing content that requires authentic contexts.

The findings revealed that knowledgeable peers with expertise in the field are not regarded as essential experts and that they are ignored by all lecturers, and yet Herrington et al. (2010) [17] identifies them as important in supporting learning and assessment.

Collaboration is an essential principle that should not be ignored in designing authentic activities. The findings indicate that collaboration on MUELE is practiced but to a smaller extent. Lecturers tend to give individual tasks rather than collaborative tasks, which affects the students' ability to communicate, solve problems, support each other with peer-to-peer feedback, and think creatively and critically on their activities.

The study concluded that leaning activities on MUELE are linked to the cognitive domain, psychomotor and affective domain that promote skills like collaboration, reflection and articulation among students.

Lastly, the study concluded that students are given support but it is to a smaller extent. More needs to be done to improve feedback on students' activities, improve teacher to student collaboration, and improve lecturers' resistance towards adoption of MUELE. This is because online education is here to stay.

4. Recommendations: Design Principles for Implementing Authentic Assessments on MUELE Platform — How Learning Content Is Designed on MUELE Platform

The study recommends the following principles that need to be implemented in the assessment of students on MUELE:

Emphasis should be focused on the design of content that support a wider range of context like online resources, audio visuals, course content, eBooks, manuals, and links to sources accompanied with eLearning activities like scenarios and simulations, games, dialogues and quizzes to increase the students' engagement in the course.

Online content should be student-centered, engaging with real life challenges and promoting collaboration in order to promote understanding of the content and lifelong learning in all courses. For instance, students can never forget the knowledge acquired when their learning is combined with work based experiences.

The design of content should support authentic context, authentic activity, expert performance and multiple perspectives as defined in the framework for authentic learning by Herrington and Oliver (2000) [15]. For instance, Authentic context should reflect the way knowledge is used in real life. The teacher needs to design content that reflects realistic or virtual contexts that are meaningful. These should be positioned in a particular context or environment where knowledge can be explored to solve real problems. For example, if a teacher is teaching mechanical engineering, students should be taken to the garage virtually. In other words, what is taught and assessed should have a connection to the real context to equip students with practical and useful skills that are relevant in a particular context.

Authentic activity should be designed in a way that it is innovative; "they have real-world relevance and well-defined. Students should have the opportunity to describe the tasks and sub-tasks needed to complete

the activity and involve complex tasks to be investigated over a sustained period of time. They should provide the opportunity for students to examine the task from different perspectives using a variety of resources. Afford the opportunity to collaborate, reflect, integrate and applied across different subject areas. Should lead beyond domain-specific outcomes and integrated with assessment to create polished products valuable in their own right rather than as a preparation for something else.” As advocated by Reeves et al. (2002) [16] based on higher order thinking skills.

In addition, content should be designed to support expert performance and describe the processes. Students learn best when they are provided with knowledgeable persons and peers who are experienced in the subject. Content design should support multiple perspectives. Students should be given an opportunity to explore topics from several approaches in different points of view. This will help them to express different ideas through a collaboration and non-collaborative context. In the same way, students should be exposed to knowledgeable peers who have expertise in an area to offer knowledge. Hence, they should not be ignored.

Lastly, content should be designed to support multiple perspectives rather than a single perspective. This will enable the students to use the knowledge obtained in one field to solve problems in another field.

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