The Digitalization of Learning Assessment

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Abstract

Assessment is recognized as significant in the world of education. The field of assessment is seen as one of the most difficult areas to reform due to the various challenges faced by teachers and students during the process of learning. Changes to digital technology in teaching and learning activities have influenced the assessment process in all educational institutions. Current assessment method that is mainly summative is often described as outdated compared to the development of the current world of education which focuses on outcome-based education (OBE). In general, the development of digital technology has changed the implementation of teaching and learning activities which also involves learning assessment. New technologies and tools have long been seen as a new possibility for assessment due to their features or capabilities that are potentially beneficial as they offer a more holistic, immediate and engaging assessment experience. Nevertheless, past studies have concluded that the use of digital technology is not yet ‘transformative’ due to its limited innovation and because its use is still linked to traditional assessment methods. In general, this paper will address the digital technology in teaching practice and the assessment of learning.

Keywords: Digitalization, Learning, Assessment, Formative, Summative

1. Introduction

At present, technological advances have permeated into every aspect of our lives through a number of digitally patterned necessities. The digital world offers tremendous benefits to all of us. It provides a platform that allows humans to connect and collaborate. In addition, it also opens up opportunities for us to gain new and important insights, as well as empower innovation in meeting current needs.

In the context of education, digitization in education is not a new concept. Although long discussed, digital technology-based teaching and learning methods are still exclusive among certain groups such as experts in science and technology. The Covid-19 pandemic that has hit the whole world has enabled every educational institution to undertake significant efforts in improving the facilities and quality of digital learning.

Digitalization or often referred to as digital transformation can be defined as the ability to transform various aspects and processes of education into digital form. The process of digitalization will have a diverse impact on the world of education, especially changes in organizations and transformative leadership (Bejinaru, 2019). Digitalization is believed to be one of the predictable and suitable answers to face education in the future.

However, in reality, most teaching-learning activities at the moment still prioritize face-to-face methods where lecturers or teachers are still the main source of knowledge provider. Not everyone is proficient in the use of technology. Most of the lecturers or teachers especially the elderly are lacking in skills related to digital use.
COVID-19 pandemic has left educators with no choice but to use digital technology in their teaching and learning processes. Small children are also pushed towards the use of digital technology in the process of seeking knowledge. These developments to some extent contribute to the demands of educators to improve the quality of online teaching and learning among students.

2. Digital Technology in Learning Assessment

Assessment is very important in the teaching and learning process. It provides evidence that shows students' progress and understanding of a learning topic. There are scholars who have warned that current assessment practices have swayed from the main principle of aiming to support learning; which in turn is seen to focus on constricted qualifications and achievements and this has received criticism from discontented scholars and students (Schwartz dan Arena, 2009; Attwood dan Radnoshky, 2007; Broadfoot, 2007; Gee dan Shaffer, 2010). As such, this criticism has led to reforms in the implementation of assessment activities in learning in order to effectively measure aspects of student learning.

Generally, assessment is divided into two, namely formative assessment and summative assessment. These two types of assessment have different purposes and need to be carried out in teaching and learning activities. While assessments integrated with technology can offer several alternatives and are coordinated to provide better impact in providing feedback such as using summative assessments for formative purposes (Black dan Wiliam, 2009). Technology-integrated assessments have been used for both types of assessments to provide mechanisms for sharing immediate feedback, diagnosing and testing skills and knowledge, peer and self-assessments, and providing an overview of student mastery and achievement in a learning situation.

The use of digital technology in implementing both types of assessments has the potential to support change in assessment innovation and development, particularly in addressing the risks and complexities of various changes based on specific objectives (Winkley, 2010). Digital technology can offer more potential to formative assessment that is less risky than summative assessment. The use of digital technology in summative assessment is somewhat difficult due to changes towards standardized assessment and some other constraints.

Digitization in the assessment of learning can contribute to better and more structured documentation of evidence. This organized record keeping will make it easier for teachers or lecturers to analyze the data stored to plan teaching and learning activities to ensure the success of students in their learning. Some of the contributions of digital technology in the assessment of learning that are outlined by JISC (2010) Pellegrino & Quellmalz (2010), Winkley (2010), Schwartz and Arena (2009), Angus and Watson (2009), Whitelock and Watt (2008) and Whitelock et al (2006) are as follows:

- **Provide immediate feedback.** Digital technology enables ‘real -time’ feedback shown by students and teachers to identify student problems and reduce misunderstandings quickly (for example; multiple choice questions) and provide more opportunities to act on feedback from multiple parties (teachers, peers, or large communities through blogs or websites). This can also lead to the dynamics of learning in the form of dialogue between teachers and students, the improvement of the assessment experience and the increase of student engagement.
- **Potentially enhance student-centered learning.** Digital technology allows supporting self-response to a task and in turn facilitates self-assessment and controlled learning through a variety of evidence, immediate formative feedback, better tracking of progress to learning outcomes. In this context data visualization is highly relevant.

- **Collaborative learning support.** Digital technology provides an opportunity for a more comprehensive implementation of peer assessment. Students are able to carry out activities and knowledge sharing and subsequently perform assessment together with each other. This situation enhances social interaction between students.

- **Provide genuine information.** Students can present challenging problems and ways to assess complex skills such as problem-solving skills, decision making, and hypothesis testing. These situations provide clear and genuine information about students’ mastery of skills and are able to predict future achievements and subsequent educational needs.

- **Expand the measurement range.** Through the ability to create and visualize complex data sets and models that consider multiple factors, digital technology can measure multi-faceted skills simultaneously involving sets of knowledge and cognitive processes that were previously difficult to assess. For example, simulation activities can instantaneously measure computer technical skills, decision-making processes and strategy planning by students.

- **Flexible and appropriate response.** Digital technology also provides choices in the approach, format and timing of assessment by students. Students can access or perform assessments at a time and place of their own choosing without restriction. In addition, digital tools such as simulations provide a variety of modalities that are more easily accessible than textbook-based tests.

- **Increase efficiency and reduce teacher workload.** Administratively friendly, it has the potential to improve the efficiency of data management such as tagging, moderating and storing information and help teachers use time and resources better.

- **Improve student performance.** The findings of studies showed that digital assessment facilitates e-feedback and as such can improve student performance quickly and encourage better student engagement (Whitelock and Watt, 2008; Angus and Watson, 2009).

- **Integrate formative and summative assessment.** Summative assessments tend to be retrospective, as these assessments test previously acquired knowledge in learning without leaving opportunities for continuous learning. This is because summative assessment is implemented at the end of the semester or school term. Digital technology can aid assessment activities by integrating assessment and instruction, such as in an immersive learning environment or monitoring how students solve problems using computers and providing immediate feedback. Improve the validity and reliability of assessments. Digital assessments can help track the validity of assessments (if the activity is a fair measure of skill and understanding) through the use of multimedia rather than simply based on textbooks. Additionally, it can provide an increase in scoring reliability and a robust data set for more in-depth analysis.

### 3. Challenges of using Digital Technology in Learning

The implementation of digital assessment faces various challenges in parallel with the challenges in digital learning activities. Many students stated that they are now free to use Web 2.0 to find additional information during classes. This could not have been done before because the act of referring to the phone while the teacher was teaching was considered impolite. At the same time, teachers use synchronous and asynchronous approach techniques in learning and demand students to be more independent. With that, teachers can now take on the role of learning facilitators and no longer be the primary source of reference and this certainly supports the vision of education based on the fourth industrial revolution (4IR). On

*The Importance of Digital Media for Sustainable Learning, Research, and Community Service during The COVID-19 Pandemic*
the other hand, students are in a dilemma in terms of lacking human touch in the learning process. The learning process is seen as a lonely process when they have to be more independent in order to understand the knowledge imparted. The student-teacher relationship seems to disappear behind a computer screen or smartphone. In addition, some students find it easier to hide behind a computer screen by turning off video and audio functions which makes it difficult for teachers to really monitor each student’s progress and understanding.

Further, students also feel a loss of support from peers in the learning process. For students who are still in early adulthood, the influence of peers is important to encourage them to work harder in seeking knowledge. The absence of the element of human touch makes students struggle while going against the current of new norms in seeking knowledge.

Sometimes teacher's questions in online learning assessment sessions are often followed by a momentary silence; to wait for students to turn on the video as well as audio functions before answering the questions posed by the teacher. Through digital learning, this spontaneous inquiry element in the classroom has been replaced with a screen display of student profile pictures. To instruct students to turn on the video and audio functions is also quite difficult as the learning sessions will be disrupted especially students who have a weak internet network. Eventually the educators have to continue the teaching session without really knowing what is going on behind the computer screen.

Hence, various efforts need to be made jointly to bring all stakeholders through this new norm which has in fact already become a reality of current life. More research needs to be done by academics to understand the impact of this digital leap on all parties especially in the aspect of learning assessment.

Certainly the interaction between teachers and students needs to be explored for the improvement of the online learning assessment process. The authorities need to introduce more initiatives that can address current issues on this matter. The new norms have now become a current reality and we need to keep moving forward and ensure the learning process takes place efficiently and in a conducive atmosphere.

**Preliminary Findings on Digital Literacy Levels among Teachers in Malaysia**

The success of implementing digital assessment depends on the level of digital literacy among the teachers themselves. If the level of digital literacy of teachers is at a high level, it is likely that digital assessment can also be implemented as efficient as possible. The following are the findings of a preliminary survey study on the level of literacy of teachers in Malaysia involving a total of 386 samples.

| Table 1: Demography of Samples in the Teachers’ Digital Literacy Levels study (n=386) |
|---------------------------------|-----|-----|
| Gender | Mean | SD  |
| Male   | 3.85 | .38 |
| Female | 3.82 | .33 |
| School Levels | Mean | SD  |
| Primary | 3.83 | .37 |
| Secondary | 3.83 | .32 |
| Age | Mean | SD  |
| 20 – 29 years old | 3.98 | .40 |
| 30 – 39 years old | 3.86 | .36 |
| 40 – 49 years old | 3.81 | .33 |
| 50 – 59 years old | 3.83 | .37 |
Based on Table 1 above, in general, the level of teacher literacy in Malaysia was at a high level (M = 3.83, SD = .38) whereby the findings of the initial study found that the literacy level of male teachers (M = 3.85, SD = .38) was higher than that of female teachers (M = 3.82, SD = .33).

Younger teachers showed higher levels of literacy than older teachers. This is also in line with findings that showed experienced teachers have lower levels of digital literacy than teachers who have just started service. This could be due to the fact that teachers who have just started the service are the younger generations who have been exposed to aspects of technology compared to older and experienced teachers.

4. Proposed Digital Literacy Improvement among Educators

In order to face the challenges of digitalization in the assessment of learning, several things should be given deliberation by all parties involved. Some suggestions that should be considered are as follows:

- **Collaborate with colleagues.** Conduct audits among teachers to find out who have implemented digital literacy as part of their teaching. Some of the collaborative planning shown can enhance learning across the curriculum and maximize resources across borders as well as foster collaboration and trust among teachers.

- **Focus on the curriculum.** It is acknowledged that teachers may be frustrated with “something” related to the digital world coupled with an already busy teaching schedule. But digital literacy does not exist in isolation. Context is the key, and the best way to teach digital literacy is to know what it means to a particular discipline. For example, English teachers can use blogs to advance digital literacy, while History teachers can present their classes with real-world problems and encourage students to use their computer skills to create solutions.

- **Create a “modern classroom”.** New pedagogical methods such as collaborative learning, student-centered learning and Flipped classroom are becoming increasingly popular in line with the development of educational technology. Technological developments help teachers apply deep evidence-based learning. This situation supports digital literacy.

- **Make your lessons digital.** It is difficult to teach students about what is needed in the online world without the use of digital tools. Therefore, teachers themselves must delve into the digital world. Teachers should consider using ActivPanels and free educational software such as ClassFlow to help students engage in the art of online learning.

- **Create a digital ambassador.** In any school there will be digital innovators. Leverage their passion and knowledge by creating digital literacy focus groups to help drive and inspire change while raising awareness of digital literacy throughout the school.

- **Involvement of all educators.** Teachers lack time, so many educational institutions shirk the responsibility of educating students about digital literacy because of concerns about the...
technical abilities of their own staff. Establish interaction between teachers at the beginning of the process to find out what they need in order to teach using digital technology.

- **Involvement of students.** Build smart partnerships between strong and productive students-teachers to help develop school's digital environment in ways that are meaningful to them. Encourage more senior students to express their views on the meaning of digital literacy and the skills they need to live, work and study in the online world.

5. **Conclusion**

Indeed, when digital technology has taken over all aspects of life, the field of education is not spared and is no exception to receive its consequences. The world of education needs to accept the changes that are taking place and move in line with the development of current demands. Several things should be considered in ensuring that digital assessment of learning is sustainable. Among them:

- Promote new assessment practices based on learning principles and theories. This involves the integration of relevant and up-to-date understanding of learning, in particular the role of feedback and assessment, into principle and then practice. Hattie and Brown (2007-2008) showed how this can be done within a national assessment framework. It requires a more thorough understanding of what constitutes effective feedback. If the core goal of education is to enhance learning, we should use assessment practices based on principles developed alongside sound and valid research.

- Foster new assessment tools that reflect pedagogical principles. There is an acknowledged need to develop ‘pedagogy-based models of e-assessment’ that allow students to take control of their own learning and become more reflective’ (Whitelock and Watt, 2008). This aligns with a growing understanding of the importance of self-directed learning and peer assessment.

- Build new feedback. Technology-enhanced assessments may prove more difficult to introduce in the context of summative assessments such as external public examinations. However, the potential for greater efficiency and effectiveness in this context is important for the immediate application of e-assessment and the implementation of studies related to the development of digital assessment.

**References**


