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THE EFFECTS OF KAHOOT! ONLINE ASSESSMENT ON STUDENTS' PERFORMANCE IN A HIGHER EDUCATION INSTITUTION



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SULTAN IDRIS EDUCATION UNIVERSITY

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(RESEARCH MODE)

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2021



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ABSTRACT

This study was aimed at developing an online assessment module to assist lecturer in using Kahoot! and to determine the effects of Kahoot! on students' performance in the Universiti Pendidikan Sultan Idris (UPSI). This study was also intended to evaluate respondents' perceptions about KOA. The study used quantitative approach with quasi-experimental design. The respondents of this study were 200 (120 female; 80 male) Semester 1 undergraduate student-teachers in the Early Childhood Education programme who enrolled in the KAQ1023 course in the 2017/2018 session. Four classes were involved in this study, two classes were for the control group Paper and Pencil Assessment (PPA) and another two for the experimental group Kahoot! Online Assessment (KOA). Assignment of classes to the control and treatment groups were done through simple random sampling. The 100 respondents from the KOA group were also involved in answering the Likert-type questionnaire measuring their perception about Kahoot!. The achievement data from the pre and post-test were analysed using the SPANOVA while data from the questionnaire were analysed using factor analysis and descriptive statistics. The findings indicated that there were improvements in achievement for both KOA and PPA groups, but the gain in achievement for KOA group was significantly higher. The Huynh-Feldt values indicates that there was a main effect of the group [$F(1.88, 372.89) = 710.80, p < .05$] and the gain in the means of KOA group (5.95) was significantly higher than the gain in PPA group (5.07) at $p = 0.05$. Respondents also agreed that KOA is one of the best online assessment platforms available and meets the criteria of 21st century assessment when the mean of each positive responds is high between 3.30 and 4.32. As a conclusion, the use of KOA had shown some positive effects on students' performance. This implicates the potential use of Kahoot! in other courses in higher education institutions.



KESAN PENTAKSIRAN DALAM TALIAN KAHOOT! TERHADAP PRESTASI PELAJAR DI INSTITUSI PENDIDIKAN TINGGI

ABSTRAK

Kajian ini bertujuan untuk membangunkan modul pentaksiran dalam talian untuk membantu pensyarah menggunakan Kahoot! dan untuk menentukan kesan Kahoot! terhadap prestasi pelajar di Universiti Pendidikan Sultan Idris (UPSI). Kajian ini juga bertujuan untuk menilai persepsi responden mengenai Kahoot! Kajian ini menggunakan pendekatan kuantitatif dengan reka bentuk kuasi eksperimen. Responden kajian ini adalah seramai 200 orang (120 perempuan; 80 lelaki) pelajar Semester 1 sarjana dalam program Pendidikan Awal Kanak-kanak yang mendaftar dalam kursus KAQ1023 sesi 2017/2018. Empat kelas terlibat dalam kajian ini, dua kelas untuk kumpulan kawalan Pentaksiran Kertas dan Pensil (PPA) dan dua lagi untuk kumpulan eksperimen Pentaksiran Dalam Talian Kahoot! (KOA). Tugas kepada kumpulan kawalan dan rawatan dilakukan melalui persampelan rawak. 100 responden dari kumpulan KOA juga terlibat dalam menjawab soal selidik jenis Likert yang mengukur persepsi mereka mengenai Kahoot!. Data pencapaian dari ujian pra dan pasca dianalisis menggunakan SPANOVA sementara data dari soal selidik dianalisis menggunakan analisis faktor dan secara deskriptif. Hasil kajian menunjukkan bahawa terdapat peningkatan pencapaian bagi kedua-dua kumpulan KOA dan PPA, tetapi peningkatan pencapaian bagi kumpulan KOA adalah jauh lebih tinggi. Nilai Huynh-Feldt menunjukkan bahawa terdapat kesan utama kumpulan [$F(1.88, 372.89) = 710.80$, $p < .05$] dan peningkatan dalam min KOA (5.95) jauh lebih tinggi dari peningkatan dalam PPA (5.07) pada $p = 0.005$. Responden juga bersetuju bahawa KOA adalah salah satu platform pentaksiran dalam talian terbaik dan memenuhi kriteria pentaksiran abad ke-21 apabila min bagi setiap respon positif adalah tinggi antara 3.30 dan 4.32. Sebagai kesimpulan, penggunaan KOA telah menunjukkan beberapa kesan positif terhadap prestasi pelajar. Ini menunjukkan potensi penggunaan Kahoot! dalam kursus lain di institusi pengajian tinggi.



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LIST OF ABBREVIATIONS

WWW	World Wide Web
MOE	Ministry of Education
KOA	Kahoot! Online Assessment
PPA	Paper & Pencil Assessment
ECE	Early Childhood Education
TOS	Table of Specification
FA	Factor Analysis
EFA	Exploratory Factor Analysis
SPANOVA	Split-plot ANOVA
ANOVA	Analysis of Variance



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- B The journal article – 21st Century Assessment: Online Assessment
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CHAPTER 1

INTRODUCTION

1.1 Background of the Study

The transformation toward the 21st century has spiked the world globally. Technology today has assisted us in many ways in making things easier and save time. It is broadly understood that technology has been transforming human life in one way or another for thousands of years. But in the computer age, the pace of technological change is very rapid and when essential daily tools can change in just five years, the impact over longer stretches can be profound. The globalization and internationalization of economy along with the rapid development of information and communication technologies (ICT) are continuously transforming the way in which we live, work, and learn Voogt & Roblin (2012). Information technology is playing an increasingly important role in work and personal lives of people. Everything is depending on technology, making everything borderless and the most remarkably technology device is the Internet which has the highest demand in every sector worldwide.

The rapid global changes in information and communication technology (ICT), has affected the availability of technology and made it universal. Technology continues to transform education and training but usually in ways unforeseen by its inventors Baker & Harold F. O'Neil (1994). The presence of technology in education is used to assist and improve the quality of learning Woolfolk (2007). Furthermore, technology can be utilized in educational assessment, specifically in the implementation of the assessment. The utilization of technology in educational assessment is aimed at the effectiveness and efficiency of the implementation of the test Towndrow & Vallence (2004). The permeation of technology in society has forced changes in employment and education Fazilat Siddiq, Perman Gochyyev, (2017).

The education sector has been transformed towards the rapid development of the Internet. The use of internet has increasingly altering today's education system. Some familiar terms like Mobile learning (M-Learning), E-learning, Kahoot, Massive Open Online Course (MOOC) and Socrative are a new concept of learning and assessing via online. In M-learning environment, knowledge can be transmitted via the mobile phones, laptops, tablet Personal Computer (PC), Personal Digital Assistant (PDA) etc. Mahat, Fauzi, Ayub, & Luan (2012). As the world is becoming increasingly borderless with the demanding usage of internet, the academic spaces are increasingly becoming less confined to the four walls of a classroom. Educators always emphasize on learning outside the classroom which eventually leads to the usage of internet and ICT in the classroom itself.

Nowadays the uses of World Wide Web (WWW)–based tests are discussed. Published empirical evaluations of Web-based tests indicate that they can be reliable

and valid. Given that these tools are useful when assessments are carried out in traditional settings, it is likely that they will also be useful when assessments are carried out through various technological media. In Knight (2008), educators need to prepare students with the 21st skills which include digital age literacy, inventive thinking, effective communication, and high productive abilities. These skills are important for the students to thrive in the future.

1.2 Problem Statement

The world is changing rapidly towards 21st century digital era and many research and publications are conducted on what knowledge and skills needed the most for society especially young generations of the 21st century. There are four types of 21st century skills: collaborative problem solving, complex problem solving, creativity and digital information literacy Geisinger (2016). Digital information literacy is the critical skill that always been highlighted in education especially in teaching and learning and also assessment as specified in shift 9 Malaysia Education Blueprint for Higher Education and shift 7 in Malaysia Education Blueprint for Pre School to Post-Secondary Education Ministry of Education, 2015; Ministry of Higher Education (2015).

From the document analysis, it can be said that our Ministry of Education has taken a wise decision to revamp the national curriculum and one of the main objectives is to comply with the competences needed for the 21st century. The 21st century competencies are being integrated throughout the school curriculum as well as teacher preparation and professional development. Different pedagogies are being encouraged,

including greater use of inquiry-based learning, information and communications technology, cooperative group learning, and problem-solving routines Ministry of Education (2015). This is supported by Beetham & Sharpe (2007); Voogt & Roblin, (2012), with the emergence of an increased of digital competencies required in 21st century, society, schools and educational systems around the world are called to make changes and remodel their curricula so that learners can take control of their own learning.

Many countries around the world have developed their own blueprint in making sure that their country's most valuable asset which is the young generations are in par with the current 21st century paradigm. As in Stewart (2013), the cities in 'Asia Society's Global Cities Education Network' all agree to direct their attention to develop 21st century skills and competencies for all students and the goal of education can no longer simply to provide basic literacy skills but to emphasis more on what is needed for the demand skills for 21st century. The document in National Education Technology Plan (NETP) United States of America, a rich 21st century manuscript touches on teaching and learning, assessment, productivity perspectives and anything related to the world of education technology Dede (2011); United States Department of Education (2011). Many countries all over the world have engaged their actions in heeding towards 21st century paradigm. Hong Kong, Australia, Shanghai, Toronto, Singapore and many more countries in the world are trying to balance knowledge transmission with more explicit attention to 21st century competencies Stewart (2013). Therefore, this 21st century paradigm in education is the cutting-edge that all countries are looking forward and the education system all around the world are facing increasing pressure to produce graduates with high competencies in knowledge, skills, attitudes, and

dispositions, automatically demand challenges in terms of pedagogy and assessment in education.

The policy by Ministry of Education and Ministry of Higher Education is already in place but the implementation still needs to be further highlighted especially on the skills required for 21st century for the students to prepare themselves to face the real life right after they have finished their study. The dynamic changes in the types of jobs demanded by the knowledge society pose important challenges to educational systems, as they are currently asked to prepare young people for a job that does not yet exist Dede (2011). The national examination system has been revised to incorporate higher level thinking skills through different modes of assessment Ministry of Education (2015). The interest in developing and using computer-based and web-based test in educational assessment in schools and higher education institutions has heightened in recent years. Many higher education institutions have started to adopt and implement ICT solutions for example electronic learning as a source for flexible teaching and learning process either in the classroom or outside the classroom Azizan (2010). The rapid growth of web-based technology and the high usage of internet have made teaching, learning and assessment via online becoming more practical.

Delivering assessments via online is becoming more and more prevalent in educational assessment domain as changes are made in assessment methodologies that reflect practical changes in pedagogical methods Kate Tzu, (2012); Genc, (2012); Hsiao, Tu & Chung (2012). Some examples of serious efforts to realize online and technology-based assessment which developed rapidly to meet the demand of 21st century education include the publications done by Pearson and Cisco Networking.

“Over the last decade, Pearson has helped a number of states transition from paper-based to online and technology-based testing. Last year alone, our web-based content delivery platform administered more than 7 million secure, high-stakes assessments in K-12 classrooms.” Pearson Official Website of Assessment, (2017)

Cisco Networking Academics is a public private partnership between Cisco and 9000 educational institutions in over 160 countries and Cisco is the world’s largest maker of computer and data networking hardware and related equipment. Cisco provides partnering school with free online curriculum and online assessment to support local school related to computer Mayrath, Carke-Midura, Robinson, & Schraw (2012). Although online education for college and university study has experienced remarkable growth over the past two decades, the links of online education to the assessment of student learning outcomes have been largely overlooked Prineas & Cini (2011). There are several issues discussed in research and publications related to the lack of implementation on online assessment. The major issue is the way we assess our students especially in higher education. Students are residing in a 20th century classroom equipped for the 21st century skills but sadly they are taking 19th century exams Robles & Braathen, 2002; De Gagne, 2009; Dietrich, 2011; Yan, 2012; Chien, Wu, & Hsu, 2014; & Albee, (2015). Calibrating assessment to meet the characteristics of online instruction is a great challenge particularly when attempting to adapt formative assessment techniques used in a traditional face-to-face classroom Vonderwell & Boboc (2013). This indicates a need to understand and study the online assessment in education.

The next issue relates to the limited number of research and publication on online assessment. By referring to the search results from Scopus using the key word ‘Online Assessment in Education’, it is found that the number of studies and publications on online assessment has grown exponentially in recent years but had decreased 16 percent between year 2015 and 2016 as in *Figure 1.1*. The number of research and publications dropped from 871 documents in 2015 to 757 documents in 2016. The analysis showed that at the beginning of early 20th century people were very interested in doing research on online assessment and technology-based assessment, but the interest seems to decrease in the recent years.

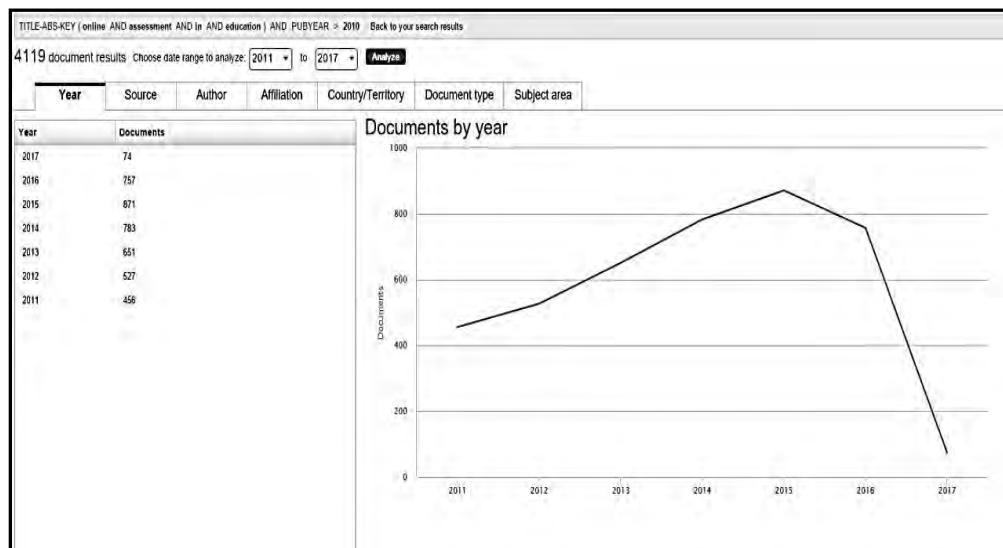


Figure 1.1 Scopus Analyze Search Result

Another issue relates to the effects of online assessment on students’ learning has been explored within other disciplines but only a handful of studies have been conducted to investigate the benefits of using online assessment in conducting assessments and evaluations. Questions arise as to whether these online methods are



comparable to the traditional tests, and whether students benefit more from the use of one or the other. When online teaching and learning become widespread, the attention to online assessment increases. Online assessments can be offered at different time, location or even different test or different students Harvey and Mogey (1999). Most studies previously conducted did not really highlight on the impact of online assessment towards the academic performance among students. Recent research focuses more on assessment for learning practices in higher education and the particular technologies, tools, and techniques that facilitate them Charteris, Quinn, Parkes, Fletcher, & Reyes, (2016). Therefore, this study was conducted to find the effect of online assessment using Kahoot! towards the academic performance of the students.

Other issue that needs to be highlighted in this research is the perception of student teacher towards the KOA. In educational contexts, understanding the student's learning must take account of the student's construction of reality. Reality as experienced by the student has an important additional value Struyven, Dochy, & Janssens (2005). This assumption also applies to a student's perception of evaluation and assessment. The study by Chaiyo & Nokham, (2017) reported on the study by Wang, A. I.(2015) resulted that students that did a quiz using Kahoot! learned 22% more than students using the PPA and students that used Kahoot! were 25% more motivated by the quiz compared to the PPA. Another survey done by NC State University about students' perceptions of Kahoot! and Google Form (GF) on their learning and engagement has resulted that 70% of students agreed or strongly agreed that Kahoot! and GF helped them learn course materials and 74 % of students agreed or strongly agreed that Kahoot! and GF increased their engagement in the classroom. Students' perceptions about Kahoot! is very crucial since they are one who plays a





significant role not only in making the teaching and learning successful but the presence of positive value in their learning experience.

Research supported the idea that adherence to best practices was common among online higher education faculty and administrators at institutions offering online courses are eager to promote student achievement and student retention is of utmost importance as it is connected to the success of the institution Albee(2015). Many higher education institutions have started to adopt and implement ICT solutions for example electronic learning as a source for flexible teaching and learning process either in the classroom or outside the classroom it is shown that universities in Malaysia are ready for the online delivery learning which supports distance education Farahiza Zaihan (2010). This clearly shows that higher education institutions are prepared in integrating online learning process in their curriculum but the practice of conducting assessments or tests using online assessment are not fully optimized especially in higher learning institution.

According to Azizan (2010) as cited in Ministry of Higher Education, (2006); Chai Lee Goi and Poh Yen Ng, (2009), there are currently 20 public universities and university colleges (14 universities and 6 university colleges), 30 private universities and university colleges (11 universities, 5 International universities and 14 university-colleges), and over 600 private colleges in the country of Malaysia and most public universities in Malaysia have some form of strategic plan for implementing pure electronic university.





The online assessment has received special attention from public universities. University Pendidikan Sultan Idris (UPSI) has implemented the E- Portfolio, E-Assessment, E-Quiz, E-PBL and etc via MyGuru and IMS platforms (Noraini, Wong Mohd Azli, & Norazilawati, 2016). However, by referring to the lecturers' course outline and instructional plan of the subject, it is found out that the assessments or tests are mostly done by using traditional method which always leads to Paper and Pencil (PPA) method of assessment. This is not saying that UPSI have been using the wrong method of assessment but rather highlighting the fact that there is a gap of using technology in assessment so far. Thus, online exams are appropriate solution for assessment in online learning environment in which students learn at their convenient time and location (Xu and Wang, 2006).



There are various online assessment platforms available for free such as Kahoot®, Socrative®, Quizalize®, Plickers® and many more. All the online assessment platforms have their own benefits and definitely advantages to users. One of the recommended online assessment platforms is the Kahoot! Online Assessment (KOA). KOA represents a new generation of student response systems that has a main focus on student motivation and engagement through gamification (Wang & Lieberoth, 2015). Kahoot® is a game-based, interactive tool that can be used in any school subject to approach any topic (Alvarado, Coelho, & Dougherty, 2016a). From the discussions about the wide use of Kahoot!® and the unknown benefits of the online assessment including Kahoot!® a study on the effect of Kahoot!® on students' performance and motivation is timely to be conducted.



1.3 Research Objectives

Based on the problems and issues mentioned, this research is expected to achieve the following objectives: -

- 1.3.1 to develop Apps-based Assessment Module to assist lecturer in using Kahoot!.
- 1.3.2 to identify the differences in students' academic performance (score) between the Kahoot! Online Assessment group and Paper and Pencil Assessment group after the experiment.
- 1.3.3 to evaluate the perception of treatment group towards Kahoot!

1.4 Research Questions

This study examines the following research questions: -

- 1.4.1 to what extend does the module demonstrate content validity as rated by the experts?
- 1.4.2 Is there any effect of Kahoot! Online Assessment on students' score after the experiment?
- 1.4.3 What are the perceptions of respondents towards Kahoot!?

1.5 Hypotheses

The research questions and hypotheses provided the direction of the study. Research questions narrow the scope on the purpose of the research and the specific questions the researcher will answer. The research questions can establish the direction of the study and the intent of the researcher (Johnson-Martin, 2014).

There are 2 hypotheses in this research:-

H_0 : There is no significant difference in students' academic performance (score) between the KOA group and PPA group after the experiment.

H_1 : There is significant difference in students' academic performance (score) between KOA group and PPA group after the experiment.

1.6 Significance of the Study

There is strong necessity in implementing the online assessment due to the growth in online instruction and the need for better learning outcomes for online students. The success implementing online assessment is critical to fulfill the university's mission. The significance of this study is that it helps current and future educators in having a clear picture on what is online assessment and provide them with information on some of the available online platforms. Outcomes of this study lead to a better understanding of online assessment.

It is also important to the mission of the institution that to ensure the instructors have proper training opportunities on technology and support for integration of technology in the classroom for better use of the technologies.

1.7 Limitation of the Study

The participants for this study will be educators and student teachers in UPSI. The study is expected to have several potential sources of error that might influence the data outcomes. The kinds of influences that might cause sources of error may occur due to the size of respective classrooms, class-meeting times, and the knowledge of using ICT among educators and students. Furthermore, student attitudes towards the usage in ICT might also contribute to source error. Conducting quasi experiment is also one of the limitations in this study as it involved groups of respondents within few time frames for pre and post test. The weakness of conducting the quasi-experimental design is the test groups are not equivalent and hence limits the generalizability of the results. The internal validity might reduce, and the assumptions related to causality are not as absolute.

1.8 Operational Definition

1.8.1 Technology

Technology refers to tools and machines that may be used to solve real world problems. Technology can be broadly defined, but here, we mean the primarily high-end tools,

such as computers, tablets, and mobile devices that can be used to deliver assessment for students (Christensen & Rogers, 2013). In this context of study technology refers to gadgets used in conducting online assessment such as mobile phones, laptops or computers.

1.8.2 E-Learning

Broad definition of e-learning is learning conducted via electronic media, typically on the Internet to deliver learning, training and educational programs. This is typically used to describe media such as CD-ROM, Internet, Intranet, wireless and mobile learning.

1.8.3 Internet

The Internet is the global system of interconnected computer networks that use the Internet protocol suite (TCP/IP) to link devices worldwide. The public Internet encompasses the World Wide Web, the popular multimedia portion, as well as the e-mail, FTP, gopher, and other services.

1.8.4 Online Education

Online Education is defined as any educational experience that is in one method transferred through a computer network or over the Internet. According to Moore and Kearsley (2005), five characteristics define online education: group communication, place independence, time-independence, text-based, and computer-mediated messaging.

1.8.5 Kahoot! Online Assessment (KOA)

KOA represents a new online assessment platform of student-response systems that focusing on student motivation and engagement through gamification. The tool is a result of the research project Lecture Quiz that started in 2006 where results from experimentation of early prototypes showed positive results in terms of increased engagement, motivation and perceived learning (Wang & Lieberoth, 2016). It is a game-based, interactive tool that can be used in any school subject to approach any topic. Each Kahoot! game consists of a collection of questions on specific topics. Quizzes can be created by both teachers and students; there is no limit to the number of players for each game. Players answer the questions in real- time by simply using a code provided by the creator of the quiz. Kahoot! allows users to create many types of question (multiple choice, true or false, sentence completion, etc.) and to add pictures, audios and videos as well. While playing a Kahoot! game, players will be able to see their scores and their place in the general scoreboard after each question, which can be

very motivating. (Alvarado, Coelho, & Dougherty, 2016b). KOA is used in conducting the quasi experiment for this research.

1.8.6 Paper and Pencil Assessment (PPA)

PPA refers to a general group of assessment tools in which candidates read questions and respond in writing. This includes tests, such as knowledge and ability tests and inventories, such as personality and interest inventories. PPA can also be used to assess subject or course, job related knowledge and ability or skill qualifications (Ibrahim, 2015)

1.8.7 Students' Academic Performance

Students' academic performance in this research refers to the analysis of findings from the pre and post test from the quasi experimental. The marks from the pre and post test were analysed using the SPANOVA analysis to decide whether Kahoot! has given the positive or negative effect towards the students' academic performance.

1.8.8 Perception of respondents

Feedback of the respondents were gathered from the survey to get the perception towards Kahoot!. Perception is from the aspect of what the respondents think and experienced from Kahoot!. The perception of the respondents can be positive and negative.

1.8.9 Module

The module in this research refers to the Apps-Based Assessment Module developed by the researcher. The module consists of some notes on item building and Kahoot! tutorial. The module is divided into few sections with colourful graphics and useful guidelines in item building.

1.9 Framework and Model

1.9.1 Assessment and Accountability Framework

The framework of this study is based on Assessment and Accountability Framework (AAF)-: LY2018001931 which was successfully developed from the Niche Research Grant Scheme (NRGS) UPSI. This framework was guided by the guiding principles



which were created based on readings from the literature on assessment frameworks, guiding principles, standards, methods, measures, knowledge, and skills teachers need for effective assessment in classroom. It was also based on data obtained from the stakeholders at various levels regarding the guiding principles and framework during the phases of development. Based on the guiding principles which are presented in the outer ring of the framework, the framework proposes that assessment should be balanced and continuous.

Teacher educators should employ multiple methods and measures and could understand, share, create, explore, and learn when assessing the three core areas of values, skills and knowledge of prospective teachers. This framework meets the standards of what is needed for 21st century assessment. The key words which are holistic and balance really portrays what is in online assessment platform especially in Kahoot!. The 21st century skills, transformation, revolution in assessment need to be assessed and how we might understand the impacts of these technological and social changes. Technologies nowadays interact with almost everything in the world. The transformation and revolution in digital world are very wild and rapid year by year we hardly notice. As in Mayrath et al., (2012) this is referred as the “digital revolution” (DR) and these advances change what is relevant to assess, how we are able to assess knowledge, skills, and attributes and how we think about the very nature of assessments. One approach to organizing 21st Century skills focuses on cognitive skills, intrapersonal skills, interpersonal skills, and technical skills Ananiadou & Claro (2009).



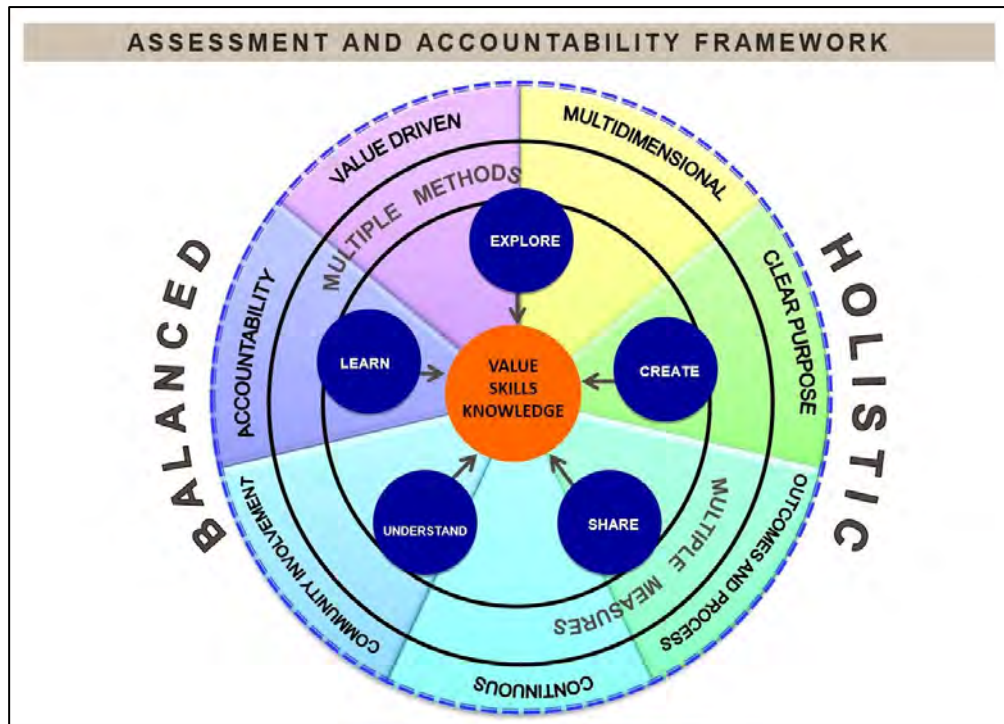


Figure 1.2 Assessments and Accountability Framework

1.9.2 ADDIE Model for Online Assessment Module Development

The ADDIE model was adapted in developing The Apps-based Assessment Module. In an online assessment module design, it is important to follow the steps in ADDIE model though it involved time consumption, trial, and error in online platform and likely to overcome problems when dealing with technology. As in Clark (2012), ADDIE was first appeared in 1975 and was created by the Center for Educational Technology at Florida State University for the U.S. Army by all the U.S. Armed Forces Branson, Rayner, Cox, Furman, King, Hannum, (1975); Watson, (1981) as the essential of the development in educational and training programs. It started with 19 phases than were revised to 5 phases six years later by Dr. Russell Watson in 1981.

The ADDIE is the acronym of the phases in developing the online assessment module and ADDIE stands for Analyse, Design, Develop, Implement and Evaluate. It was easily applicable, flexible, and systematic and allows turning back to previous phases. More in Durak & Ataizi (2016) ADDIE is accepted as easily applicable, flexible and systematic. In this study, the ADDIE design model was applied throughout the process of developing the Apps-based Assessment Module.

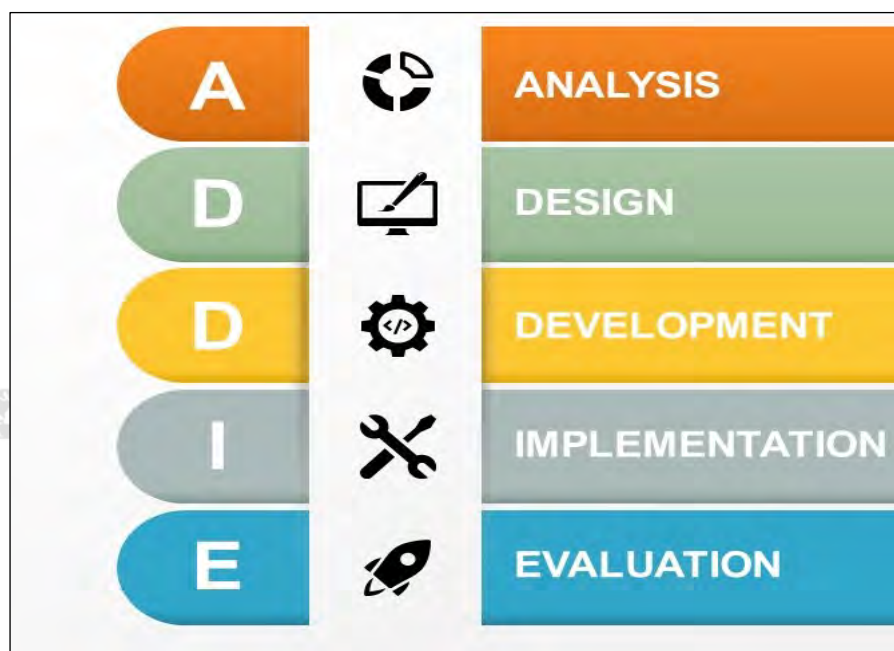


Figure 1.3 ADDIE model adapted for Apps-Based Assessment Module

The analysis phase was more on analyzing the conceptual of the module which includes the training, knowledge, and gaps. Reseracher came out with questions on the module itself and the main purpose why the module is developed. In this phase, the instructional problem, the instructional goals, and objectives were clarified. The learning environment and learner's existing knowledge and skills are too were identified in this phase. Questions proposed by researcher are the targeted audience,



types of learning constraints that exist, the constraint and limitations that may arise and the timeline for project completion.

The design phase was focusing on the objectives, assessment instruments, exercises, content, subject matter analysis, lesson planning and media selection. The design phase was designed in specific and systematic. Specific means each element of the instructional design plan needs to be executed with attention to details whereas systematic means developing and evaluating a set of scheduled strategies aimed for attaining the objectives. This phase involved the creating of storyboard, documentations of steps in Kahoot! and the arrangement of notes in item building.

The development phase was where the module is developed progressively. The module was validated by the expertise and further discussed in Chapter 3. The topics in the module were arranged accordingly and being reviewed by panels. The module was revised accordingly to any feedback given. The implementation phase was where the module is being administered to the lecturer. Lecturer was given a time frame to study the module and some time to sit together with the researcher for the one-to-one tutorial. Lecturer was given a checklist to get the overall understanding of the lecturer towards the module.

The evaluation phase consists of the evaluation of the module itself. The evaluation phase was about the overall evaluation of the module from the respondents; the lecturer and respondents from the K-Novasi Conference (as discussed in Chapter 3)



1.10 Conclusion

When designing assessments for students, educators need to bear in mind the main purpose and objectives of designing an assessment. They need to have knowledge on assessment whether the assessment is for learning or the assessment as learning. They need to understand the techniques and know proper way in preparing questions and answers for students. According to (Black & Wiliam, 2009), three main objectives of assessment are for accountability, certification and learning. One of the most important factors when designing an online assessment is the positive value that the students benefited from it.