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Assignment Weekend School 1

“The technological solutions are encouraged in the modern learning assessment. How relevant are these methods in the context of today’s internet savvy generation?”

SILVIO NOCILLA

Contents

Chapter 1 Introduction	3
1.1 Background and context to this study	3
Chapter 2 Literature Review	5
2.1 Introduction Awareness of Gamification in Education	5
2.2 Social Gamification Strategy	5
2.3 Targeting Audience Attitude	7
2.4 Use of Technology in a Classroom and Framework Conceptualization	8
2.5 Case Study Approach.....	10
2.6 Expected Outcomes.....	10
Chapter 3 Research Methodology	11
3.1 Objectives	11
3.2 Aims.....	11
3.3 Research Approach and Research Instruments: Qualitative Approach	11
3.4 Research approach and Issues.....	12
3.5 Validity and Reliability	13
3.6 Data Collection, Analyses an Conceptualise Framework.....	15
3.7 Sampling	16
3.8 Qualitative Procedures	17
Chapter 4 Analysis and Discussion	18
4.1 Presenting Performance Findings.....	18
Pre-Test.....	18
Pro-Test.....	19
4.3 Performance Comparison.....	20
4.4 Observation (Engagement).....	22
4.4.1 Observation Analysis	23
4.5 Informal Conversation and Questions	26
4.6 SWOT Analysis	28
Chapter 5 Conclusion	30
5.1 Recommendations.....	31
References.....	32

Chapter 1 Introduction

1.1 Background and context to this study

“This shift is significant: mobile technology untethers learning from schools, expands opportunities for informal learning, and helps bridge in and out of-school experiences.”

(Press, 2013)

Technology is increasingly being integrated in education especially through the use of Learning Management Systems (LMSs) for blended learning and distance learning, such as video, pod-cast, chats, video conferencing and various online interactive tools modalities. The use of disruptive technology for game-based learning and evaluation is still not fully accepted. The latter results in being sceptical about the use of technology in the classroom that can be perceived as disruptive technology, for example the use of smart phones in class during an evaluation activity is considered disruptive. The perception is that this can disrupt students’ performance rather than enhance students’ performance.

This case study examines the efficacy of individual traditional evaluation compared with social technology evaluation session. To learn about the extent to which both methods influence students’ engagement and performance. This case study approaches a qualitative research method. By conducting informal interviews and develop two different tests i.e. a pre-test on traditional individual context and a pro-test on social technology context lessons being delivered through the 7Es learning cycle model.

Findings revealed that with the use of students' smart phone, a game-based evaluation influenced positively their performance and engagement when compared with individual traditional evaluation. Findings also suggest that the use of game-based evaluation minimises distractions and plagiarism thus improve performance and engagement. Other essential factors contributing to the students' motivation is that technology used through game-based learning provides instant feedback which enhance students' motivation. The social technology evaluation process revealed that students improved their problem-solving skills, eagerness to learn more and increase the ability to identify their own strengths and weaknesses. Such indicators were identified by correlating the Students Response Systems (SRS) and Game based Students Response Systems (GSRs) theories.

Chapter 2 Literature Review

How important is the role of mobile technology to overcome individualistic culture and engage students with the use of social disruptive technology?

2.1 Introduction Awareness of Gamification in Education

Literature demonstrates that despite an increasing academic interest in gamification over the last years, “teachers’ attitude towards gamification and actual use of gamification remains a neglected research area” (P.J.Marti, et al., 2016, p. 682). Blin and Munro (2008) & Sharples (2003) cited in: (Flavin, 2012, p. 103) state that “A number of researchers have anticipated that the use of technologies in learning and teaching would disrupt learning and teaching practices in higher education.”

Nevertheless, *Fry and Love 2011; Margaryan, Littlejohn, and Vojt (2011) research study* cited in: (Flavin, 2012, p. 103) posit that “*digital technologies have, in practice, largely reproduced, rather than transformed and disrupted, existing pedagogical approaches.*”

Flavin (2012) argues that the gap results in exploring ways for non-institutional technologies to contribute in the existing learning and teaching in higher education.

2.2 Social Gamification Strategy

This case study will use a gamification strategy method to provide evidence if “*technologies in learning and teaching would disrupt learning and teaching practices in higher education (Blin and Munro 2008; Sharples 2003) cited in (Flavin, 2012)*” or if “*digital technologies have, in practice, largely reproduced, rather than transformed and disrupted, existing*

pedagogical approaches (Fry and Love 2011; Margaryan, Littlejohn, and Vojt 2011) cited in (Flavin, 2012).

Considering the human and technological element as a link of communication for a gamification activity following an Expansive Learning (Engestrom, 1987) methodology deriving from Activity Learning, which was formulated by Vygotsky's (1978, 1927/1997) theory of human development. *Activity Theory argues that human actions are not a direct transmission between subject and object but are mediated through the use of (broadly defined) tools.*" (Vygotsky, 1978) (Vygotsky, 1927/1997) *cited in (Flavin, 2012, p. 103)*

This research considers the 'broadly defined tools' as smart phones and Kahoot application to augment the design of the gamification activity. The lecturer will be the mediator that will rule the gamification session.

A well-designed gamification lesson structure can enhance students' response and improve motivation. *Papastergiou (2009) and Siegel (2015) cited in (Sherlock A. Licorish, 2018, p. 2) argue that; "designing a gamification lesson structure is found to support the development of students' cognitive, motivational, emotional and social outlook"*

Literature recommends that activities that apply gamification methods are more adequate for elementary and high school students rather than university students. "Jui-Mei et al. (2011) cited in (Sherlock A. Licorish, 2018, p. 2) however states that is as an essential aspect that is to "limiting to smaller classrooms with elementary and high school students rather than university students who have to achieve specific learning outcomes through course work delivered in medium to large lectures."

In order to test out Jui-Mei et al.'s (2011) recommendation, this case study will target level 4 ICT Diploma students. Literature shows that Students Response Systems (SRSs) are frequently used to display "multiple-choice questions to offer opportunities for students to interactively answer quizzes in classrooms as part of a formative assessment regime (Sellar, 2011) cited in (Sherlock A. Licorish, 2018, p. 2). "However, can have a limited impact on engagement and motivation" (Wang, 2015) cited in (Sherlock A. Licorish, 2018, p. 2). To compensate engagement and motivation limitation, Cardwell (2007) ; Kay (2009) and LeSage (2009) argue that "Game based Students Response Systems (GSRSs) improve overall class attendance and Wang (2015) cited in (Sherlock A. Licorish, 2018) stresses that "...at an individual level, they also motivate students who may not normally participate in class discussion."

The use of GSRSs in the form of gamification requires participants to activate previous knowledge and assess their performance as they play and learn the content of a subject (Méndez and Slisko 2013; Plump and LaRosa 2017) cited in (Sherlock A. Licorish, 2018, p. 3).

2.3 Targeting Audience Attitude

In a game competitive environment, it is important to identify the learners' attitude and the design of game approach for an effective and engaging interactive lesson. The objective of this exercise is to identify a model for gamification in which students' learning styles play the most important role. The design implementation will follow Bartle's model based on students attitude to enhance engagement and motivation.

"Bartle (1996) cited in (Mena, 2012, p. 15) creates a set of two axes that reflect a wide spectrum of player motivations. In crossing these axes, four quadrants are created, and a

unique player type is associated with each quadrant.” The quadrant Figure 1 below shows Bartle’s Player Type and clearly demonstrates that vast majority of the players are socializer.



Figure 1: Bartle's Player Type

2.4 Use of Technology in a Classroom and Framework Conceptualization

This research study will compare traditional lessons versus technology gamification designed lessons, implementing the 7Es Learning Cycle model, smart phones as digital communication devices and Kahoot as a tool for gamification technology designed lessons.

Literature shows that, *“Kahoot as a tool for social learning, has been proven to foster learning and reinforce learning. The fostering and reinforcement of learning through the use of computers, smartphones and tablets have improved learners’ engagement and active participation in classrooms”* (Debbita Tan Ai Lin, 2017, p. 5).

The 7E Learning Cycle model is a learner-centered model. *“This model consists of stages of activities organized in such a way that students can master the competencies that must be achieved in learning by playing an active role”* (Fitri Mur Fatimah, 2018, p. 5).

See table below:

Table 2-7E Learning Cycle Model Lesson Plan

Component	Description	Activity
ELICIT ENGAGE	<ul style="list-style-type: none"> • Capture interest demonstrate innovation of web design. 	<ul style="list-style-type: none"> • Guided practice session • Questions and critical thinking • Unguided practice session
EXPLORE EXPLAIN	<ul style="list-style-type: none"> • Discussion of scenario • Hands on design and development 	<ul style="list-style-type: none"> • Present a Web design scenario • Discuss Previous knowledge • Investigate and apply
EXTEND ELABORATE	<ul style="list-style-type: none"> • Reviews of activities • Apply knowledge obtained 	<ul style="list-style-type: none"> • Reviewing web design practical session • Explain techniques • Notes to be created by students • Self-correction of previous practical session from explanation provided and notes taken
EVALUATE	<ul style="list-style-type: none"> • Practical Evaluation • Test Evaluation 	<ul style="list-style-type: none"> • Non guided practical session from previous knowledge • Multiple choice test (individual Traditional) • Multiple choice test (Social Technology)

A comparison between traditional and technology lessons design, was based on the 7E steps proposed by Eisenkraft (2003) cited in (Derya Orhan Göksüna, 2019, p. 16). Eisenkraft (2003), in contrast to Bybee (2003), argue that the “*prior knowledge of the students should be tested in the engagement step. In the present study, gamification was used as a formative assessment tool in the engagement step where the prior knowledge of the students is tested and in the evaluation step where whether the students learned the content is tested*” (Derya Orhan Göksüna, 2019, p. 16)

2.5 Case Study Approach

Research design based on case study is perceived as a less conservative research instrument of how to provide evidence of a theoretical study. Cavaye (1996) cited in (Sørensen, 2014, p. 66) argues that *“using case studies is, however, still perceived as a less conventional manner of testing theories in many research communities”*. Literature demonstrates that case studies in certain circumstances are still contested, however, a case study sustained with theory and testing can serve for different elements and specific research studies. Sørensen (2014, p. 66) argues that *“the research design for theory testing using case studies differs from the design of theory building using case studies because different research projects serve different purposes and follow different research paths.”*

Brinberg and McGrath (1985) cited in (Sørensen, 2014, p. 67) present a theoretical path that identifies the lead of an end product of tested hypotheses. Brinberg and McGrath (1985) state that *“Concept-driven theoretical paths focus on understanding the explanation(s) underlying a phenomenon”* (McGrath, 1985).

2.6 Expected Outcomes

Results will contribute to clarify and identify if the use of disruptive technology based on a gamification method for learning and evaluation, engage and improve students' performance or disrupts learning and teaching practice. Results will measure and compare students' performance and engagement during two different states; Individual traditional evaluation and social technology evaluation. Based on the literature review this case study will sustain

the socializing context considering the SRSs and GRS elements applying 7E learning cycle model. This case study will follow as a point of reference Brinberg and McGrath (1985) theoretical path conceptual framework to compare traditional versus technological designed lessons.

Chapter 3 Research Methodology

3.1 Objectives

Research is to compare traditional evaluation lesson design compared to technology evaluation lesson design. The study compares students' performance and engagement during a traditional individual evaluation assessment and during a social technology evaluation assessment. Providing evidence of efficacy between the two pedagogical methods.

3.2 Aims

This case study validates if disruptive technology can effectively overcome traditional lessons and assessments and is to clarify if disruptive technology can be an effective learning tool in a social context evaluation design.

3.3 Research Approach and Research Instruments: Qualitative Approach

The research is based on a case study model. According to Yin (2003) cited in (Jack, 2008, p. 545) *“a case study design should be considered when: (a) the focus of the study is to answer “how” and “why” questions; (b) you cannot manipulate the behaviour of those involved in the study; (c) you want to cover contextual conditions because you believe they are relevant to the phenomenon under study; or (d) the boundaries are not clear between the phenomenon and context.”*

This type of case study reflects most of the considerations stated by Yin (2003) supporting the case study approach for this research. Data analysis are defined in a descriptive method to “describe an intervention or phenomenon and the real-life context in which it occurred (Yin, 2003 cited in: (Jack, 2008, p. 548)”

3. 4 Research approach and Issues

The sensitivity and integrity of the researcher can be one of the main weaknesses for a case study since the researcher is the primary instrument of data collection. Is what Guba and Lincoln (1981, p.378 cited in University of Stanford, 2018) refer to as “*unusual problems of ethics. An unethical case writer could so select from among available data that virtually anything he wished could be illustrated*”. Both the readers of case studies and the authors themselves need to be aware of biases that can affect the final product (Stanford, 2018).”

To counterbalance this weakness three different research instruments are used; theory tests, observation and informal interviews. For instance, “*Eisenhardt (1989) cited in (Sørensen, 2014) specifies three such goals: description, theory testing, and theory generation.*”

This case study refers to (Eckstein, 1975; Giorgi, 1986a) process model. A descriptive phase, a theoretical-heuristic or theory development phase, and a theory-testing phase (Edwards, 1998) .

Table 1: Categories of Case Study Work: adapted from (Edwards, 1998)

Categories of case study work	
Descriptive Phase	Exploratory-descriptive work (Observation)
Theoretical-heuristic or theory development Phase	Statements of correlational relationship Propositions about processes (Informal Conversations)
Theory-testing phase	Testing propositions within grounded theory (individual evaluation social evaluation)

3.5 Validity and Reliability

Neville (2007, p.11) defines research approaches as a grounded theory with the aim “.... *that is then, to approach research with no preconceived ideas about what might be discovered or learned*”. The aim of this case study is not to predetermine a phenomenon but to gather data deriving from students’ responses and theoretical test is to analyse the efficacy of disruptive technology in a classroom. According to Neville (2007), Silverman, (1993) summarises the main features and stages of grounded theory are to develop categories deriving from the data related to students’ responses through informal conversations/questions, observations and theoretical tests. This process will be represented in two different contexts; [1] individualistic traditional context and [2] social technological context through factors which may have a considerable impact on students’ performance and engagement during the evaluation sessions.

Maxwell, echoing Mishler (1990) cited in Cohen & Manion, (2005, p.138), suggests that 'understanding' is a more suitable term than 'validity' in qualitative research". Data gathering through observation and informal conversations/questions will strengthen the validation of this research by identifying students' perception with regards to social disruptive technology in education, thus understanding students and their perceptions in relation of evaluation methods.

3.6 Data Collection, Analyses an Conceptualise Framework

The conceptual framework used in this research study is based on Brinberg and McGrath (1985) theoretical path.

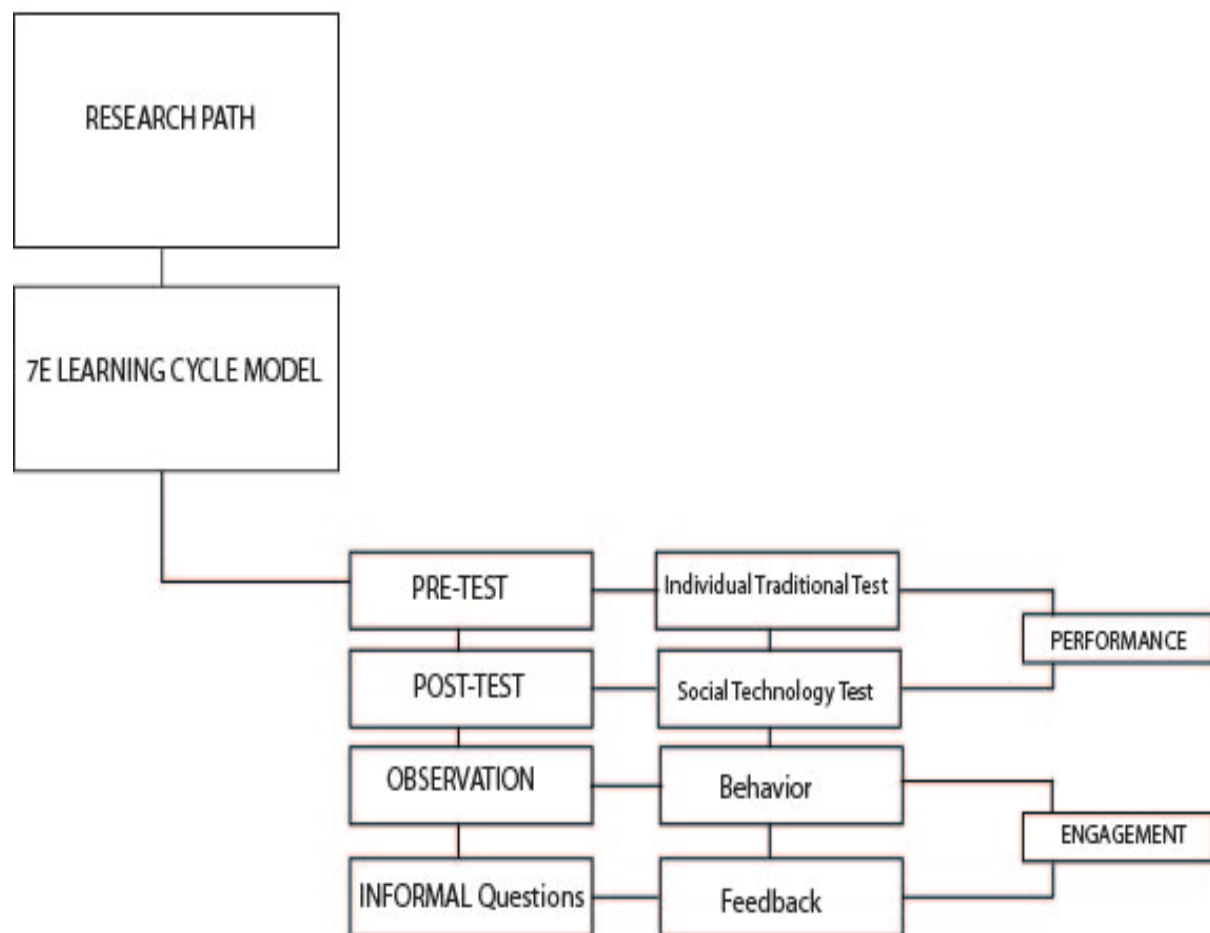


Figure 2: Adapted from Brinberg and McGrath (1985) theoretical path.

In this study students are given two different tests, a pre-test to find out students' individual abilities during a theoretical individual test and a post-test to find out students' social technology abilities during a social technology theoretical test. Before being given a web, development lesson based on 7E learning cycle model.

Data collection techniques through observation will be used during pre-test and post-test to determine students' engagement response during and after the evaluation session activities *(Referring to table 1: Categories of Case Study Work - Descriptive Phase)*.

Students' knowledge and performance are analysed from the results of the pre-test and post-test. Using a comparison of the results obtained in relation to the subject concerned, in this case *"HTML and CSS properties and elements"*.

(Referring to table 1: Categories of Case Study Work - Theory-testing phase)

Informal conversations/questions aim to determine students' response to the use of disruptive technology as an evaluation tool and the implementation game-based activities

(Referring to table 1: Categories of Case Study Work - Theoretical-heuristic or theory development Phase Statements of correlational relationship Propositions about processes)

3.7 Sampling

A class of students is selected randomly with a population of 13 students males exceeding females, 10 males and 3 females, average age 17 years. All students are reading 1st year Diploma in IT and have same level of skills and knowledge in relation to the HTML and CSS development unit. There are no students with learning difficulties or different abilities among the participants.

3.8 Qualitative Procedures

- A full identity background of the researcher will be presented to the director of MCAST ICT Institute.
- Information sheet will be presented to the director of MCAST ICT Institute for approval.
- The director will receive a draft copy of the theoretical tests.
- The above qualitative ethical procedures are in accordance with the EU ethical guidelines Commission, (2007), ethical considerations vis-à-vis MCAST code of practice presented by MCAST. (MCAST, 2019).

Chapter 4 Analysis and Discussion

The following results examine students' performance and engagement related to learning and evaluation, in two different contexts, individual traditional evaluation and social technology evaluation. This Analysis helps to clarify and understand the efficacy of the two methods when compared to each other. The description of this analysis compares and defines the level of responsiveness in relation to students' engagement and performance. Before the evaluation test, lessons were delivered based on 7E learning cycle model.

4.1 Presenting Performance Findings

Pre-Test

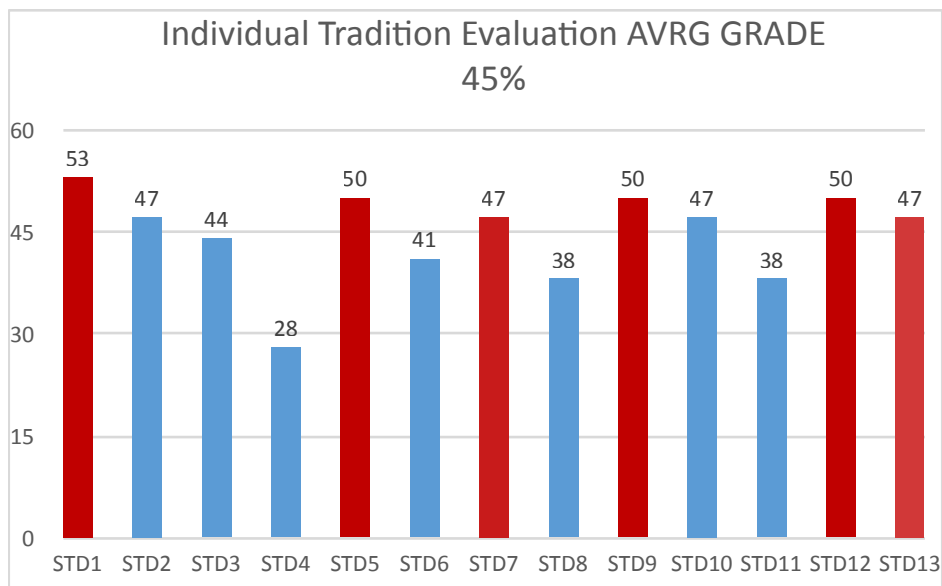


Figure 3 Individual Evaluation

Measuring Individual traditional evaluation: Students were given an online multiple-choice question test, related to previous lessons based on the knowledge taught with regards to HTML and CSS “*Introduction to Web Design and Development*”. The test took place in a traditional setup environment, each student using a computer assisted by the lecturer/teacher

for any difficulties with regards to online connection and questions clarifications. Students had to answer and submit the test in 1^{1/2} hrs. Results demonstrate an average grade of 45%. Only four students managed to pass the test with the highest grade of 53% and lowest grade of 28%. Results show a discrete performance from the students. Before being given lessons designed on 7E learning cycle model with regards to HTML and CSS “*Introduction to Web Design and Development*”. It is to note that students during individual test where not allowed to seek help from their peers.

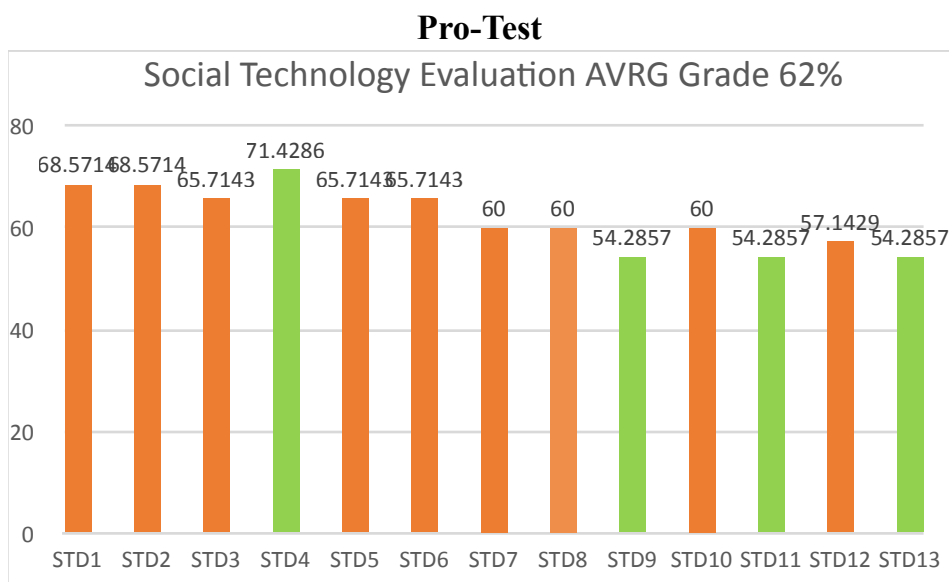


Figure 4-Social Technology Evaluation

4.2 Measuring social technology game-based evaluation: A game-based quiz learning activity was created to evaluate students based on the knowledge taught with regards to HTML and CSS “*Introduction to Web Design and Development*”. The activity took place the day after the individual traditional evaluation session was completed. Different questions were provided related to the subject taught. The quiz was structured with multiple choice questions. Students were asked to use their smart phones to interact and choose the correct answer. Students had 20 seconds to choose each correct answer and the total time of the

activity took 1½ hrs. Results demonstrate an average grade of 62%. All students managed to obtain a passing grade with the highest grade being 71% and lowest grade being of 54%. Results show an increase in performance. Before being given lessons designed on 7E learning cycle model with regards to HTML and CSS “Introduction to Web Design and Development”. It is to note that the test was set in social setup environment and students could interact between each other.

4.3 Performance Comparison

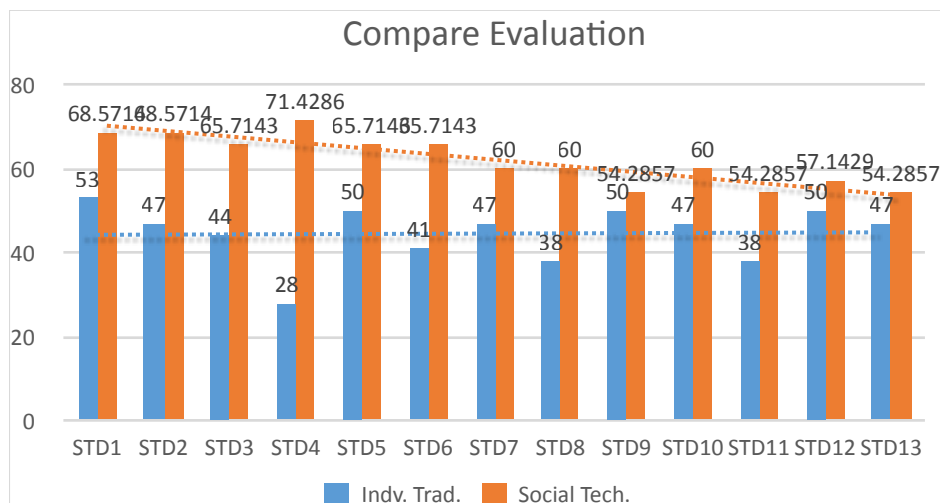


Figure 5- Comparison Social Technology vs Individual traditional

Comparing students results, analysis demonstrate that students’ performance increased during game-based social technology evaluation session with a difference of plus 17% in average grade. Analysis results support Jui-Mei et al.’s (2011) cited in (Sherlock A. Licorish, 2018) argument that “gamification lesson structure is found to support the development of students’ cognitive, motivational, emotional and social outlook.” Noticing that student number 4, obtained the lowest grade during the traditional individual test whilst obtaining the highest

grade when completing the social technology test. Indirectly supporting Wang's (2015) cited in (Sherlock A. Licorish, 2018) argument stating that at an "*individual level, they also motivate students who may not normally participate in class discussion.*" Proving that lack of engagement during the learning and or evaluation process can lead to reduced students' performance.

4.4 Observation (Engagement)

Table 6 observation form

1. Students are engaged	1 -2 -3 -4 -5 (1 lowest 5 highest) = 5
2. Promotes positive attitude and performance	1 -2 -3 -4 -5 (1 lowest 5 highest) = 5
3. Maintains appropriate classroom discipline	1 -2 -3 -4 -5 (1 lowest 5 highest) = 4
4. Shows evidence of positive student teacher interaction.	1 -2 -3 -4 -5 (1 lowest 5 highest) = 5
5. Technology being utilized is relevant to the purpose and importance of the lesson	1 -2 -3 -4 -5 (1 lowest 5 highest) = 5
6. Accommodates individual differences and learning styles through instructional techniques utilized	1 -2 -3 -4 -5 (1 lowest 5 highest) = 4
7. Demonstrates enthusiasm learning	1 -2 -3 -4 -5 (1 lowest 5 highest) = 5

The themes listed in Table 6 are further analysed and discussed in **Section 4.4.1**

4.4.1 Observation Analysis

1. Students are engaged.

Students felt very excited about the game-based evaluation session via Kahoot. During this session students felt happy and enthusiastic, eager to answer correctly as quickly as possible to obtain a place on the podium. It was observed that the game-based learning element in education it is equally important to the work base learning element, because both share a common factor, aiming to achieve specific goals in presence of obstacles in a logical structure. Game base elements used during the test session correlates with work-based learning targets which are; aims, objectives, rules, social interaction and feedback, to support engagement and performance.

2. Promotes positive attitude and performance.

Results show that the response of students for social technology session is more positively accepted than the traditional individual session, in this case with regards to the evaluation factor. During the individual test students focused on a defined objective executing the task, given the priority to accumulate enough marks to pass the test. During social technology test students were inspired to achieve points gaining a sense of reward for their effort which goes beyond passing the test. Sustaining Papastergiou and Siegel argument that; “*designing a gamification lesson structure is found to support the development of students’ cognitive, motivational, emotional and social outlook.*” It was observed that students’ motivational behaviour demonstrated a positive competitive attitude as well as a social outlook after the test was completed, discussing results in relation to their strengths and weaknesses with their peers.

This demonstrates that combining the principles of gamification theories generating a

competitive, social and collaborative environment with the use of disruptive technologies, students perform better when compared to individual traditional methodology.

3. Maintains appropriate classroom discipline

The use of technology related to classroom management can offer challenges due to the overwhelming behavior of the students. However once introducing the game and explaining the objectives and aims of the session, overwhelming behavior changes into an engagement behavior. At this stage the arbitrate role of the lecturer/teacher is crucial. If this role is not properly interpreted students' engagement can turn into a lack of motivation and classroom disorder. On the other hand, if the arbitrate role is applied appropriately, research showed that game-based evaluation produces a reciprocal increase in motivation.

4. Shows evidence of positive student teacher interaction.

The participation and interaction of the lecturer during the lesson is crucial so to build up an active and fun learning atmosphere. The latter correlates with Vygotsky's (1978, 1927/1997) theory of Human Development. Vygotsky's (1978, 1927/1997) Activity Theory posits *"human actions are not a direct transmission between subject and object but are mediated through the use of (broadly defined) tools"*. The role of the lecturer turns into a mediator role regulating the use of technology tools as well as the commentator of the game. This case study reveals that the lecturer took the role of mediator and commentator and further developed the role of the person who stimulated a positive competitiveness environment that provoked a sense of engagement.

5. Accommodates individual differences and learning styles through instructional techniques utilized.

The observation revealed that the implementation of 7E learning cycle model supported social technology evaluation that is linked with students' Recognition of Prior Learning (RPL) based on individuals' cognitive structure. Game based activity demonstrates that corresponds with the 7Es Learning Cycle model stages, primarily in the Engagement and Explore stages. By blending 7Es learning cycle model and social technology, the evaluation shows that most of the students approached a problem-solving solution to answer the correct question. This outcome distinguishes itself from traditional education.

6. Technology being utilized is relevant to the purpose and importance of the lesson

Students were asked to make use of their smart phones to answer the questions provided. All students were able to access Kahoot website with no difficulties, signing in and entering the pin number to start the quiz game. Exploring the use of mobile phones during the game-based session, showed that smart phones can be an exceptional learning technology tool, demonstrating a positive impact with regards to students' performance. This is proved through the results obtained from the game-based evaluation session when compared with the individual traditional session. Refer to Figure 4 Comparison Social Technology vs Individual Traditional. It is noted that using technology as a learning/evaluation tool is an efficient way to analyse students' performance. Students' evaluation data incorporating average marks, highest grade, lower grade, timing, level of difficulty and other various indicators are recoded in a database in which data can be analysed and accessed in real-time.

7. Demonstrates enthusiasm learning

Observations were made after completing social technology evaluation session. Students showed interest in their performance reflecting on their weaknesses and strengths, discussing

grades with their peers and comparing their knowledge by exchanging ideas. Game based evaluation approached created a more engaging active participation even among students that usually do not participate. Test results demonstrate that game-based evaluation increase eagerness in learning when compared with traditional evaluation.

4.5 Informal Conversation and Questions

When comparing social technology evaluation with an individual traditional evaluation which one do you prefer and why?

Students commented that they were more motivated during the game-based session. They highlighted that are willing to learn and prepare more for such game-based evaluation sessions.

“If we are informed beforehand that more Kahoot sessions will be done we do our utmost to focus on the lesson and prepare ourselves for the Kahoot activity” (Students 13, 11, 8).

Students also put forward the entertaining element of the session expressing their willingness suggesting that such a test should be applied also in Time Constrained Assignments (TCAs). Most of the students agree that this was a unique experience, enjoyable, engaging and more interactive when compared to other evaluation/learning sessions where they are supposed not to talk during the test.

“During tests usually we are not supposed to talk, use our mobile phones or computers because maybe we can copy from one each other. With Kahoot is the opposite we can talk use computers and mobile phones and because of the competition, everyone tries not to reveal the correct answer to win points” (Students 10, 11, 1, 2, 5 and 13).

Students also discussed the element of competition as stimulation to win the game, however, one of the students expressed his doubts about the use of Kahoot and the competitiveness

environment. The student stated that he/she didn't have enough time to understand and answer correctly the question due to the pressure of time and the competition excitement.

"I think that at a certain time I am only trying to win and not trying to answer the correct question. I just try to select the correct question at random to answer in time" (Students 12).

Twelve out of thirteen participants stated that a game-based session via Kahoot was an enjoyable learning experience and they look forward to more Kahoot sessions. All twelve students described Kahoot experience as a positive learning experience.

"When you read the question, you need to reason it out you have to think logically and quickly to answer correctly, this also served us as a revision lesson" (Student 4).

What are the disadvantages of a game-based evaluation session via Kahoot?

Students commented on three main aspects in relation to the pros and cons of game-based evaluation/learning; time management, not able to recheck answers and not able to answer questions in their preferred order. During the traditional individual session, students could decide their own strategy on how to answer questions, irrelevant to the numerical order of the questions. Students had the opportunity to answer first the questions they knew and after answer the challenging questions, gaining time.

"When we had the usual test first, I answered the questions I knew after I tackled the difficult questions. At least I managed to answer quite a few questions and had some time left to answer the rest of questions" (Students 5, 12, 13).

Ten out of thirteen students stated that through Kahoot they didn't have the possibility to go back and recheck the answers before submitting the test. Students commonly felt that this could be a concern when it comes to a real evaluation test.

“When you are taking the test on your own you can see all the questions and answers. Before submitting my work, I can go through all the questions and recheck accordingly. With Kahoot, I have less time to think and I cannot recheck my work I have to answer in a limited amount of time per question, however, it is still more fun than the usual test” (Student 6).

Students reported that during the Kahoot session there is no time management and that this can be an advantage but at the same time also a disadvantage. The advantage mentioned was about an enjoyable challenging experience that stimulates activity triggered positive attention. Comments with regards to disadvantages were time pressure and not enough time to concentrate.

“The games-based session was enjoyable, however, when I had to know that there are marks involved, I was excited and felt pressured because I was worried not to answer correctly at the right time even though I have improved in my markings” (Student 12).

4.6 SWOT Analysis

The following SWOT analysis echoes what has been observed during the social technology evaluation session and issues that have been encountered and may be encountered during a social technology evaluation session.

Internal Strengths

Game-based evaluation/learning creates a dynamic environment among students that leads to better performance and improves students’ engagement. Students are more eager and show interest to learn. Technology activities provide immediate feedback enabling the lecturer/teacher to examine students’ performance almost in real-time. Game-based sessions provide enough evidence that there is an increase of participation from students who tend to be

introvert. Game-based sessions foster team building encouraging collaboration between students as well as improves students' attendance.

Internal Weaknesses

Most of the technology activities require internet connection if an internet connection is not available or slow this might create issues. It takes an extensive time of preparation for a lecturer/teacher to create a quiz activity. Students can become overwhelmed and negatively excited due to the competitive element. Students tend to feel pressured and react negatively if the session is not appropriately planned.

Opportunities

In the era of Education 4.0, the use of technology provides opportunity to lecturers/teachers to exploit existent technologies such as smartphones, tablets computers, and laptops to enhance motivation and engagement for meaningful learning. Lecturers/teachers will experience a and implement new pedagogical approach using technology, for example: revising topics by approaching a dynamic technological environment. The game-based learning method will support the integration of technology in schools and prepare for future education including distance learning.

Threats

Some schools may not accept technology as a learning tool and still perceive smartphones or social technology as a disruptive technology and therefore they will prohibit the use of a smartphone in the classroom. Game-based sessions may create disorders in a classroom if not thoroughly planned and managed appropriately. Technology activities need electronic resources. Lack of electronic resources will generate obstacles for such activities.

Chapter 5 Conclusion

The findings of this study show that social technology evaluation, improves students' performance and influences their learning motivation and engagement. Jui-Mei et al.'s (2011) argument supports this study when stating that "*game-based learning is found to support the development of students' cognitive, motivational, emotional and social outlook.*"

Students' impact was positive, and they accepted the new way of learning and evaluation method. Students also noted that it drives their interest in learning and be attentive during the lessons. However, few students experienced competitive pressure even though confirming that it was a new enjoyable way of learning. Furthermore, social technology learning and evaluation enables students to share and exchange ideas.

The lecturers experience during a game-based activity is crucial with regards to class management. The lecturer's role during a game-based activity changes into a mediator role and need to adapt according to students' response, control their overwhelming behaviour and set clear rules. With the use of technology lecturers will be able to give feedback in real-time containing students' enthusiasm in a dynamic environment till the end of the lesson. This research study adopted Kahoot as a technology learning tool to produce a game-based learning /evaluation session. There are myriad of technological tools for game-based techniques that can be implemented including learning Management Systems (LMSs), for example MOODLE can be used to create game-based activities providing real-time feedback and issue badges as a reward. Other tools that can be implemented for game-based learning/ evaluation approach are FlipQuiz, Duolingo, Ribbon Hero, ClassDojo and more.

Data gathered from observations, tests results, and informal interviews/conversations provides enough evidence that the use of disruptive technology as a learning tool does not disturb students' performance if the use of disruptive technology is implemented wisely. Hence data analysis demonstrates an increase in engagement and performance contradicting Blin and Munro (2008) & Sharples (2003) cited in (Flavin, 2012) argument that states "*A number of researchers have anticipated that the use of technologies in learning and teaching would disrupt learning and teaching practices in higher education*"

This study supports different ways of evaluation making assessments sessions produced in a fun learning environment that contributes in increasing students' performance and engagement. Further research may produce strategic gamification developments applying various technologies through the use of a Learning Management System (LMS) in a social context at the extent of the students' response.

5.1 Recommendations

It is recommended to make use of technology wisely and avoid technology to take over. Employ other gamification samples in various contexts by applying different game-based learning tools. Developing a gamification session in a Vocational Education and Training (VET) environment it is important to realise that stakeholders, students and lecturers work together for the development of such teaching and learning game-based pedagogical structure. Therefore, this study establishes the need of further research that is to study the impact of social technological factors within the educational and industry sector to reflect upon the future of teaching, learning and working in an era of social technology nexus with future jobs.

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