RELATIONSHIP BETWEEN STUDENTS' INTEREST IN USING GAMIFICATION AND THEIR OPINION TOWARDS GAMIFIED DIGITAL LEARNING ENVIRONMENT

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ABSTRACT

The influences of digital games in students' daily activities are prominent. The combination of entertainment and education encouraged the use of gamification in educational activities. In order to effectively gamify learning objects, educators need to understand the students' perspective of their learning environment. Thus, the first section of the paper, introduces the concept of learning environment, learning objects and gamification. This is followed with a case study done to investigate the students' interest and opinions towards their learning environment. A multivariate regression was conducted to investigate this relationship. Finally, the paper concludes with a paragraph that proposes the incorporation of students' interest within the need analysis process of the instructional design, and also the need for future study to venture into other predictors that could predict the students' opinion towards the development of an effectively gamified learning environment.

1 Introduction

The aim of the educational system in Malaysia is to modernise and transform the education sector towards 21st century learning (Arumugam, 2016). In order to achieve this aim, higher education institution (HEI) has put in their effort and investment in digital learning environment to overcome learning challenges. However, the optimum use of the learning environment depends entirely on the students. Today's students grow up with digital devices and the Internet. Hence, their behaviours differ from those of previous generations. Therefore, the challenges that educational institutions, practitioners and designers face are to recognize these differences and to develop educational offerings appropriate for their learning patterns, characteristics, and behaviours. One new wave of such educational offering comes in the form of gamification. However, an empirical study of gamification usage in digital learning environment is very limited especially in the Malaysian HEI's setting. Thus, this study addresses gaps of previous studies.

2 Literature Review

2.1 Learning Environment

The social cognitive view assumed the environment as the social and physical factors external to the person where the development of beliefs and cognitive competencies takes place and afterward being improved either by the social influences or by the physical structures embedded in the environment (Bandura, 2001; Glanz, Rimer, & Lewis, 2002). Additionally, this means that learning environments are situated places where students and educators meet to participate in learning

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activities. For this reason, according to Fraser & Fisher (1982), the environment created for learning is important.

The use of digital learning environment offers new possibilities such as shared inter-organisational resources between the participants, offers easier access to technical expertise, scalability, and economic access to applications at any time and from anyplace. The Malaysian Education Blueprint 2010-2015 (Higher Education) has rightfully placed globalized online learning as enablers for the higher education ecosystem to ensure continued excellence in the higher education system. Furthermore, *Dasar E-Pembelajaran Negara* (DePAN, 2011) also envisioned all higher education institutions to offer 100% connectivity with open access Web 2.0 environment starting from 2015. Consequently, this showed that institutions of higher education in Malaysia were currently attempting to provide a more comprehensive and effective academic environment by incorporating e-learning.

2.2 Learning Objects

One of the most important aspects of learning environment is the contents involved or the learning objects. Basically, learning objects are defined as interactive web-based tools that support the learning of specific concepts by enhancing, amplifying, and/or guiding the cognitive processes of learners (Kay & Knaack, 2009). Thus, a learning object is also type of knowledge object. By definition, objects are commonly self-contained and re-usable. In order to be re-usable, its content and presentation are separated. In addition, Cohen & Nycz (2005) mentioned learning objects as types of knowledge objects because their goal is to provide knowledge in support of an associated learning objective.

2.3 Gamification

In order to define the term gamification, there is a need to de-root the word “game”. A game is denoted as a system in which players engage in an abstract challenges defined by rules, interactivity, and feedback and results in a quantifiable outcome and often elicits an emotional reaction (Koster, 2013). According to Juul (2011), a game is denoted as (a) a rule-based formal system with (b) a variable and measurable outcome, where (c) different outcomes are assigned different values, (d) the player uses effort to influence the outcome, (e) the player feels attached to the outcome, and finally (f) the consequences of the activity are optional and negotiable.

Generally, gamification is the approach the uses game features into non-game activities to motivate or influence users’ behavior. Among the most popular expressions of this paradigm is the trend of ‘gami- fication’, which emerged in 2008 as a behavioural marketing strategy that makes use of surface level game features such as badges, achievements or rewards as an ‘incentive’ for consumer loyalty (Bogost, 2011). Gamification in the educational environment normally uses elements such as points, badges, or progress bars to engage students in the learning process. This engagement is said to also increase students’ motivation.

3. Aim of Study

The aims of this study were twofold:

1. To investigate the relationship between students' opinion with their interest regarding the gamification of their learning objects.

2. To predict the contribution of students' interest coupled with demographic profile regarding their opinion on gamification of their learning objects.

4. Methods

4.1. Participants

Participants were 124 students (65.3% males and 34.7% females) who voluntarily participated in this study at a university college in Selangor. These students were purposely selected because of two reasons; first they were students of a technical faculty that had more courses and subjects that deal with practical-based and laboratory activities. The second reason was that the students indicated that they had completed at least 60 credit hours of learning and had been using gamifaction beforehand. Therefore, they have the experience in providing both their interest and also their opinions on their exposure to gamification. Ideally, responses from a purposive sample are suitable in developing research hypotheses and for identifying issues (Fricker and Schonlau, 2002).

4.2. Materials and Procedure

Students' opinions and interest regarding gamification of their learning objects were evaluated using a questionnaire adopted and enhanced from Mohamed, Jan, & Daud (2010). The questionnaire comprised of three sections namely: demographic, opinions, and interest. In total, apart from the demographic section, the questionnaire consists of 15 close-ended questions. All items (except for the demographic section) will be measured on a Likert scale from 1 (strongly disagree) to 5 (strongly agree).

First, the items were analysed using factor analysis. The final questionnaire retains 4 items for the opinion section and 6 items from the interest section which explained 60.51% (opinion section) and 56.07% (interest section) of total variances. Before conducting the multivariate regression, assumptions of linearity, normality, homoscedasticity, and multicollinearity was examined. The results suggest that all the assumption was met in this study. Next, the Pearson Product Moment Correlation and Multiple Regressions were conducted to analyse the data. The following table shows the result of assessment of items for the opinion and interest sections.

Table.1. Assessment of items

Variables (Item)	Mean	Standard Deviation	Cronbach Alpha
Opinion(4)	3.33	0.67	0.77
Interest(6)	3.17	0.51	0.84

4.3. Results

The first aim of the research was to find out the relationship between students' opinion with their interest regarding the gamification of their learning objects. The result is presented in Table 2.

Table 2. Correlation matrix of opinion and interest

Variables	Opinion	Interest
Opinion	-	0.498(**)
Interest	0.498(**)	-

** Significant (*p<0.01*)

Opinion significantly and positively correlated with interest (*r=0.498, p<0.01)*. According to Ratner (2009), the result indicated a moderate positive linear relationship. The second aim of the research was to predict the contribution of students' interest in using gamification coupled with several demographic profiles (frequency of using gamification in terms of hours per day, and frequency of using gamification in terms of occurrences per month) regarding their opinion on the gamification of their learning environment. The result is presented in Table 3.

Table 3. Coefficient result of multiple regression

Model	Unstandardized Beta	Sig
Constant	2.086	.000
Interest	0.432	.000
Frequency (hours/day)	0.120	.004
Frequency (occurrences/month)	-0.214	.001

** Dependent Variable: Opinion

A standard multiple regression analysis was conducted to evaluate how well students' interest in using gamification, their frequency of using gamification in terms of hours per day, and their frequency of using gamification in terms of occurrences per month predicted their opinion towards gamified digital learning environment. The linear combination of the aforementioned predictors was significantly related to opinion, F ((3, 11) = 28.19, p < .001). The multiple correlation coefficient was .65, indicating that approximately 65% of the variance of the students' opinion can be accounted for by the linear combination of the predictors. The regression equation for predicting the students' opinion was: Predicted opinion = 0.43 x interest + 0.12 x frequency of using gamification in terms of hours per day -0.22 x frequency of using gamification in terms of occurrences per month + 2.09.

The role of interest is evident in the study. However the frequency presented a new view in understanding the students' opinion. The results portray the evidence of limited engagement between both students and the gamified learning object. Over a certain period of time, the students' became acquainted with the gamification process. Eventually, the 'over' acquaintance scenario decreases the students' opinion towards the overall gamified digital learning environment.

5. Conclusion

The study found that the students' opinion towards gamified digital learning environment is positively predicted by the students' interest and frequency of gamification use. Thus, educational institutions, practitioners and designers need to consider and adapt the current students' overall

interest in making a meaningful gamified experience. Incorporating the students' interest in the need analysis process of the instructional design will ensure the students' preference is covered and will cater towards providing a personalized learning process. In addition, future study should also venture into other predictors that could predict the students' opinion towards gamified learning environment such as learning styles, and personality. Consequently, the study points out that gamification of learning objects should not only provide the students with individual challenges of the actual learning, but also contribute in developing a long term engagement with the learning objects which eventually will increase students' learning ability.

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