WHY DO STUDENTS ENGAGE IN GAMIFICATION? AN EXPLORATORY STUDY USING MEANS-END CHAINS

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ABSTRACT

Gamification is one of the educational techniques that increase the motivation and engagement of learners. With the expansion of gamification in higher education, especially in the context of COVID 19 emergence, it is an increased need to know about student engagement in such behavior. While many topics of gamification are growing at a rapid pace, the students' personal values were not uncovered in related literature. The current study sought to address this gap by investigating a set of students' personal values when they participate in gamification. Based on interview 69 students by the laddering technique, six personal values that drive students to participate in gamification are explored in the current study, such as Social Recognition, Exciting life, Sense of accomplishment, Sense of belongingness, Self Enhancement, and Self-expression. The findings suggest that educators and teachers focus on investigating how personal values can be used to motivate learners, improve their skills, and maximize learning by gamification.

Keywords: *Gamification; personal value; student; means-end chain; higher education.*

1. INTRODUCTION

The speedy development of new technologies gives great potential in enhancing the educational process. One of the popular and entertaining methods in higher education nowadays is gamification, which ables students to learn through a fun game in an easier approach. Today, with the additional pressure caused by the COVID-19 pandemic, educators around the globe are trying to get students interested in online researches [1]. Gamification seems to be the solution they have been looking for. It provides an effective tool to motivate and engage in the educational context.

Gamification is the use of games in non-game contexts with the aim to increase user engagement and experience with a certain system. Gamification has previously been investigated in marketing and business, but its use in the educational context has not yet been considered appropriately. Previous studies mainly focused on the design of game elements [2-6], the pros và cons of gamification [7-10], the effective gamification strategies [11, 12]. Although the knowledge of gamification has been developed, there has not been researched focusing on the key values that students expect to achieve when using gamification.

Scholars stated that an output of values and attitudes is individual behavior. According to Rokeach [13] stated that the values decide behavior. Homer & Kahle [14] suggested that personal values explain the reasoning of attitudes that guide specific behavior. Rohanm [15] believed that values cause behavior. Therefore, to understand why students engage in gamification, it is needed to explore the personal values of students for using gamification.

Previous studies have also explored personal values in various fields such as travel and leisure [16], business ethics [17], management [18], and education [19, 20]. But in the gamification context, no personal values studies have been performed. Hence, the aim of the study is to fill this gap. The current study highlights that a means-end chain theory assists an appropriate method that helps to explore the personal values that drive learners to participate in gamification in higher education. The study provides a better understanding of how students satisfy their personal values when they use gamification. The current study also has important practical implications, not only to educators but also to the teachers who can learn about new ways to maximizing learning in higher education.

2. LITERATURE REVIEW

2.1 Gamification in education

According to Lee & Hammer [21], there is a fix between education and gamification. Gamification

in the educational context can be understood as an approach of impacting positively attitudes of students towards the certain courses and drawing their focus and motives by the transferring gamification structure from a fun game to the educational processes. It is the utilize game's elements and mechanics in non-game contexts with the aim of engaging people and solving problems [22, 23]. Hence, Simões et al. [24] defined the education's gamification as the use of game elements in a learning context.

The reasoning behind employing game design elements in non-game contexts such as education is that essential psychological suggests elicited by games can support to increase individuals' motive, participation, and achievement in non-gaming activities. In education, it has been stated that through gamification, students could be motivated to learn in new ways or enjoy otherwise tedious tasks [3]. Adams et al. [6] presumed that the elements that make games interesting along with the essence of games are intrinsically motivated so applying game elements and mechanics to the classroom may increase students' intrinsic motivation to learn [3].

Gamification of the educational process positively affects student achievement [25 - 29], attitudes [30, 31], and motivation [32 - 34] toward lessons. On a theoretical foundation, gamification would positively impact the educational procedures, but the students will determine whether it activates in practice. In relation to this question, the current study aimed to explore how personal values are perceived by the students for the gamification of the educational process, and whether the students' personal values are unified around a common ground for using gamification.

2.2 Personal Value

Human nature concerns a set of universal fundamental needs, with the individual differences in these needs, show to the uniqueness of individuals, and they are seen as personal values [35]. There are various other viewpoints of personal values. For example, in terms of anthropology, Thomas & Zaraniecki [36] define personal values as abstract goals and social elements, which evoke individuals' responses. Sociology interprets the value as a concept, which is constructed of clusters of modes of conduct in society. Psychologists define a personal value as an essential held, maintaining belief, which leads to actions and perception and is trans-situational [13]. Schwartz

[37] states that personal values refer to desirable trans-situational purposes with a hierarchy of importance that serves as leading standards and principles in an individual's life. The implication of these definitions of personal values as goals is that they serve the interests and needs of individuals, they motivate behavioral direction and stimulate emotional intensity, and they act as standards for deciding and justifying action [38]. In sum, personal values perform as important motivational drivers as they act as a guiding standard in individuals' lives [38], and hence an underlying determinant of a person's attitude and behavior [39, 13]. Although the general agreement that personal values have a strong effect on individual behavior, it is a field that has not yet been examined in the current gamification literature, especially higher education context.

2.3 Means-end chain theory and laddering technique

Means-end chain (MEC) analysis is a qualitative method for examining individuals' general cognitive structures in decision [40]. The method originated from the personal psychology of constructs by Kelly [41], who claimed that an individual makes sense of the world by classifying its aspects into a set of hierarchically arranged levels, of which the most abstract ones stimulate behavior and the more specific ones correspond to behavioral options. Additionally, the MEC method is also related to Expectancy Value Theory [42, 43], which offers that person's attitude towards and assessment of an offer base on the expected performance of that offer regarding the underlying values. Therefore, the study suggests that MEC theory has related and possible application in gamification research. It would able researchers to insight the uncovered personal values in the students' gamification using decision making.

According to scholars [44, 45], the most ordinarily used technique to evolve information within the MEC method is laddering that focuses on evoking respondents' means-end structures by examining for a number of ladders, feedbacks with an increasing level of abstraction. With the expressed goal of inducing sets of connections between the value, consequence, and attribute, these discriminations at the abstraction levels give more personally related ways in which objects are grouped and categorized. In general, the means-end chain and the laddering technique appear suitable for examining how students link the gamification attribute to consequences and underlying values.

3.   METHODOLOGY

3.1. Sampling

The current study used a convenience sample because of its exploratory nature. A convenience sample are employed in the laddering technique [46]. Three criteria are that respondents (1) are students, (2) should be willing to answer, and (3) they understand the gamification well.

According to Reynolds & Gutman [44], a number of participants between 50 to 60 offer a suitable sample to participate in deep-interview. Thus, the sample of the current study were 69 Vietnam students in university, including age between 18 and 22 years, and particiapted in gamification of any courses in the recent six months.

3.2. Data Collection

The current study employs a laddering technique to develop means-end chains. According to Reynolds & Gutman [44], this technique enables researchers to identify of the connections between elements of attributes, consequences, and values. Before the data collection, the study gives 7 pilot interviews to examine the interview instruction. With an aim to ensure that participants can ease or comfortable during their communications, the interviews have been organized at locations that students have offered in Vietnam.

Each student participated face to face interview for about forty-five minutes. They were discussed with trained researchers. After the demographical data is gathered, the researcher directly interviewed students to determine the most considerable attributes when they use gamification. Next, students are asked to know why they think that certain attributes are important. Klenosky & Saunders [47] suggest that this process only stops when the respondent reveals a personal value and can not give any further answer.

3.3. Data Analysis

Analyzing content was implemented with instructing of the previous related researches [44, 48]. All concepts are coded and arranged into attributes, consequences, or values. The data analysis process is described as following: (1) Content analysis; (2) (2) Summary of links in content-coding; (3) Generating a table of all paired connections, called an implication matrix ; (4)

Developing a hierarchical value map which represents the key conclusion [49, 50].

4.   RESULTS

4.1 Content Analysis

In examining a large number of answers to the triadic classifying and laddering works, the first stage was to perform a careful content analysis of all noted concepts. For this task, we based on a set of codes to summarize concepts with similar meanings. The results of content analysis included a table of ten attributes, eleven consequences, and six values (as shown in Table 1).

[Insert Table 1 here]

4.2 The implication matrix

Following content analysis, an implication matrix (IM) was developed that demonstrates the total linkages between each pair of discovered concepts. The columns and rows in an implication matrix show the relationships between Attribute-Consequence-Value (see Table 2). Next, we selected a cut-off value to decide which connections should be described on the map. According to Grunert et al. [51], a cut-off point of between 3 and 5 is usually suited for a pool of 50-60 respondents. Gengler & Reynolds [50] suggested that a cut-off point is 5% of the sample. Therefore, the current study included any connection in the HVM for which the total number of links is greater than or equal to four (5%x74 subjects =3.7, rounded to 4). Thus, the links referred less than four times are not displayed in the hierarchical value map.

[Insert Table 2 here]

4.3 The hierarchical value map (HVM)

From a brief table called Implication Matrix, major connections can be displayed graphically as a figure in the form of a hierarchical value map (HVM) (as shown in Figure 1). The aim of this step is to attempt to avoid crossing lines, giving a connection to the map that is structural in nature and exhibits the linkages across levels of abstraction, and adding appreciably to its interpretation [44].

The solid the line, the more times the link was noted by the students. As a result, these thicker lines represent the key MECs. Seven key MECs

emerged from the data analysis, giving insights into the personal values of students for using gamification. Each of the seven key MECs is discussed below.

[Insert Figure 1 here]

4.4 Key path explaining

Figure 1 displays the major personal values of students when using gamification in learning. the key seven paths are explained as following. Each of the seven key paths is discussed below.

Online (TT01) – Anytime, Anywhere (KQ01) - Convenient (KQ11) - Feel good (KQ10) – Exciting life (GT02)

Online context offers students the opportunity to participate whenever it fits into their lives, and to join no matter where they are. Therefore, gamification offers a convenient learning experience that is easy to participate in and has what students need. It's always easy to play an online game. Students no longer have to worry about missing any action of the game because of work or study. Hence, gamification helps students make their life easier, and makes them feel better emotionally. Feeling good by using gamification is important to students, as it enhances their exciting life.

Vivid image (TT03) – Stimulation (KQ02) – Feel good (KQ10) – Exciting life (GT02)

The second key path, displayed in Figure 1, focuses on students' interests in vivid images. Gamification uses interesting images, animation, and maximizes visibility. Vivid images capture learners' interest, stimulate interest using gamification, maintain learner attention. By participating in a game, students can aim to gain stimulation of the gamification. They think that doing so leads to decrease stress and has a positive effect on emotion. It is also noted to be important for increasing life's excitement when students satisfy their need for the things they feel good about.

Challenges (TT04) – Competence (KQ09) – Sense of accomplishment (GT03)

The third path was labeled "Challenges– Competence– Sense of accomplishment". According to respondents, using gamification support or enhance the competency of learners, which is addressed by the challenges attribute. They stated that competency appeared when they were able to overcome challenges correctly and comfortably. They link gamification success to personal effort and ability. Through completing the challenges, therefore, students gain a sense of accomplishment personal value.

Leader board (TT06) – Competition (KQ03) – Sense of Belongingness (GT04)

Leader boards appear to be a significant attribute for students with a ranking of users according to their achievements. It allows comparing players' scores, achievements, levels. A leaderboard is used to demonstrate the overall scores and the current high scorers of students. Therefore, it is used to create a competitive environment among students. The objective of a competitive environment is to increase the students' motivation and give a sense of belongingness to belong to a group and to be a main part of the group.

Points/Levels (TT07) – Information Sharing (KQ04) – Social Interaction (KQ08) – Social Recognition (GT01)

The point/level system functions as a measure of success or achievement. Points that are accumulated as an outcome of executing challenges, and levels that users pass depending on the points. When students get high scores at some activity, they will share this information. Nobody likes celebrating alone; people all seek public recognition when having great news to share. Gamification functions enable students to spread the word about the progress or levels they have made by interaction among social groups. Students want respect from other people and are cared about their image in the eyes of others. Students think that they attain the purpose of personal through showing competence according to social standards and thus obtaining social recognization.

Content (TT08) - Better knowledge retention (KQ05) - Learn effectively (KQ07) - Self-enhancement (GT05)

Most of the respondents agree that gamification should be an integral section of the courses. Students revealed their positive attitude towards gamification in class because they memorized their lectures through a funny game and it also supports better knowledge retention for them. Hence, students can complete their assignments as quickly as possible, and help them get better grades. It leads to the personal value that could be attained is self-enhancement. Self-enhancement personal value can

also motivate learners to participate in gamification to achieve high results in the course resulting from learning effectively.

Avatar (TT10) - Express oneself (KQ06) - Self-expression (GT06)

The last path also found that an individual's avatar is one of the most important attributes related to gamification using. An avatar is the player's virtual graphical representation of him or herself in the game. Through his/her avatar, the student can express his/herself. It ables students to describe themselves in a diversity of different ways, like changing appearance, age, gender, and personality. The results revealed that students not only create an avatar as a mean of representation their image, but they also gained the self-expression value, which is used to symbol him or herself as possess a distinctive personality of those around them.

4.5 Students' personal values in using gamification

4.5.1. Social Recognition

Cooley [52] defined this term to refer to individuals perceive themselves through the eyes of others. In other words, how a person views oneself is shaped by how he/she thinks he/she appears to others and how he/she thinks others judge him/her. Research on social recognization in higher education [53 - 55] indicates the importance of social recognition for students when learning in universities. Our findings suggest that the way in which students perceive others' recognition of their achievements (social recognition) during these interviews may have the greatest impact on students when they use gamification.

4.5.2. Exciting life

According to Rokeach [56], exciting life is defined as a stimulating and active life. In fact, Borrego & Bernhard [57] stated that it is immensely useful to explain the subject on more dynamic levels via technology-enhanced learning and teaching techniques using video, visual and textual forms for an exciting learning experience. Jarmon et al. [58] suggested that a notable level of experiential learning can take place in the virtual world context. Focusing on gamification in higher education, the current study found that through

gamification using, students pursued an exciting life by feeling good because of convenience and stimulation. Students feel that their lives become more exciting when they play a game in learning progress. Therefore, the more students want to achieve an exciting life value, the more they will use gamification.

4.5.3. Sense of accomplishment

Weiner [59] suggests that a sense of accomplishment can be achieved through challenge completion. The relevance of a sense of accomplishment in the education context has been highlighted by Gehr [60], Jacobs & Dodd [61], and Migliettiv & Strange [62]. According to students' answers, they have achieved this value by completing a challenge game level. They were happy with their results as they felt self-satisfied about completing the challenge. In the current study, the sense of accomplishment is also gained as a personal value when they engage in using gamification.

4.5.4. Self Enhancement

Self-enhancement describes the type of personal value that functions to make individuals feel good about themselves, simultaneously to maintain their self-esteem [63]. Relevant studies [64 - 66] referring to self-enhancement value in higher education have indicated certain factors of this motivation, consisting of enhancing personal worth. In the current study, many students recognized the role of self-enhancement as a key-value experienced during use gamification. This value is especially obvious in the consequence of more learning effectively, which is addressed by the content attribute. Students stated that they have better knowledge retention if overcoming any challenge in-game of course, and it also provides extra motivation. It strengthens the opinion that self-enhancement has a key role to play in affecting and enhancing the gamification preference of students.

4.5.5. Sense of belongingness

A sense of belonging in a given academic setting captures the extent to which students feel accepted, included, and supported by others [67]. Students

who experience a sense of belonging in educational environments are more engaged in classroom activities, more motivated, and report increased academic self-efficacy [68, 69]. A student's sense of connection and belonging (or not) in a social setting drives whether she feels integrated with or alienated from her environment [70]. This study extends that students can gain this value by sharing information with others and the competition between them. Students who considered a sense of belongingness as a principal value were more likely to use gamification in order to have a more social connection.

4.5.6.   Self-expression

Self-expression values are part of a core value dimension in the modernization process. Self-expression is a cluster of values that include social toleration, life satisfaction, public expression, and an aspiration to liberty. Previous studies suggest that self-expression is what drives students in the education context but they do not refer to the relationship between this motivation and gamification [70, 71]. The current study explored that students were more able to show their internal beliefs or character and display their personal characteristics by using avatars in gamification. Through their avatars, they gain self-expression value. This value is utilized to mark him or herself as owning the unique personality of those around them.

5. CONCLUSION AND IMPLICATIONS

The results of the study explored six types of personal values that motivate students to participate in gamification, such as Social Recognition, Exciting life, Sense of accomplishment, Sense of belongingness, Self Enhancement, and Self-expression.

The contribution of the findings is threefold as following. Firstly, the rising of e-learning applications leads to an increasing number of gamification in university education through the years. Even so, there are no related studies regarding the students' desire to use this learning approach. Therefore, the findings of the current study would feasibly fill this gap by exploring personal values that learners want to get when participating in gamification. Secondly, the results from this study can extend to existing knowledge of gamification, especially in education. Using and

highlighting important personal values can contribute useful awareness to gamification researchers. The results may probably propose a distinct learner typology, classified based on their personal values. And finally, identifying the personal values for gamification use in higher education will give a strategic advantage to educators, teachers, and learners. The recognization of the personal values of students and the classification of students based on their important values are probable to be considered favorably by educators because it will enable them to offer a better approach and to gain expected results. In addition, teachers can evaluate the gamification strategies by looking at the value fulfillment prior to the classroom implementation. Understanding students' expectations will provide insight into what students want to obtain and satisfy through their participation. By personalize offerings that link to these key values, educators and teachers will be able to meet and satisfy student's values.

Although this study enlarges our knowledge of gamification in education, it suffers from some limitations. Firstly, six personal values were explored based on the qualitative approach. While this qualitative method is deemed appropriate for obtaining insights into fields, no empirical investigation exists. Therefore, future studies should perform quantitative methods to further investigate the values for the use of gamification in education. Secondly, this study did not examine the distinguishing demographic characteristics between the perceptions of respondents. However, future studies could examine a moderator variable of students' demographic characteristics with a more diverse sample of respondents representing a range in gender and major. Thirdly, this study employed only Vietnamese students. The findings may be culturally relevant. Therefore, the utilization of the findings in other cultures may be limited. Examining other cultures should be a key direction for future research efforts in order to confront and obtain a more in-depth understanding.

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Table 1. Content analysis results

Attribute	N	Consequence	N	Value	N
TT01 Online	25	KQ01 Anytime, Anywhere	25	GT01 Social Recognition	46
TT02 Good storyline	6	KQ02 Stimulation	47	GT02 Exciting life	54
TT03 Vivid image	36	KQ03 Competition	46	GT03 Sense of accomplishment	41
TT04 Challenges	37	KQ04 Information sharing	58	GT04 Sense of belongingness	46
TT05 Reward and charity	23	KQ05 Better knowledge	26	GT05 Self Enhancement	26

		retention			
TT06 Leader bȯad	48	KQ06 Express oneself	24	GT06 Self-expression	22
TT07 Points/ Levels	40	KQ07 Learn effectively	26		
TT08 Content	26	KQ08 Social interaction	57		
TT09 Personalization	6	KQ09 Competence	39		
TT10 Avatar	18	KQ10 Feel Good	58		
		KQ11 Convenient	21		

Table 2 Implication Matrix

	KQ 01	KQ 02	KQ 03	KQ 04	KQ 05	KQ 06	KQ 07	KQ 08	KQ 09	KQ 10	KQ 11	GT 01	GT 02	GT 03	GT 04	GT 05	GT 06
TT01	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TT02	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TT03	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TT04	0	5	0	0	0	0	0	0	32	0	0	0	0	0	0	0	0
TT05	0	0	8	8	0	0	0	0	7	0	0	0	0	0	0	0	0
TT06	0	0	38	10	0	0	0	0	0	0	0	0	0	0	0	0	0
TT07	0	0	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0
TT08	0	0	0	0	26	0	0	0	0	0	0	0	0	0	0	0	0
TT09	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0
TT10	0	0	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0
KQ01	0	0	0	0	0	0	0	0	0	0	21	0	0	0	0	0	0
KQ02	0	0	0	0	0	0	0	0	0	39	0	0	0	0	0	0	0
KQ03	0	0	0	0	0	0	0	0	0	0	0	0	0	6	37	0	0
KQ04	0	0	0	0	0	0	0	57	0	0	0	0	0	0	0	0	0
KQ05	0	0	0	0	0	0	26	0	0	0	0	0	0	0	0	0	0
KQ06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
KQ07	0	0	0	0	26	0	0	0	0	0	0	0	0	0	0	26	0
KQ08	0	0	0	57	0	0	0	0	0	0	0	46	0	0	0	9	0
KQ09	0	0	0	0	0	0	0	0	0	0	0	0	0	35	0	0	0
KQ10	0	39	0	0	0	0	0	0	0	0	19	0	54	0	0	0	0
KQ11	21	0	0	0	0	0	0	0	0	19	0	0	0	0	0	0	0

Figure-1: The Hierarchical Value Map