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Gamifying education for classroom engagement in primary schools

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ABSTRACT

Gamification carries the element of fun and creativity into classroom teaching. It is not an unusual fact that playing games varied among learners and created an effective classroom environment. In the 21st-century teaching era, learners' fun and creative learning environment are prioritized. Lessons filled with fun games are believed to produce a positive outcome during a lesson. Therefore, gamification prepares learners to be active and take responsibility for their learning. This study aimed to explore learners' comprehension of the term 'gamification' and the effects of gamified elements implemented in the lesson on the targeted learners. A set of questionnaires was administered through an online survey to 100 respondents from local primary schools around Selangor who took part in a service-learning programmed. The data was then analyzed and presented in the form of tables. Results showed that respondents had prior knowledge of the term 'gamification' and the game culture's overall context. The respondents agreed that their respective teachers had implemented several game elements when conducting a gamified lesson. Results also indicated that respondents were in preference to learn using gamified learning activities that helped them learn subconsciously.

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1. INTRODUCTION

As the 21st century progresses, technology has started to shape the education systems [1] and slowly eliminate traditional classroom teaching techniques worldwide. Today, learners comprise Generation Y (Millennials) and grow in the online-based environment. Using traditional teaching methods and techniques can lead to boredom, unmotivated, and disengagement [2], [3]. Also, people are more interested in learning when there is a degree of control and autonomy [4]. Educators in today's modern era have to be attuned to the current wave of trends in assuring their teaching content is compatible with the current learners. Learners need to be independent and monitor their learning to be successful language learners [5]. Gamified-learning allows learners to explore and bring out their potential in language learning because games contain fun elements [6]. Hence, allowing learners to engage in learning by themselves will obtain better results [7].

Incorporating games in the education sector is beneficial. There are various benefits of games, which are helpful for English as a second language (ESL) classroom. First, games are believed to be an important leisure activity for learners. This is due to the fact that learners are more relaxed in learning

through games [8]–[10]. This, in return, will produce positive outcomes, not only in improving learning but also in learners' behavior [11], [12]. Wahab and Joy [13] stated that learners could be very receptive to the gamification concept and display a significant readiness during a gamified learning session, omitting major restrains issued from the lack of infrastructure and facilities. Besides that, gamified-learning is motivating and encouraging as it provides a platform for learners to compete with each other in a healthy way [8], [14]. This is due to the fact that games have rules and conflict, which encouraged learners to actively participate in order to win [6], [15].

Some researchers suggested reinforcing games as a form of enjoyment that later can serve as an occasion in having games in the pedagogical field. They later embarked on instructional goals from within a highly interactive gamified context provided by digital-based learning or a well-crafted gamified environment in analogue game-based lessons. Based on the empirical evidence of recent studies, the success of digital games in education has sought to validate the effects of gamification in support of its potential to improve motivation, engagement, and social influence while allowing learners to immerse in experiential learning [16], [17]. In recent years, gamification has created widespread interest among academicians and researchers, prompting them to purposefully explore the gamut of gamified elements used as part of the instructional design process to deliver engaging experiences and enhance programs [18], [19].

Gamification or gamified-learning will sustain learners' engagement in learning the English language, as it induces a fun learning environment for all [7]. Hence, this study was carried out to distinguish learners' feedbacks and perceptions towards the application of gaming elements in their learning sessions. The gathered data could then contribute to the adaptation and design of gamified lessons to be well prepared in the future.

2. LITERATURE REVIEW

Games are described as the interactive activities accomplished by competitive and cooperative individuals as the decision-makers in the said activities seeking to achieve their objectives within a set of rules [20]. An ideal game can potentially attract learners' attention toward the game context itself, resulting in a need to complete the game's objective. Technology games have many ranges and categories, from individual to large assemblies and educational to fantasy [21], [22]. Ibrahim [23] stated that a language game is a game with regulation that has a linguistic focus. Thus, language games herd the significance of competitive aims, including linguistic components in a game.

Games are tools that teachers can use to improve learner outcomes across many areas [24]. The use of games in classrooms that include increased accuracy and speed for calculations improve communication skills, resourcefulness, and adaptability [25]. Besides, games can enhance intrinsic or extrinsic motivation [26] for replays seen as phases that nearly lead to new knowledge being acquired and mastered [27]. Kuo and Chuang [26] mentioned that through replays, learners would indirectly improvise their game resources revision while polishing both technical and critical thinking ability for their own sake of use.

As gamified-learning continues to draw attention, learners' perceptions toward classroom activities are vital in influencing the quality of learning. The integration of games in lessons focuses not only on the fun element but also on sharpening language skills [28]. The attitude of learners who are playing games will be aggressive or high competency level [24]. According to previous studies, applying gamification techniques in a curriculum can help provide a more inclusive activity by affecting learners' sense of competition, interaction, and motivation [29], [30].

2.1. Motivation

The value of motivation causes humans to strive forward, which boosts learners' will to proceed with given tasks and responsibilities. Jenkins and Demaray [31] defined motivation as the drive that provides the urgency for human's everyday conduct, causing individuals to trigger an action that escorts the objective and sustain the act itself. The existence of two sub-points had occurred within the term 'motivation' itself, solely focusing on the values of both intrinsic and extrinsic motivation [32]. This research has confronted many of the behaviorist approach's principal concepts and exposes fascinating correspondence within the psychodynamic approach. Intrinsic motivation is behavior that is prompted by internal rewards, allowing individuals to partake in behavior that arises from the individual's will because it fulfils one's desire. However, extrinsic motivation displays an individual's engagement of particular behavior by allowing the said individual to reap the external rewards or avoid punishment [33].

Kapp [34] described that the gamified learning session, or the designated gaming experience, to have the ability to create an impactful efficacy on the values of cooperation among learners, empowers an individual's desired behaviors while stimulating innovative thinking. This, however, depends on the time and context of the learners' classroom session itself. Educators could employ these at a given moment and throughout a particular activity applicable to the said concept. Likewise, since every learner has a different

interpretation of activity, it might be perceived differently, in the context of seeing it as encouraging in both internal rewards and external compensation. Games that particularly encourage and award collaborative values and teamwork positively affect real-life communicative skills [35].

As per the motivational feature of the comprehensive game components, Lee and Hammer [36] proposed that the gamified circumstances' social and emotional details can accord to the learner's growth of engaging in the said circumstances. This method's cue is by being aware of the balance between rewards and consequences in ensuring that players remain motivated to advance while not getting engulfed or disheartened by the difficulty on the assigned task [37].

2.2. Gamification

Chou [38] stated that gamification is the art of distinguishing entertaining and insightful features often contained within games and adapting them thoroughly to real-world or efficient actions. He calls this process the 'human-focused' design, apart from what is ordinarily presented in the general social system as 'function-focused' design. The human-focused design utilizes human incentive in a system rather than automates mere streamlined performance throughout the system. Chou [38] added that various game mechanisms and strategies could be incorporated towards forming optimal and pleasant encounters for everyone involved in the gamified task through gaming.

Hill and Brunvan [39] stated that game features' integration and growth into an instructional curriculum appears to be an inevitable development. Educators strive to engage with personal gadgets to peak on the learner's interest in the designated learning environment, followed by certifying the idea of developing game-based educational atmospheres that foster collaborative learning that may influence social skills similarly. A well-designed game will have the ability to encourage learners to remain participated by elevating the significance of the task or tasks being concluded [40].

Peppler [41] proposed the gamification model of learning in Figure 1, consisting of mechanics, measurement, behavior, and rewards. The concepts of gamification were applied to an educational or learning environment to maximize learning enjoyment and engage learners, thus inspiring and motivating the learners to continue learning. However, not all elements of the gamification of learning need to be incorporated at all times, though theoretically, the more elements a 'game' has, the more effective it should be. This will eventually influence learners, causing them to develop desirable behavior.

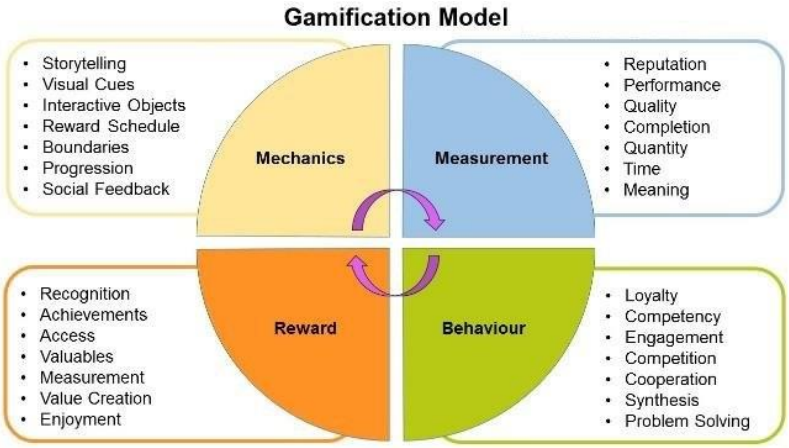

Figure 1. Gamification model of learning

3. RESEARCH METHOD

This study utilized the quantitative method by using questionnaires as the research instrument. According to the study's objectives, the questionnaires were designed to gather enough information on the perceptions and challenges. The quantitative method shows a cause-and-effect relationship with numerical data and hard facts [42]. The results can be shown in statistics, tables, graphs, and charts. The quantitative method is a method that uses measurable variables, and statistical procedures can be used to analyze the numbered data in instruments [42]. Hence, the quantitative method fits this study the most as it aids the study with clear and understandable data.

The study was conducted on local primary schools' learners (10-11 years old) around Selangor. Due to the current COVID-19 pandemic that hits the world, the process of teaching and learning had switched to virtual learning [43]. Service-learning program is an educational approach to involve higher institution learners in community engagement [44]. A total of 100 sets of survey questionnaires were collected during the service-learning program through an online platform.

The main aims of this study were to analyze learners' perceptions of games, elements in a gamified lesson, and gamification contributions in the classroom. Besides, the respondents who participated in the survey are voluntary. Likert-like Scale was used as a measurement for data collection. The Likert-like Scale of the questions was categorized as 1 (Strongly disagree), 2 (Disagree), 3 (Agree), and lastly 4 (Strongly agree). There were 15 questions for a set of questionnaires divided into three sections. Section A was used to show learners' knowledge of gamification. Section B was used to determine learners' perceptions towards gamification. In addition, Section C was used to analyze learners' learning experience through games integration. Respondents answered the questionnaire individually. The results were analyzed, and data was presented in the form of tables. The number of frequencies (N) and percentage (%) in the three tables explained the questionnaires' responses.

4. RESULTS

Table 1 shows the percentage of learners' knowledge of gamification. It shows that 55% (N=55) of the respondents are familiar with the term gamification. While 23% (N=23) are not familiar with the term gamification, another 22% (N=22) of the respondents responded maybe. Next, 84% (N=84) of the respondents admitted that they play games, while the other 16% (N=16) said they do not play games. Then, 95% (N=95) of the respondents are motivated to earn points and evolve skills in a game, while the other 5% (N=5) are not motivated.

Besides, 92% (N=92) respondents are motivated to play games with their friends, while the other 8% (N=8) are not motivated to play games with their friends. Moreover, 92% (N=92) of the respondents are motivated not to miss opportunities in a game, while the other 8% (N=8) are acceptable to miss opportunities in a game. Also, 91% (N=91) of respondents are motivated not to lose what they have already won in a game. In addition, 9% (N=9) accept losing what they have already won.

Table 1. Learners' knowledge of gamification

No	Statements	Yes	No	Maybe
1	Are you familiar with the term 'gamification'?	55%	23%	22%
2	Do you play games?	84%	16%	0%
3	In a game, are you motivated to earn points and evolve skills?	95%	5%	0%
4	In a game, are you motivated by playing with friends?	92%	8%	0%
5	In a game, are you motivated not to miss opportunities?	92%	8%	0%
6	In a game, are you motivated not to lose what you have already won?	91%	9%	0%

Table 2 shows the percentage of learners' perceptions of gamification. It reveals that 92% (N=92) of the respondents agreed that they feel motivated to learn through games, while 8% (N=8) disagreed with the claims. Next, it shows that 93% (N=93) of the respondents agreed that they enjoyed the lesson more with games while 7% (N=7) disagreed with the claims. Then, 88% (N=88) of the respondents agreed that they participated more in the classroom through gamification, while 12% (N=12) objected to the claims. Besides that, 78% (N=78) of the respondents stated that their teachers frequently use games during teaching, while 22% (N=22) disagreed.

Table 2. Learners' perceptions of gamification

No.	Statements	Strongly disagree	Disagree	Agree	Strongly agree
1	I feel motivated to learn through games.	0%	8%	50%	42%
		N=0	N=8	N=50	N=42
2	I enjoy the lesson more with games.	3%	4%	46%	47%
		N=3	N=4	N=46	N=47
3	Through gamification, I participate more in the classroom.	4%	8%	42%	46%
		N=4	N=8	N=42	N=46
4	My teachers frequently use games during teaching.	4%	18%	41%	37%
		N=4	N=18	N=41	N=37

Table 3 shows the percentage of learners' learning experience through games integration. It shows that a large number of learners, with 92% (N=92), agreed that learning is fun when integrated with games compared to only 8% (N=8) who disagreed. In responding to the statement if learning through games is a waste of time, a total of 20% (N=20) agreed, while 80% (N=80) of respondents countered the claims. A total of 80% (N=80) agreed that they have a positive experience while learning through the integration of games, while the remaining 20% (N=20) disagreed. In addition, 13% (N=13) of the respondents agreed that they felt uneasy when learning through games, while 87% (N=87) disagreed with the claims as the respondents think games help lowered their anxiety. However, 32% (N=32) of the respondents felt bored learning through games repeatedly, while 68% (N=68) felt the opposite.

Table 3. Learners' learning experience through games integration

No.	Statements	Strongly disagree	Disagree	Agree	Strongly agree
1	I have fun learning through games.	0%	8%	42%	50%
		N=0	N=8	N=42	N=50
2	I have a positive experience learning through games.	3%	17%	70%	10%
		N=3	N=17	N=70	N=10
3	I have an uneasy feeling learning through games.	17%	70%	10%	3%
		N=17	N=70	N=10	N=3
4	I feel bored learning through games repeatedly.	25%	43%	22%	10%
		N=25	N=43	N=22	N=10
5	I think learning through games is a waste of time.	27%	53%	12%	8%
		N=27	N=53	N=12	N=8

5. DISCUSSION

Overall perceptions from the results have revealed that most of the respondents are accustomed to the term 'game' and 'gamification' and are driven to enjoy games in education as it enriches the learning environment in the classroom. According to Landers [45], gamification could be conducted under any scenario, and the same pertains to the field of education. He stated that gamification is engaging in sparking someone to participate under any occurrences actively. Learners will be more determined to participate in the class activities in the learning environment provided to them since every lesson needs to trigger the learners' motivation, both intrinsically and extrinsically. Intrinsic motives are efficient because they do not need recognition, and they compensated themselves in return [46]. At the same time, extrinsic motivations help initiate a game.

As for the gamified lesson, most respondents agreed that gamified lessons should be enjoyable, convenient, and trigger intrinsic and extrinsic motivation in learning. The findings also show that most respondents acknowledged that gamified lessons contribute to learners' growth in classroom settings and experiences. According to Karadag's study [47] on using games in learning, gamification could foster motivation and cooperative learning, facilitate group work, and cultivate social skills between learners.

The findings also show that most respondents prefer learning through games to develop mastery of the lessons taught. In line with the study by Licorish *et al.* [48], educational games strongly influence classroom dynamics and improve the learning experience. Most of the respondents stated that learning through games improves their motivation and also increases their learning engagement. They also felt that learning through games makes learning fun and interesting. However, some respondents felt that learning through games is not effective if used multiple times. This has then caused them to feel bored and a waste of their time. Due to a lack of engagement in meaningful activity [49], boredom has hampered the objective of integrating games into education.

In conclusion, learners' knowledge and perceptions toward gamification are primarily positive. It is concluded that learners agreed that gamified lessons have their contributions when adequately developed and well-equipped with certain game elements. The current curriculum requires educators to implement 21st-century learning where a gamified lesson is no longer prevalent. Thus, the need to build learners' self-confidence, create a suitable learning environment and improve motivation are proved to be important [50].

6. CONCLUSION

Gamification plays a vital role in primary education to improve learners' engagement and motivation. The integration of interesting and engaging activities sparks learners' interest in language learning subconsciously. Hence, several recommendations that could be conducted for future studies in regards to gamification context in the educational industry. It is important to analyze in-service teachers'

ability in preparing gamified lessons in the classroom environment. Future researchers should conduct experimental studies to identify the co-relationship between learners' academic achievement and the effectiveness of gamified lesson. Lastly, they need to conduct a qualitative methodology in approving the gamified lesson's capability among educators with over 5+ years of teaching in education industry through in-depth interview session provided with valid questions. It can serve as a reasonable proof for the study itself in the future.

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