

INVESTIGATING THE IMPLEMENTATION OF GAMIFICATION APPROACH TO ENHANCE STUDENTS LEARNING ENGAGEMENT

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A B S T R A C T

This research aims to investigate the effectiveness of the **gamification** approach in enhancing students learning engagement through the utilizations of gamified learning application such as **Quizziz** under iB Curriculum. Also, to find how significance is the role of teacher while implementing the gamification approach. There were three cycles to obtain qualitative data—planning stage, action stage and observation stage, taken from seven male and fourteen female students. The instruments are observation note from the cooperating teachers and field notes. After that they were analyzed and classified with the rules and procedures, the implementation, and the benefits of the implementation. The study shows that the implementation of gamification demonstrated significance impact in enhancing students' learning engagement. It was found that the enhancement of students' learning engagement through gamification approach should consider the time frame of the lesson, students' personality, clear instructions in line with the rules and procedures, and frequent check for understanding as the students could contribute to the lesson. Further, the teacher's role was significant to guide the students through discussions in understanding the learned concepts. It is recommended in future research to have longer implementation period to compare the effectiveness during online and hybrid learning, and to elaborate different gamified learning platforms.

Introduction

The students prompt to disengage from the lesson that can be seen from passive participation with reluctance in contributing thoughts, ideas, or comments throughout the class. Some frequently missed the assignment submissions. The researcher is interested to implement the gamification approach to enhance students learning engagement. The researcher viewed this issue is urgent to be solved as low learning engagement will impact students' growth in developing critical thinking skills, learning achievement, and enduring understanding. Further, this impacts the students' performance under IB Curriculum which integrates critical thinking throughout the lesson. Besides, online learning has made the students step back in learning engagement. Hence, the urgency of this research is evidence in dealing with the low learning engagement issue through the implementation of gamification approach.

The researcher realizes the importance of viewing the gist of low learning engagement from the theological standpoint through the grand narrative framework. In creational perspective, God has created human beings as *Imago Dei* or the Image of God as the crown of creation (Erickson, 2001). As *Imago Dei*, human beings have God's attributes to fulfill His creational mandate (Graham, 2009). One of the attributes pertaining to learning engagement is "active and purposeful" (Graham, 2009, pp. 74). Further, the true purpose of education is to equip and nurture the students to apply their learned knowledge continuously and purposefully for the glory of God by caring and loving God's creations on earth (Graham, 2009, p. 55). It is believed that the true purpose

of education with the students as *Imago Dei* is essential to fulfilling God's cultural mandate to the extent of proclaiming God's truth to the entire world. This study aims to investigate the effectiveness of the gamification approach in enhancing students learning engagement through the utilizations of gamified learning application such as Quizziz and Jeopardy. Further, to find how significance is the role of teacher while implementing the gamification approach. The students experienced learning disengagement in online learning since the CoVid-19 pandemic started. Throughout this research, it is expected that gamification serves as the 'game changer' to engage students throughout the learning process. Hence, an increased learning engagement will help students to develop better understanding on the learnt subject. Further, the students will cultivate curiosity and critical thinking as they engage the subject to learn.

Literature Review

The students have experienced two years of online learning since the beginning of CoVid-19 pandemic. Learning engagement becomes a critical issue when students during online learning experience learning loss with academic decline (Engzell, Frey, & Mark, 2021). The Minister of Education, Nadiem Makarim, argued that education in Indonesia is in the emergency level since the CoVid-19 pandemic where the students who experience learning loss during online learning are growing in numbers (Kompas, 2021). Hence, there is a connection between learning engagement with learning loss. Lack of learning engagement poses threat to students' academic achievement.

The gamification approach integrates gaming elements, mechanics, and thinking such as challenges, rewards, and immediate feedback into the learning process to enhance learning engagement (Kim, 2015; Al-Azawi, Al-Faliti, & Al-Blushi, 2016; Pratomo, 2018). Further, Al-Azawi, Al-Faliti, & Al-Blushi (2016) believed that gamification "influences people's natural desires for competition, achievement, recognition, and self-expression" (p. 133). Yu-kai Chou, one of the pioneers of the gamification method, found the Octalysis that consists of eight core drives that will intrinsically and extrinsically motivate humans to make decisions or act in certain ways (Chou, 2014). Those core drives are "Epic Meaning & Calling; Development & Accomplishment; Empowerment of Creativity & Feedback; Ownership & Possession; Social Influence & Relatedness; Scarcity & Impatience; Unpredictability & Curiosity; Loss & Avoidance" (Chou, 2014). Gamification, then, proved to be an approach that can influence the students' learning engagement.

There have been researches done on the gamification approach as an effective strategy to enhance students' low learning engagement. Rahman, Panessai, Noor, & Salleh (2018) found the implementation of gamification approach in a lesson will gradually increase students' engagement and academic achievement. Papp (2017) showed the result from the implementation of gamification on students can improve learning motivation and engagement. Faisal (2017) proved the impact of gamification in learning has improved students' engagement, motivation, and understanding of the lesson. Göksün & Gürsoy (2019) found the increasing of students' interest, engagement, and motivation to achieve greater result in a lesson where gamification approach through the use of Kahoot! and Quizziz were applied. Those studies clearly present the evidence on how gamification approach in learning can improve students' learning engagement as one of the benefits.

Numerous researchers concluded plethora benefits from the gamification method in learning where students' motivation has been increased both intrinsically and

extrinsically over the course of time, sustainable engagement throughout the learning process, and better academic achievements (Papp, 2017; Rahman, Panessai, Noor, & Salleh, 2018; Sulispera & Recard, 2020; Jonathan & Recard, 2021). Al-Azawi, Al-Faliti, & Al-Blushi (2016) found the students regardless of their backgrounds [e.g., gender, ethnicity, high or low achievers] have increased learning engagement due to the immediate feedback and reward, cultivate self-driven learning where the students independently set their milestones which in particular maintain positive learning attitude, and pose students with challenges that enhance curiosity in learning. Students learn in a fun yet productive environment blended with the learning process with lesser anxiety and greater self-efficacy (Goscu & Caganaga, 2016). It can be inferred that gamification has greater impact towards the students in enhancing learning engagement despite of the diversity of students' backgrounds.

By implementing the gamification method, the teachers are expected to elaborate the students' context with gaming perspectives to establish a meaningful, engaging, and effective gamified learning atmosphere (Haeley, 2019). Thus, gamification has a plethora of benefits towards improving learning engagement and achievement towards learning.

Research Method

Subjects

The subjects of the research are the Middle Year Program (later MYP) Grade Eight (later G8) Individual & Societies (later IS) students consisting of two South Koreans, one Taiwanese, one Malaysian, ten Chinese Indonesians, and seven Indonesians. There were seven male and fourteen female students. Speaking about the proficiency level, two students came from English as Additional Language (phase 1-2), nine students from English Literature (phase 4-5), and ten students from English Language Acquisition (phase 3-5) class. Lesson delivery and instructions were in English. The students in general are passive during online yet active in onsite learning.

Setting of Place and Time

This research was conducted from August 3rd until December 18th 2021. The researcher had a collaborative teaching with the cooperating teacher in teaching IS. The classroom setup was in online for the first two months and then hybrid as the school began to re-open for the students. The research planning, data gathering, and processing happened less than two months. The researcher met the G8 IS students four times a week with this detailed schedule below.

Tuesday : 10:35-11:15 a.m.
Wednesday : 12:05-12:45 p.m.
Thursday : 2:40-3:20 p.m.
Friday : 10:35-11:15 p.m.

Below are the detailed stages of the research process from August 4th to September 10th.

Date	Research Stage
*August 4 th – 26 th	Discussion and planning with the cooperating teacher. Along the way, the researcher observed the class since the first day of school.

August 27 th	1 st Cycle: Conducted Quizziz for the first time with the topic “Emperor Justinian I & Empress Theodora”. Observed by the cooperating teacher. The researcher took field notes.
September 3 rd	2 nd Cycle: Conducted Quizziz with the topic “Byzantine + Constantine”. Observed by the cooperating teacher. The researcher took field notes.
September 10 th	3 rd Cycle: Conducted Jeopardy that includes current learned materials in connection with the topic of “Sassanian Empire”. Observed by the cooperating teacher. The researcher took field notes.

Instruments

Observation Note from Cooperating Teacher

The observation from the cooperating teacher throughout the three cycles will be useful to have real-time results in acknowledging the benefits and drawbacks of gamification approach. The cooperating teacher will take note from the beginning of the class until the end. The goal is to see the students’ gradual engagement before and after the implementation. (See Appendix A1-A3)

Field Notes

Written by researcher that serves as qualitative notes to record the ongoing implementation of gamification approach. The goal is to collect real-time data before and after the implementation. There are some elements in the notes such as classroom setting, background of the lesson with the students, and the reflection on the implementation of gamification. (See Appendix B1-B3)

Procedures

First Cycle

Planning Stage

The researcher will observe MYP G8 IS class since August 4th – 26th to gain background information of the students, rules and procedures, and the current teaching approach. Then, the researcher will plan and discuss with the cooperating teacher on specific days to implement the cycles and specific tools for the research. The researcher will inform the students to prepare another device with internet data just in case of technical issue. Also, students will be allowed to turn off camera if it limits accessibility to Quizziz.

Action Stage

The researcher will implement Quizziz to twenty-one G8 students in online setup at the beginning of the class. There will be fifteen questions with thirty seconds to answer. The students will receive the access code to play the game. The mode will be student-paced where the progress will depend on the students’ ability. The researcher and cooperating teacher will observe the implementation.

At the end, the researcher will show the leaderboards and congratulate the students who got most right answers. Also, encourage the ones who are not performing well. Lastly, the researcher will review the questions to ensure the students understand the topic.

Observation Stage

The cooperating teacher and researcher will observe the implementation. Personal field notes and co-teacher's observation note will be the instruments to aid in observations. Things to be observed such as the students' behaviors during and after the implementation (questions, answers, giving thoughts).

Reflection Stage

The researcher will reflect on what went well and wrong throughout the implementation based on the field notes and co-teacher's observation note. This includes students' behaviors, flow of the implementation, and the engagement progress of the students. In this stage, the researcher also discussed with the cooperating teacher to listen on her feedbacks. Hence, the reflection can be holistic by looking from different perspectives.

Second Cycle

Planning Stage

The researcher will conduct Quizziz in instructor-paced mode on September 3rd with the topic "Byzantine & Constantine". The lesson will be in online setup. The implementation will take 10 minutes from 40 minutes of the lesson's length. The modification will help to appease probability of students who left behind as per the first cycle. Besides, the researcher will stop at every end of question for ensuring the students' understanding.

Action Stage

The Quizziz will be at the beginning of the lesson. It is expected that twenty-one students will come in time and ready for Quizziz. The researcher will operate the Quizziz as it will be in instructor-paced mode. Then, there will be a short discussion at the end of every question to ensure the students' understanding.

Observation Stage

The researcher and cooperating teacher will observe the differences on students' behaviors such as active participations through questions, answers, and contributing thoughts based on the prompts given by the researcher. The observation will be done throughout the implementation until the end of the class.

Reflection Stage

The researcher will reflect the implementation based on the personal field notes, observation notes, and post-implementation discussion with cooperating teacher. Also, to review what when well and wrong in comparison with the first cycle.

Third Stage

Planning Stage

The researcher will discuss with cooperating teacher to implement Jeopardy instead of Quizziz. The implementation will be on September 10th with the topic of "Sassanian Empire". Further, this will be done in the first 10 minutes of the lesson in hybrid setup.

Action Stage

There will be 10 onsite students and 11 online students who attend the class. The researcher will make 20 question boxes with points from 100-500. The researcher will operate Jeopardy, take note of the scores, and watch the time for each student to answer. Each student will have 1 minute 15 seconds to answer each question.

Observation Stage

The researcher and cooperating teacher will observe the implementation in the classroom. While observing, the researcher will take field notes and cooperating teacher on observation note. The observation will be until the end of the class.

Reflection Stage

The researcher will use field notes, observation note, and note from discussion with cooperating teacher for the reflection. The researcher reflected on what went well and wrong throughout the implementation.

Data Collection

The researcher collected qualitative data such as personal field notes and cooperating teacher's observation account. The goal is to obtain multiple perspectives towards the implementation process and outcome. The researcher discussed thoroughly with the cooperating teacher to ensure the clarity on the feedback, benefits, and drawbacks from the applied method. The data will be organized according to grade level which focused only to Grade 8 Individual Societies students in one of the schools in Sentul.

Data Analysis

The qualitative data will be analyzed through descriptive way. The cooperating teacher's observation notes will be the source for the researcher to reflect and consider suggestions for future improvement of this research. In correlation to the researcher's field notes, both qualitative data will be helpful to see the real-time result from the three cycles. It is expected that in the future, the obtained data will give new insights and perspectives on the implementation of gamification approach during online and hybrid setup.

Result and Discussion

First Cycle

Planning Stage

The researcher with the cooperating teacher agreed to use Quizziz and Jeopardy as the chosen tools for gamification approach. The first implementation was during online learning on August 27th with Quizziz in classic mode where the pace will be based on the students. The implementation was around 10 minutes out of 40 minutes from the lesson's length. The students were asked to read Justinian I and Theodora from Google or other possible resources that they can find. The researcher observed the live results from the leaderboard and took field notes.

Action Stage

On August 27th, the researcher implemented Quizziz with expected twenty-one students to attend the class online. The implementation will be conducted at the beginning of the class. There are fifteen questions with thirty seconds to answer. The students will join the platform by inputting the given code. While doing so, the researcher and cooperating teacher are observing the implementation. (*see Appendix A1 & B1 for further details*).

Before continuing to the next activity, the researcher asked the students if they were confused on certain questions or needed further clarifications. Lastly, the researcher reviewed the questions again to ensure all students were at the same page by knowing the correct answers.

Observation Stage

In general, the cooperating teacher advised the researcher to ensure the students have proper connections and devices while joining Quizziz at first. Some students experienced technical issues. However, they were able to come back and continue the work. Some students came late to the class. Besides, it is recommended to inform the students in advance that there will be Quizziz. Hence, the students can prepare devices and proper connection in advance without taking much time. Some students began to ask questions but some still reluctantly to ask.

Reflection Stage

The researcher did reflection with the homeroom after the implementation on what went well and wrong throughout the session along with the students' behaviors. The researcher needed to inform the students in advance pertaining to the coming activity, so they will be prepared. Also, to reinforce the rules & procedures – particularly to come in time to the class. Then, the researcher should change the Quizziz into instructor-paced mode like Kahoot! as to ensure all students are at the same page at the same time. Further, the students will have real time feedback from the teacher and interaction as needed such as small discussions. Hence, the students can grasp the lesson well to have a meaningful learning engagement. The researcher should reach each of the student to ensure they understand and to make them feel of being in unison with the lesson. During the implementation, the researcher was rushed through the session without reaching out some students. The researcher should implement differentiation to establish equity in giving students opportunity engaging the learning meaningfully.

Second Cycle

Planning Stage

The researcher planned to conduct Quizziz on September 3rd with the topic “Byzantine and Constantine” in online setup. The implementation will be modified with instructor-paced mode – in consideration to the previous reflection. The goal is to lead the students experience meaningful learning engagement. The researcher stopped by each question and give opportunity to the students who would like to ask for clarifications. 3 questions out of 15 in total will be considered as bonus to draw more engagement from the students. Further, the researcher randomly chose students to state their understanding after listened to the small discussion or the answer from the researcher.

Action Stage

The researcher used planned instructor-paced mode in Quizziz which is the same with the mode in Kahoot!. The students joined by typing the access code and went through each question. At the end of every question, the researcher conducted small discussion by throwing questions to the students for clarifying their understanding and giving the opportunity to ask questions. In this approach, students began to cultivate learning engagement by answering the questions from the researcher and challenge themselves to inquire the lesson.

Observation Stage

Both researcher and cooperating teacher noted slightly different traits from the students during and after the implementation until the class ended. The students who were passive beforehand become actively engage. In connection to the researcher's class in ITC, the students feel matter and to be part of the classroom if the teacher calls them personally. Some students are also introvert that need to be called by the teacher first to participate in the class. The instructor-paced mode also gave the students a time to understand the concept per question and ready for the next one. This mode gave the

opportunity for the students to actively engage the lesson as they tried their best to answer correctly and get higher points. The researcher took a field note and the cooperating teacher also took observation account throughout the class (*see Appendix A-2 & B-2*).

Reflection Stage

After the second cycle of gamification implementation, it can be inferred that the students were much more engaged than before. The method was successful as the students who were passive during the first cycle began to ask questions and clarifications as the mode was instruction-paced. Throughout the lesson, gradually, the passive students began to contribute thoughts, opinions, and questions either verbal (direct question/answer) or literal through Zoom chat.

The researcher and cooperating teacher began to see the effectiveness of Quizziz in enhancing students' learning engagement. According to the reflective discussion with the cooperating teacher, the researcher might modify the time limit and points per each question to add more challenges for students according to the difficulty level. Hence, it is expected the modification will foster the students' engagement and understanding of the lesson. Lastly, as per the feedback from the cooperating teacher, the researcher should simplify the prompts so the students can follow through without taking much time to understand it.

Third Cycle

Planning Stage

The researcher discussed with the cooperating teacher regarding the last cycle of the research to implement Jeopardy for the gamification method instead of Quizziz. The goal of modification is to see the improvements from the students' learning engagement since the first and second cycle. On September 10th, the lesson was about Sassanian Empire with sort of review questions from previous lessons in hybrid setup. The implementation took 10 minutes out of 40 minutes of lesson's length. The researcher has taken steps to anticipate limitations such as informing students to have second device with strong connection, prepare another Jeopardy page in case of corrupt files, and repeatedly inform the students to prepare for the lesson.

Action Stage

There are 21 online students who attend the session. The researcher has made questions and answers in Jeopardy. During the implementation, the researcher divided the students into two big groups – online and onsite. Each student will have chance to choose the question box and answer with one minute of time to think or discuss. If the group cannot answer, the other group will be able to answer for the next one minute. There will be 20 boxes with different points from 100-500. Different than Quizziz, the researcher should manually input the score and select the questions for students to answer. The group who reached the highest point first will be the winner.

Observation Stage

The researcher and cooperating teacher observed the implementation of Jeopardy until the end of the class (*see Appendix A-3 & B-3*). Things to be observed such as students' activeness in answering and collaborating to answer the chosen questions. The students were much more engaged than the implementation of Quizziz. It can be inferred that the modification was successful in helping the students learning. Especially, to collaboratively support one another in answering the questions. By doing so, the students along the way reviewed the lesson and brainstorm together as a class. Further, after the Jeopardy session, the students were still active in giving responses such as questions,

answers, and even sharing their current understanding pertaining to the lesson. This was helpful to lead the first hybrid lesson as the students online were also engaged. However, there was a bit of chaos as the researcher needed to calm the onsite students down as they were very active.

Reflection Stage

The researcher discussed with the cooperating teacher on how the implementation of Jeopardy going on. The students were very engaged with the lesson during and after the Jeopardy session. The passive students began to cope up with their friends in contributing answers, asking questions for clarifications, and collaborating in answering the questions.

The researcher needed to establish new rules & procedures for hybrid learning. Especially during the implementation of the gamification approach to establish conducive learning environment. Further, the researcher should consider the time frame in doing Jeopardy so the lesson can be continued according to the plan. In the future, the researcher should consider the number of questions in relation to the time frame of the lesson.

Data Analysis

Qualitative Data: Cooperating Teacher's Observation Note

There were several key points for the researcher to analyze from the cooperating teacher's observation note. First, she noted the rules and procedures that should be emphasized before the implementation such as coming to the class on time, camera stays on, and informing the teacher in advance if there is technical issue. Hence, the implementation can have effective result without being disturbed with infractions and all students can participate at the same time. Second, she specifically mentioned for the researcher to have regular check for understanding by reaching out all students throughout the implementation. This is important to ensure their engagement as well where some students were introvert. In connection to that, it is recommended to have instructor-paced mode for Quizziz. The goal is for students to have meaningful engagement.

Third, she noted on the benefits to modify the gamification mode and learning platform to engage students not in a monotonous approach. There was a significant progress on students' learning engagement from the implementation of Quizziz during online learning and Jeopardy during hybrid setup. Such modification in consideration to the changes of learning environment is necessary to sustain students' growing learning engagement. Further, she noted on the importance to always involve the students throughout the lesson. Because, it is crucial for them to stay engage the lesson by giving contribution such as questions, answers, or opinions.

Qualitative Data: Researcher's Field Notes

According to the researcher's field notes, firstly, the researcher should consider the time frame of the lesson while implementing the approach. Such consideration should be done by preparing the chosen platform and ensuring all students have access to it. This will lead the implementation to run according the plan. Second, the researcher should keep in mind on the number of questions for the implementation. Some students became disengage by not answering most of the answers as they felt they were left overwhelmed with the questions. Third, the researcher should encourage students who were mostly quiet throughout the implementation. However, during the third cycle, those students became actively participate in giving answers and helping others to get the answers.

Discussion

Jeopardy and Quizziz are the concrete implementation in integrating gaming elements with the learning process. Throughout the three cycles of implementation, the researcher learned the enhancement of students' learning engagement through gamification approach should consider the time frame of the lesson, students' personality, clear instructions in line with the rules and procedures, and frequent check for understanding as the students have the opportunity to contribute in the lesson. This connects with the statement by Blushi (2016) on the influence of gamification towards the developing motivation to achieve goals and overcome challenges. Further, in relation to the core drives by Yu-kai Chou, Jeopardy and Quizziz have development & accomplishment (through getting points and ranks), unpredictability & curiosity (questions are random around the topic), and loss & avoidance (students tried hard to sustain their answer streaks). Hence, the students are motivated to achieve more at their best that resulted in an increasing learning engagement.

There were new insights that can be inferred from the implementation of gamification approach. First, the modification on the mode in Quizziz from student-paced to be instructor-paced resulted in significant difference of students' learning engagement. The researcher can check for understanding on each question. This gave the opportunity for students to meaningfully grasp the concept and connect it with their current understanding. Aside from the increasing of points and leaderboards, such modification will lead the students to have a meaningful learning engagement. This is connected with the research by Göksün & Gürsoy (2019) who found the students are motivated to aim for greater achievements – gradually after the use of Quizziz & Kahoot!.

Second, the use of gamified learning platform should be varied as a means to sustain the students' learning engagement. Researches by Papp (2017) and Faisal (2017) proved as well that gamification approach should not only from one gamified learning platform for the course of time. The teacher's choice to combine different platforms and modify the instructions is crucial in maintaining and increasing students' learning engagement. Throughout the cycles, it can be inferred how significant benefit can be attained through Jeopardy towards the increasing students' learning engagement. Besides, Jeopardy posed a group learning approach instead of Quizziz with a more individualized system. Though, even though there is the group mode in Quizziz, the accessibility is the obstacle for online students as it can only be implemented if all students are in the onsite classroom.

Third, the teacher's role and the gamification approach is like a two-sided coin. Meaning, both should go hand-in-hand to help students in engaging the lesson. The teacher should not just be the operator of the gamified learning platform. But, should also encourage the students, especially the quiet ones to contribute the lesson. Because, such engaging learning environment will build a supportive learning community. Hence, gamification approach will not be effective if the teacher does not involve all students in the lesson.

Conclusion

The implementation of gamification approach was successful to enhance students' learning engagement. The gathered qualitative data clearly showed how influential such approach is for students to engage the lesson meaningfully. Further, the teacher's role was significant to guide the students through discussions in understanding the learned concepts. There are significant connections between the core drives by Yu-kai Chou with Quizziz and Jeopardy that engaged the students to learn. Further, the teacher's role as a

coach with the gamification approach should be done hand-in-hand. Gamification is one of the tools for the teacher as a coach to help the students engage the lesson meaningfully. It is clear that the teacher's role cannot be neglected in light of enhancing students' learning engagement through the implementation of gamification approach.

The researcher will do differently in the classroom as a result of this study by exploring more gamified learning platforms to sustain students' learning engagement. It is advisable to switch the mode of the platform as to avoid a monotonous sense of the learning platform. Further, to consider the learning setup either online or hybrid while choosing and implementing such gamified learning platform. Lastly, to do frequent check for understanding in implementing this approach. So, the students can have meaningful learning engagement.

Recommendation

The researcher recommended others to collaborate with teachers from different subjects with same grade level, curriculum coordinator, and research and development unit in implementing this approach. The goal is to see whether the gamification approach works on every subject and can have greater benefits for students according to the school's context. Besides, to have longer implementation period to compare the effectiveness during online and hybrid learning with additional instruments such as questionnaire and interview. The goal is to see its relevance and sustainability towards students' learning engagement in relation to the current situation. Then, to elaborate different gamified learning platforms that have different modes and user interface. This is to see the difference of students' learning engagement through the different platforms being used. Hence, the results can be more comprehensive and systematic in looking the effectiveness of gamification approach towards students' learning engagement.

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