Strengths And Challenges In Station Rotation Gamification

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ABSTRACT

Gamification is a pedagogical strategy for improving the learning environment for students. It has been positioned as a remedy for issues with student engagement, learning, and retention that are prevalent in higher education.Although students are only considered to be the consumers of gamification, current implementations of gamification in education place a greater emphasis on the function of game aspects in promoting lower-order learning goals like understanding and remembering. One of the problems with current gamification is the unstructured approach used in game design elements that lead to ineffective outcomes(Sailer, Hense, Mayr, & Mandl, 2017). To overcome the problem, researchers have introduced an innovative approach gamification technique called Station Rotation Gamification (SRG) that has been implemented in 10 weeks of learning in one of the public colleges in Malaysia.Therefore, the purpose of this study is to explore the strengths and challenges of implementing Station Rotation Gamification (SRG). Ten students and two lecturers participated in the semi-structured interview for the study. Surveys on strengths and challenges were also quantitatively administered to the 35 students to support the findings. The interview's findings are categorised into themes and subthemes. The students' challenges in implementingStation Rotation Gamification (SRG) at a public college included increased participation, struggling in finding the answer, longer periods, demonstrating enthusiasm, and completing assignments on time. Moreover, the strengths under the theme of students' motivation are looking excited, consistent effort, eagerness to learn more, and self-regulation.These strengths and challenges were revealed through data analysis using opencoding, axial coding, and selective coding. Quantitative data are assessed and displayed in a table and graph.

Keywords:gamification, station rotation, advantages, challenges, and higher education

INTRODUCTION

According toOsatuyi, LaRosa, & Osatuyi (2016), educators currently face several difficulties, including low student retention rates, undergraduate students' difficulties with self-directed learning, and low levels of student engagement, motivation, and learning.As a solution, many teaching and learning have been done with gamification.Based on prior studies, gamification has recently been incorporated into a teacher's teaching methodology. According to Sebastian, Nacke, & Deterding (2017), gamification is the employment of game components in contexts other than the game itself. According to Irwin, Dicheva, Irwin, Dichev, & Talasila (2015), the use of gamification in information technology can promote voluntary continuous practice. It might improve the motivation and involvement of students in their academic endeavours. Gamification enables students to evaluate their performance and encourages non-obligatory persistent practice, enhancing their motivation and involvement in class activities. Students are thought to be able to acquire improved engagement through expanding their boundaries (via ongoing feedback, little challenges, and positive increases)(Shernoff, Ruzek, & Sinha, 2017). Despite the advantages, some researchers and academicians have argued the effectiveness of the approach, questioning whether its benefits outweigh the drawbacks.According to the study, the strategy for gamification, in particular, could be improved to make it more structured and organised. Numerous research that has been published explain why gamification in education has been successful. While incorporating gamification in learning, researchers have come across a number of holes. Due to various unfavourable implications in earlier studies, gamification needs to be improved urgently.Furthermore, it was evident that the nature of the analysis's tactical flaws prevented gamification from being effective(Sailer et al., 2017). According to Akrolu, Başbüyük, Güler, Atabay, and YlmazMemiş (2017), previous research frequently either used a class intervention without administering a pre-test or conducted a two-class comparison study

without comparing students from the same course.Therefore, researchers have found an innovative solutions called "Station Rotation Gamification" to overcome the weaknesses of previous gamification.

LITERATURE REVIEW

Gamification has the potential to motivate individuals across all industries to start or maintain goal-oriented behaviour(Sailer et al., 2017). Due to its influence on student learning, gamification is also a developing phenomenon in education(Da Rocha Seixas, Gomes, & De Melo Filho, 2016; Orhan Göksün & Gürsoy, 2019). Additionally, it is a teaching strategy to enhance instruction, motivate and empower students, boost their participation and interaction, and inspire them to develop their skills (Zainuddin et al. 2020).This conclusion was supported by experimental research done by Sailer & Sailer (2021) on 205 educational science students. While non-gamified in-class activities consisted of exercises, the study's gamified activities included game components like team leaderboards and points. The findings provide evidence in favour of gamified learning by demonstrating that it has a positive effect on application-based knowledge that is influenced by learning process performance. The outcomes also show how gamified in-class activities boost students' intrinsic motivation and social connectedness. The satisfaction of needs for competence, according to the self-determination theory, is unaffected.In his research, Alshammari (2020) came to a similar conclusion. The learning effects of gamification are investigated in this study using a controlled experiment with 58 elementary school students completing an Arabic language course. The findings show that gamification improves students' learning outcomes and enthusiasm to learn.This is consistent with a study by Duggal, Gupta, and Singh (2021), the major objective of which was to address the issue of student withdrawal through the development and implementation of a gamified framework that enhanced student engagement, motivation, and enticement among a group of 120 higher education students. The results showed that students who used the recommended intelligent gamified system displayed higher levels of participation compared to the control group, demonstrating the model's success(Duggal, Gupta, & Singh, 2021).

RESEARCH OBJECTIVE

To explore the strength and challenges of implementing Station Rotation Gamification in Higher Learning Education.

RESEARCH QUESTION

What are the strengths and challenges of implementing Station Rotation Gamification in higher learning education?

METHODOLOGY

This study aimed to investigate the benefits and challenges of implementing the innovative approach of Station Rotation Gamification at a public college in Malaysia. Qualitative case studies were employed to explore the advantages and obstacles associated with the implementation of this approach. The choice of qualitative case study methodology was inspired by Yin's (2016) technique for investigating real-world situations and addressing current problems. The study involved ten students and two lecturers, and a semi-structured interview guide was developed based on the research objectives. The interview responses were analyzed and categorized into themes and subthemes using open coding, axial coding, and selective coding techniques. The findings were organized into categories using ATLAS.ti 23 software. Additionally, a quantitative survey was conducted to assess the students' difficulties and coping mechanisms, and the quantitative data were presented in tables and graphs to support the findings.

Gamification And Station Rotation Gamification

Gamification refers to the utilization of various game elements in non-gaming contexts or scenarios. These elements encompass points, leaderboards, levels, and badges. The effectiveness of gamification has been demonstrated by numerous researchers in both online and offline settings. It can be as simple as the instructor awarding sweets to the students after completing the task. The strategy of using gamification in learning has been confirmed as attractive, enjoyable, and fun. However, from(Sailer et al., 2017)the process of implementing gamification has not been well designed and well structured.Nonetheless, flaws have also been identified in the implementation of gamification. One of the dominant flaws isunstructured gamification in the design and implementation of gamification. Therefore, researchers have found an innovation in the gamification technique called Station Rotation Gamification (SRG).

The design of SRG has considered all the required elements in ensuring a systematic way of teaching and learning through gamification. SRG is the combination of blended learning and games and one of the concepts isderived from Blended Learning called station rotation. Figure 1below indicates the general idea of SRG. There are four stations in one lesson comprised of 100 minutes lesson. The process starts with Station 1 named Goal. Since this station is instructor-led all students are required to join the first station. After 25 minutes spent in the

first station, groups of students are dispersed and join any available stations according to the group. The SRG is designed so that any station, except for the first one, can be joined at any time in a non-sequential manner.Station 2, named "Access," is the station that stresses the basic concept of the topic.Here students will be introduced tothe basic key terminology of the topic studied. After exploring the definition of the relevantterms, students are required to access talentLMS.com; the platform that infused gamification elements and concepts. At station 2 students will gain points, levels, and leaderboards. Station 3 named "Collaboration" comprises tasks related to inquiry-based learning. One of the tasks assigned isthe extraction of information from the article reading about the subject. Upon completion of the task, students will be awarded points, levels, and badge. Station 4 named"Challenges" comprises various challenges such as quizzes and test questions. Students are free to choose any station including station four to start learning. Eventhough station four comprises questions, which is common as the last part of traditional learning, SRG is designed to be accessed at any time. This is to promote the idea that learning can be started at any part. In this station, students learn by exploring the answer to questions. The process of learning requires students to explore and investigate the answer based on the questions given.
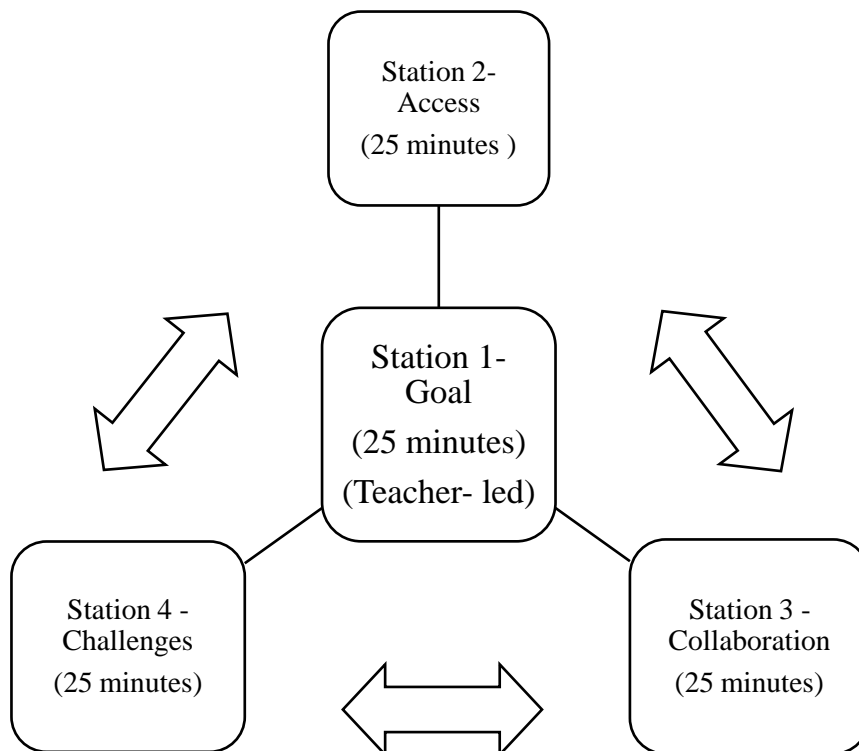

Figure 1: The Station Rotation Gamification (SRG).

RESULTS

The main goal of this section is to discuss the unit of analysis, as well as the themes and sub-themes that emerged from the research. The quantitative findings are presented in tables and graphs. Two parts of the findings are derived from the research, one from the instructor's perspective and the other from the student's perspective. Both parts reveal emergent findings related to the strengths and challenges of implementing the learning strategy using "Station Rotation Gamification" (SRG). Nevertheless, the quantitative data is thoroughly analyzed and presented in tables and graphs to uncover the strengths and challenges of implementing SRG.

Part 1

Part 1 will summarize the finding from the instructor. Figure 2 shows the first part of the finding from the instructor. The unit of analysis is the benefitsofimplementing Station Rotation Gamification, two themes emerged for challenging mainly; a.) Student Engagement; b) and Student Motivation.
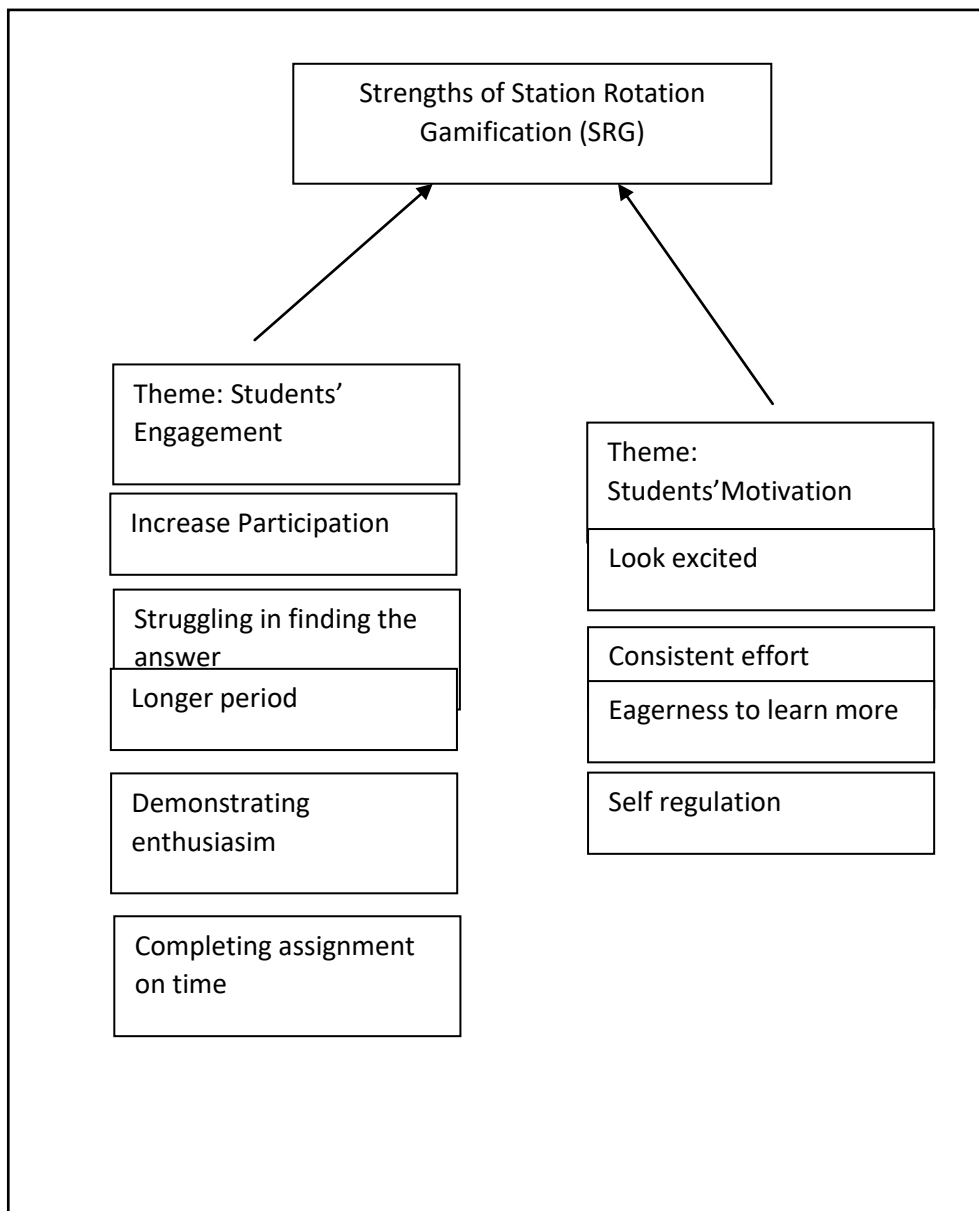
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┌─────────────────────────────────────────────────────────────┐
│                  ┌─────────────────────────┐                 │
│                  │ Strengths of Station     │                 │
│                  │ Rotation Gamification(SRG)│                │
│                  └─────────────────────────┘                 │
│                                                               │
│   ┌──────────────────────┐                                    │
│   │ Theme: Students'      │      ┌──────────────────────┐     │
│   │ Engagement            │      │ Theme:                │     │
│   ├──────────────────────┤      │ Students'Motivation   │     │
│   │ Increase Participation│      ├──────────────────────┤     │
│   ├──────────────────────┤      │ Look excited          │     │
│   │ Struggling in finding │      └──────────────────────┘     │
│   │ the answer            │      ┌──────────────────────┐     │
│   │ Longer period         │      │ Consistent effort     │     │
│   ├──────────────────────┤      │ Eagerness to learn more│    │
│   │ Demonstrating         │      ├──────────────────────┤     │
│   │ enthusiasim           │      │ Self regulation       │     │
│   ├──────────────────────┤      └──────────────────────┘     │
│   │ Completing assignment │                                   │
│   │ on time               │                                   │
│   └──────────────────────┘                                    │
└─────────────────────────────────────────────────────────────┘
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Figure 2:Strengths of Station Rotation Gamification (SRG).

Based on Figure 2, the emergent themes for strengths in implementing SRG based on the instructor's perception aresare students' engagement and students' motivation.Five categories are identified as strengths which are increased participation, struggling in finding the answer, longer periods, demonstrating enthusiasm, and completing assignments on time. Moreover, the strengths under the theme of students' motivation are looking excited, consistent effort, eagerness to learn more, and self-regulation. These strengths indicate that the implementation of SRG increases the level of engagement and motivation of students from the perspective of instructors.

Part 2
The finding for Part 2 will uncover the challenges faced by students in learning via SRG.Table 1 shows the strengths found by students while using SRG in their learning. The two most popular strengths are "I feel happy" and "I am enjoying doing the tasks". This indicates that the SRG promotes enjoyment in learning.

**Table 1:Strengths shared by students in Station Rotation Gamification (SRG)**

Theme	Strengths	Sources
Strengths	I feel so happy	R1, R2, R3, R4, R5, R6, R7, R8, R9,R10
	It drives me to compete with each other	R1, R2, R3, R4,R5, R6, R7, R8, R9
	I am enjoying doing the task	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10
	I like to receive many points	R1, R2, R3, R4, R5, R6.
	I feel that I am better than my friends	R1, R2, R3, R4, R5, R6, R7, R8. R9, R10
	I understand the goal for each station	R1, R2, R6, R7, R8, R9, R10
	I can always discuss it with my friends	R1, R2, R3, R4, R5, R6, R9, R10
	I work hard to gain badges	R1, R2, R6, R7, R8, R10
	I can perform all the tasks easily	R1, R7, R8.R10

**Table 2. Challenges faced by students in writing Station Rotation Gamification (SRG)**

Theme	Challenges	Sources
Challenges faced by students in SRG	Demotivated when ata low rank	R2, R3, R4, 5R, R6, R9, R10,
	Feeling tired to compete with others	R1, R2, R3, R6, R7, R8.
	Too many tasks assigned in gaining the badge	R1, R2, R17, R10.
	Slow Internet Coverage	R2, R3, R4, R5, R6, R10
	Need time to understand the concept	R1, R2, R3, R4, R5, R7, R8, R9, R10
	Some tasks given are too difficult	R3, R4, R6, R7, R8, R9
	Friends in the group are too slow	R1, R3, R4, R5, R6, R8, R10
	Difficulty in answering questions at some of the stations	R3, R4, R6, R7, R10.
	Some groups take longer time to complete tasksaffecting their group to move to the next station	R4,R6,R9,R10

Based on Table 2, challenges are classified into demotivated when at a low rank, feeling tired to compete with others, too many tasks assigned in gaining the badge, slow Internet coverage, needing time to understand the concept, some tasks given are too difficult, friends in the group are too slow, difficulty in answering questions at some of the stations and some groups take longer time to complete tasks affecting their group to move to the next station. The finding shows that all ten respondents faced one difficult obstacle which need time to understand the concept.

Graph 1, suggested three strengths in implementing SRG. The highest strength is Increase engagement which is 97%. Most respondentsfeel that they are engaged when performing activities. 85% of respondentsstressed that SRG increases their motivation.

Graph 1: Strengths in SRG
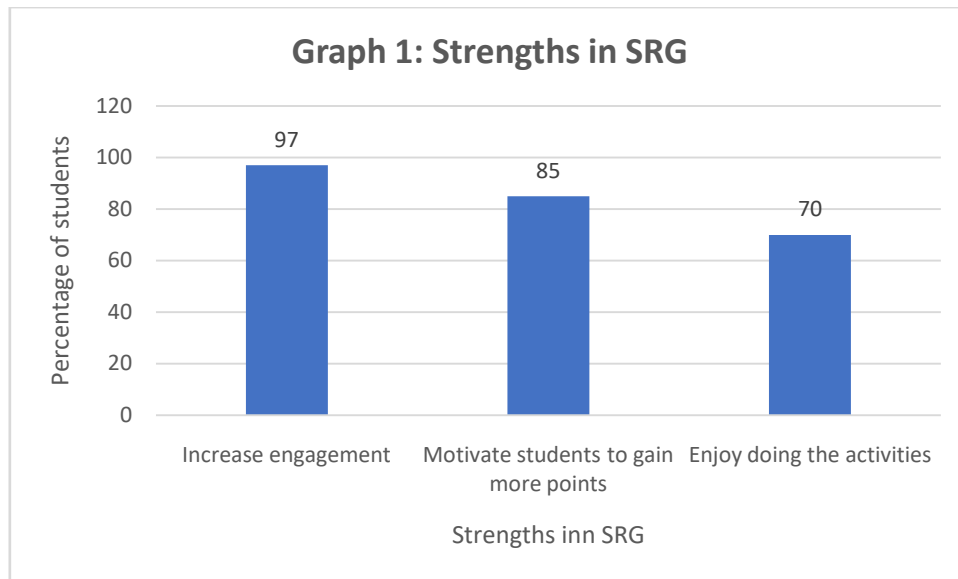
The three factors that pose the most hurdles in implementing SRG are shown in Graph 2 of the quantitative findings. Difficulty in solving tasks is an important issue. 55% of respondents felt that the main issue is putting off joining SRG. One of the factors that contribute to 47% of the difficulties in participating is taking longer time to finish the assignment. The third challenging component is unequal access with 33% of respondents agreeing on this challenge. This is due to different Internet coverage and different performances of the devices when performing activities in SRG

Graph 2: Challenges faced by students in SRG
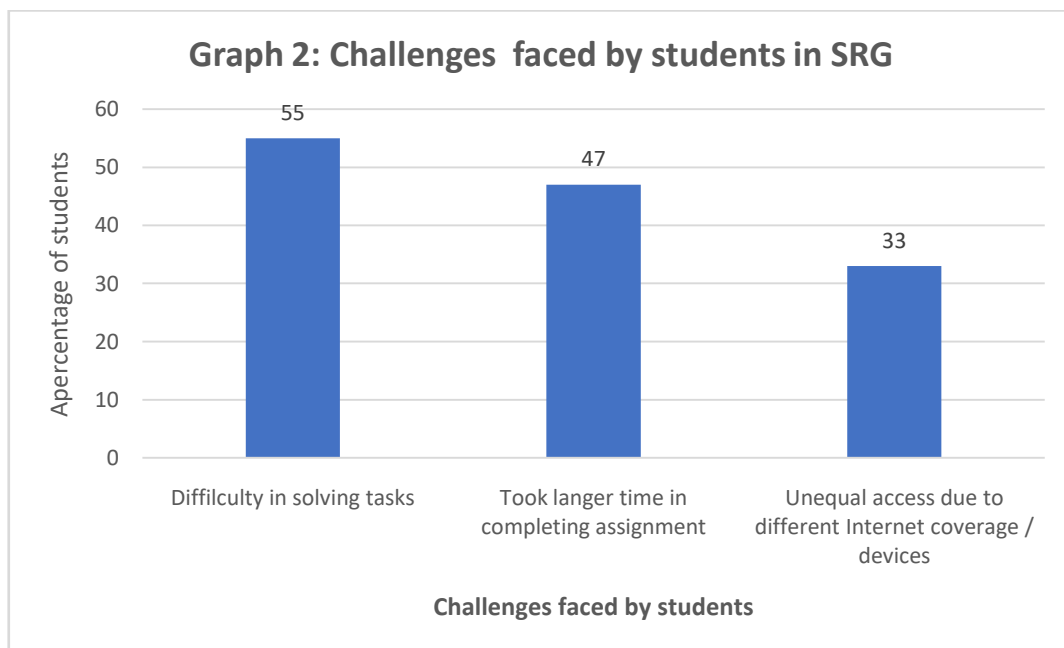
CONCLUSION

When implementing SRG in teaching and learning, several strengths emerge, demonstrating its effectiveness in enhancing students' motivation and engagement. However, challenges encountered during the implementation can serve as valuable guidance for instructors to improve the content and materials design in SRG. Additionally, every strategy or approach remains open to further refinement, making it more efficient and meaningful.In conclusion, in organisational and educational contexts, gamification offers a variety of learning and development opportunities. However, there is a clear need for research that offers valuable, practical insights to direct future gamification initiatives to fully realise this potential. By going beyond the present manner in which gamification is applied to a course, this study takes the first steps toward the gamification of higher education.

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