

A-MAZE-ING PHYSICS

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ABSTRACT

Kinematics is one of the topics in physics that describes the motion of objects. Most of the students are getting confused to solve the problems of this topic since there are many considerations to take off before choosing and applying the equations. Creating game-based learning regarding this topic is a useful way to help the students understand this topic. This way is not just improving students' ability but allows the students to engage with educational materials playfully and dynamically. A-maze-ing Physics is game-based learning that uses Wordwall as a platform to create learning activities. This platform has fully customizable activities such as quizzes, word games, maze chases that can be used by the educator as an alternative way to review the students' understanding with a quick revision. In this study, about 43 of the respondents from Pre-Science students have been selected to try the A-mazing-ing Physics game, and they have to give feedback on the game in a given survey form. Based on the feedback, the analysis showed that all the respondents agree that A-mazing-ing Physics is not just game based learning that helps them to more understanding about the kinematics but also attracts them to learn physics interactively.

Keywords: kinematics, Wordwall, physics, maze chase

1. INTRODUCTION

Saying the word physics makes students feel afraid to listen to it. This is because their minds have been stuck on the fact that the subject of physics is the most difficult in the world. Therefore, educators who teach this subject need to find effective ideas or ways to re-cultivate students' interest in learning this subject. The use of the game in teaching and learning has become an option among educators. Gamification in learning is just not an attractive concept, but it also promotes motivation [1] and engagement to the learners [2][3].

Kinematics is one of the topics that students always lack understanding. This is because students are confused with the use of formulas and selections in solving questions involving this topic. The purpose of this study is to build a practical educational game that would assist students in mastering concept kinematics, to provide an alternative platform for students to review their learning and conduct a short revision, to encourage educators to incorporate technology into the teaching and learning process and to investigate the efficiency of revision games based on educational games regarding student motivation.

2. MATERIAL AND METHOD

The study was conducted on the Pre-Science students who enrolled in the Fundamental Physics courses at UiTM Negeri Sembilan, Kuala Pilah Campus. From previous experience, Pre-Diploma Science students have difficulty understanding and applying the concepts of Kinematics when only using a lecture-based approach of teaching. Hence, the ADDIE model was used as a guideline for designing the revision. A-maze-ing Physics was designed as a tool for revision activities, and Wordwall was used as a platform to create interesting activities such as quizzes, word games, maze chases, and random wheels. A total of 43 respondents were given a try to answer A-maze-ing Physics to see the effectiveness of this tool during learning and teaching. Besides that, this was a survey study to identify students' problems in understanding the idea of kinematics.

3. RESULTS AND DISCUSSION

Among the questions asked in the survey are regarding the student's preferred learning style, as shown in Figure 1. The results show that about 65.1% of respondents prefer learning physics face-to-face (F2F) when before the pandemic. However, during the pandemic, most of the respondents (30.2%) preferred online classes, followed by hybrid classes (27.9%) and blended learning (23.3%) instead of face-to-face (18.6%).

Figure 2 shows types of game activities that can be played in A-maze-ing Physics, and results show the most interested of respondents to answer is Maze Chase (51.2%). This result was supported by the data in Figure 3 which are among the reasons respondents were interested in Maze Chase. Almost all respondents are interested in answering A-maze-ing Physics because it makes them more competitive, makes them more active in learning, can reduce boredom and burning, and is colorful and interesting.

Overall, Figure 4 shows the student's perception in answering A-maze-ing Physics. About 22 respondents (51.2%) strongly agree physics lessons using educational digital games like A-maze-ing Physics give a lot of benefits especially to improve their understanding. Furthermore, most of the respondents (58.1%) strongly agree that they are very interested in using games for learning physics in the future.

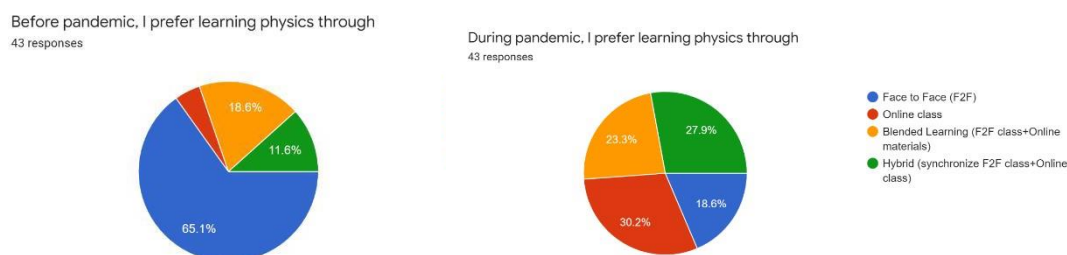


Figure 1: Preferable of students learning physics before and during the pandemic

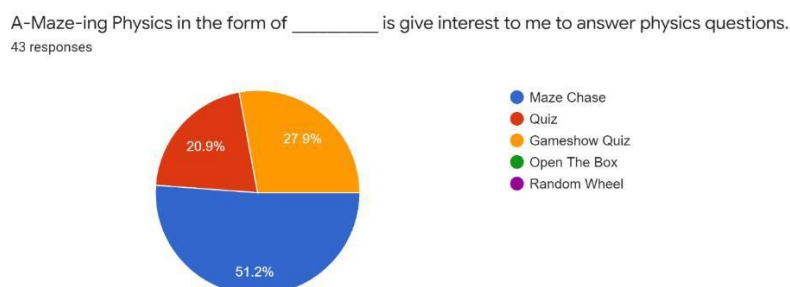


Figure 2: Preferable of students answer A-maze-ing Physics form activities

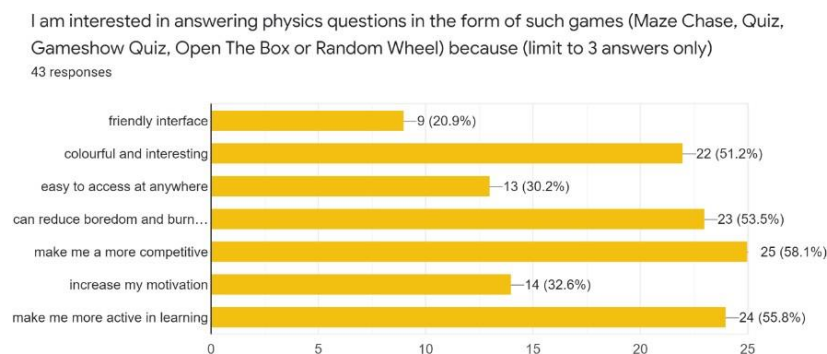


Figure 3: Reasons of students answering A-maze-ing Physics

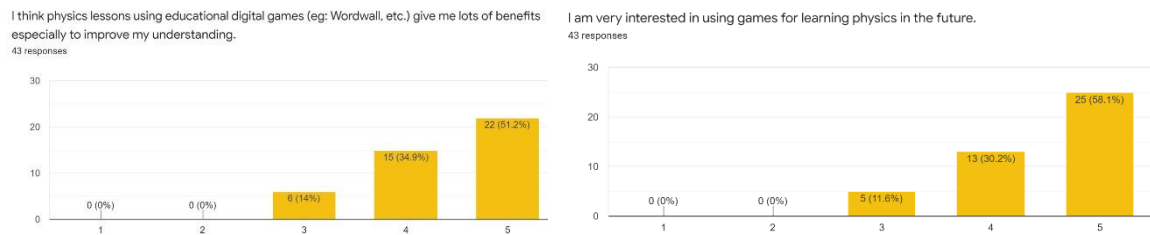


Figure 4: Perceptions of students answering A-maze-ing Physics

4. CONCLUSION

In conclusion, A-maze-ing Physics is one of the educational games which appropriately uses an alternative way of teaching learning online. It can also provide an understanding related to kinematics and indirectly attract students to learn physics subjects.

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