

The 11th International, Invention, Innovation & Design 2022



Ushering in the Age of Endemic

**THE 11TH INTERNATIONAL INNOVATION,
INVENTION & DESIGN COMPETITION
INDES 2022**

EXTENDED ABSTRACTS BOOK



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ENHANCED BIOSCIENCES REVISION THROUGH GAMIFICATION

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ABSTRACT

This pilot experiment was conducted to determine the effectiveness of revision session through a gamification approach. The participants in this experiment were 118 pre-university students who took the Biosciences module in their semester 3. Students were given virtual medical case (VMC) studies for topics of hematology and virology during their revision session before the final exam. Data of the study was collected from post-item analysis for their final exam and through a questionnaire filled by the students. The experiment findings from item analysis showed significant improvement only in a few questions. Despite this, the questionnaire completed by the students has shown very positive and encouraging feedback. This clearly proves that learning through gamification is one of the most effective and useful methodologies in this current educational system. Further study is needed to determine whether incorporating gamification in other topics of this module such as bacteriology, parasitology, and immunology would have a positive impact on student motivation, engagement, and performance.

Keywords: gamification, education

1. INTRODUCTION

Gamification is one method that may present itself as a useful, cost-effective, and efficient tool for educators to improve learning outcomes (Oprescu et al., 2014; Rowland, 2014). The idea of gamification has great potential in enhancing students' motivation, improving their learning experience, engagement, and performance (Legaki et al., 2020). Nowadays, innovation and creativity in the learning process are essential elements in order to achieve targeted learning outcomes in an educational system. This pilot testing was done to determine the effectiveness of revision session through gamification approach.

2. METHODOLOGY

This study was conducted on 118 Semester 3 pre-university students from FS321 intake. VMC was created for Haematology and Virology topics under the Biosciences module and was uploaded into the e-learning portal. During the final revision session, students were given time to complete case studies. Thereafter, the lecturer went through the questions and answers with them. The discussion eventually covered the entire learning outcomes of both topics.

3. FINDINGS

After the end-of-semester examination, item analysis was collected from the examination unit for three consecutive intakes to compare the effectiveness of this gamification approach. This analysis has shown mixed findings.

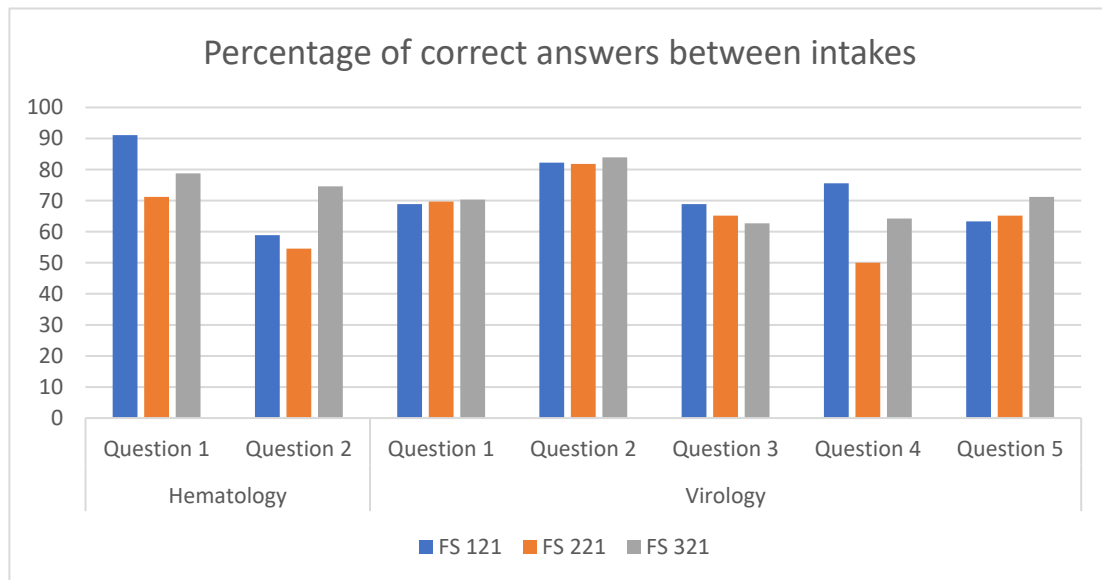


Figure 1 Percentage of Correct Answers between Intakes

Besides that, a questionnaire regarding this study was filled out by the students. Out of 95 respondents, 94 have mentioned that these videos are useful for their revision as can be seen in Figure 2.

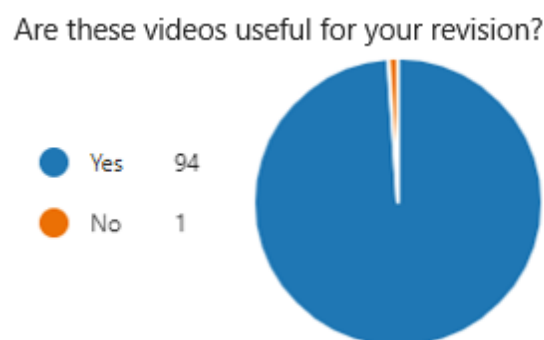


Figure 2 The Usefulness of the Videos for Students' Revision

Therefore, it can be concluded that the revision through gamification shows a positive effect on their performance.

4. CONCLUSION

Though the first study exhibited mixed findings, the students' response was very positive and encouraging. This VMC gamification will also be very useful to prepare students for more clinical case studies and problem-based learning during their undergraduate studies later. Hence, applying gamification to education is now a necessity, given its capacity to capture and sustain students' attention, which is a prerequisite for students' success in educational environments.

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