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LEARNING SCIENCE THROUGH GAMIFICATION FOR SECONDARY SCHOOL STUDENTS

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ABSTRACT - The goal of this final year project is to determine whether gamification can be used to effectively teach secondary school students about force and pressure in science. The goal is to increase students' interest in and enthusiasm for learning science while also enhancing their comprehension and memory of the subject. The methodology used in this project is the Waterfall model, including the planning, analysis, design, implementation, testing and documentation phases. A secondary school has created and implemented a gamified learning environment where pupils are urged to actively engage in interactive and game-like activities. The cloud database used to store the data produced by these activities is Firebase. In order to obtain points, badges, and a position on a rank, participants in the activities must watch films and complete exercises. The instructor can keep an eye on the student's development and performance.

Keywords: Firebase, science, gamification.

1. INTRODUCTION

The goal of the final year project is to assist secondary school students in their study of force and pressure in science class. This system used gamification components like points, ranks, and badges to help students concentrate and stay motivated while they were learning. It can also assist teachers in keeping track of their students' progress. Overall, this project can improve learning process quality and effectiveness.

2. METHODOLOGY

The successful development of a web-based system will be accomplished using a waterfall methodology. Usability testing is being utilised in this project to evaluate how well the Learning Science System functions. There were 16 respondents, which is secondary school students and teachers. To make sure that respondents are aware of how the system works, comprehensive instructions and explanations will be given. The respondents' device was used for the usability assessment. The system was open for respondents to explore for 20 minutes. Respondents are required to complete the Google Forms survey on their own devices after investigating and testing the technology.

3. RESULT AND DISCUSSION

The Usability testing involved a total of 16 individuals. Personal data about the respondents, including name and gender, were gathered in the survey's initial stage. The question then divided into four categories, including perceived utility, perceived simplicity of use, and interface design. In conclusion, the fact that almost all criteria had high mean ratings indicates that consumers intended to utilise this web-based service.

4. NOVELTY OF RESEARCH/PRODUCT

This research project provides a novel strategy to engage and encourage secondary school students in science education by integrating gamification approaches in a web-based learning environment. By combining interactive and game-like aspects into the learning process, it seeks to close the gap between traditional classroom instruction and the digital era. Additionally, the emphasis on force and pressure as scientific ideas gives the research a unique perspective. The study examines a key feature of physics education by focusing on these particular topics and explores

how gamification can improve students' comprehension and recall of these difficult concepts. This study has the potential to aid in the creation of efficient methods for gamifying the instruction of difficult scientific concepts.

5. CONCLUSION

Overall, all of the goals were met, and the Learning Science With Gamification Web Based project was produced effectively and according to schedule. This web-based system was also effectively constructed in accordance with user requirements. The user will utilise this web-based tool since it helps students concentrate better when they are learning.

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