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Mobile Monopoly Game: REV-OPOLY ON THE GO

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Abstract: REV-OPOLY ON THE GO is a mobile monopoly game set during the impending technological revolution. In comparison to the traditional approach of self-revision, the goal of REV-OPOLY ON THE GO is to improve students' understanding in terms of their capacity to make explicit references to past learning and show and apply information in a game-based setting. REV-OPOLY ON THE GO is a quiz that assesses students' understanding of the emerging technological revolution, which is covered in one of the University Utara Malaysia courses. Incorporating gaming components is supposed to increase students' interest in the course while also enhancing their comprehension. The game may be used as a review tool to remind students of the theme of the emerging technological revolution, which is discussed during lectures. In the game, the student will compete against the bot to buy the technologies by answering the questions. To prevent the bot from winning the game, students are required to know the topic of the subject. REV-OPOLY ON THE GO allows students to have a more relaxed learning experience while still following the same syllabus and having fun.

Keywords: Gamification, Interactive Learning, Student-Based Learning

1. Introduction

The number of teaching and learning strategies that support student-centred learning has increased. These strategies call for students to actively participate in their education to demonstrate high levels of interest. Game-based learning is one of these methods, and it may be carried out through mobile phone games or applications. This is because games can improve students' learning experiences, and they are increasingly being used in educational settings [1]. To achieve predetermined learning goals, game-based learning seeks to bring enjoyment and learning together.

Monopoly has been used in numerous cities, nations, and even platforms since its inception. In addition, mobile and tablet devices frequently have their own resized versions. The set board structure is kept the same in many of these variations, including the electronic board game version of Monopoly, but artificially intelligent players take the place of the players [2, 3]. Similarly, location-based variations

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of the game have also appeared, such as The Landlord Game by Quip Media for IOS and Android Smartphones.

The mobile phone represents a common platform, for the most part, for gaming developers to design and implement. Mobile Monopoly is designed to be played in an outdoor environment. Nowadays many people like to play mobile games because the mobile phone is easier to carry anywhere. The player can play monopoly games whenever they want to play. This can help them to spend their time wisely during their free time. The gaming industry's task is to effectively use these technologies to create fresh engaging games [4, 5]. Another strategy is to take into account conventional board games and enhance them using fresh involvement modalities [6].

Mobile games or applications are viewed as a widely accessible choice for fulfilling activities, with the majority of people in the world own smartphones. According to studies, learning using mobile and game-based platforms has a favourable impact on student's academic success, learning motivation, and subject matter interest. Mobile games can now be used for more teaching and learning opportunities due to technological improvements. A mobile game is said to have the power to engage and motivate students, foster their creativity and imagination, and support teaching and learning because it allows for the representation of data in a variety of ways. As a result, REV-OPOLY ON THE GO, a mobile game about the technological revolution, is developed based on the previous work on REV-OPOLY [7, 8].

2. Methodology

In this project, the methodology used is the Agile Model Methodology. Agile methodology is a software development process system that employs an interactive approach, open collaboration, and process adaptation all through the life cycle of a project. This iterative agile approach is more adaptable, with short period iterations as the project seeks improvements in little releases, with minimal planning instead of detailed planning. This helps minimize overall risk and empowers projects to adapt to changes more rapidly. This method consists of six main phases which include requirements collection, analysis, designing, coding, testing, and maintenance. The reason for using this methodology in this project is that it is better controlled, can improve the project predictability, and reduce the risks. The most important is to fulfil the requirement of the client.

Phase 1: Requirements Collection - In the first phase, which is requirements collection, the information related to the problem and solution will be collected through the websites related to the current system. Also, the requirement from the client will be collected via Webex meetings so that can make this system more effective, efficient, and user-friendly. All information and requirement will be collected to conduct an analysis.

Phase 2: Analysis - In the second phase, after all the information and requirement is collected, the information and requirement will be analyzed whether it is appropriate for the project or not. This phase will analyze the objective, problem, alternative solution that is going to use, requirements from the client, method, and implementation that are going to use in developing this system. This phase aims to define the appropriateness of the information and requirement for this system while the requirement that is not appropriate will be removed.

Phase 3: Designing - In the third phase, which is designing, the project developer will prepare a design document for this project after analyzing the requirements. The developer is going to design the structure and layout of this project which are the register and login page, homepage of the application, profile page, game screen, rules of games, and so on. The developer will also insert the application logo, background colour, and a field for users to upload their profile pictures. The requirements were gathered and analyzed. The requirements including register and login into an account, connecting with the bot, rolling the dice, answering the questions, and managing information and pictures as shown in **Figure 1**.

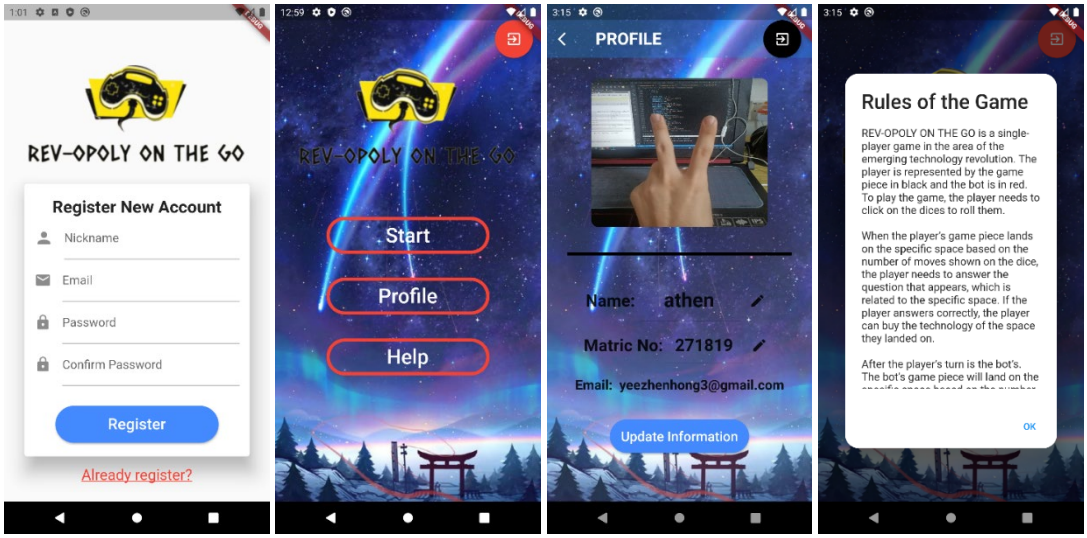

Figure 1: REV-OPOLY ON THE GO interface

Phase 4: Coding - The fourth phase is coding. The code to develop this system and convert the design into the actual application by using Visual Studio Code after completing the design is shown in **Figure 2**. This phase will be the longest part of the whole process. The prototype of a mobile application named REV-OPOLY ON THE GO was developed. It represents the requirement in the interpretation previous section. Android Studio is used as the primary integrated development environment (IDE) tool. The cPanel development platform is used to facilitate key features such as user verification and the database for data storage.

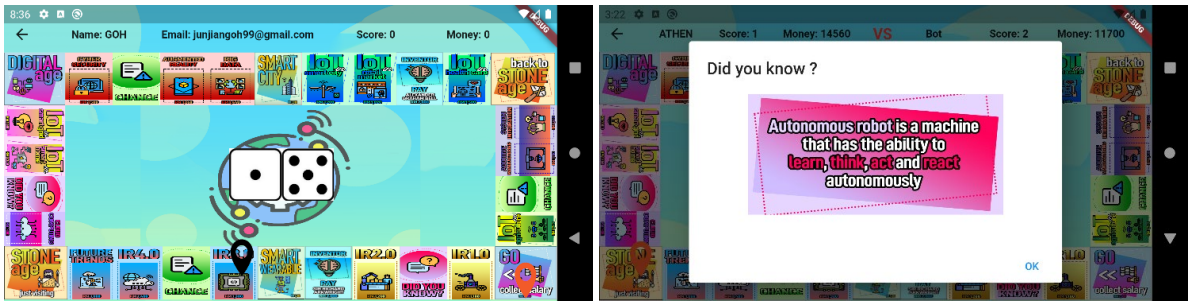

Figure 2: REV-OPOLY ON THE GO play setting

Phase 5: Testing - In this fifth phase, which is testing, the application is tested to make sure it the compatibility and does not have any bugs according to the code writing before. An error in terms of the usability of the game was tested. **Figure 3** shows the main function of the game in terms of answering and checking the player's answer to proceed with the game. The keywords for the answers were checked with the player's answer.

Phase 6: Maintenance - In the last phase, which is maintenance, the developer will always collect the requirement from the client's feedback to fix up the bugs or upgrade the version of the application by adding some features. The developer will also conduct maintenance services when there is any problem or bug that exists. For example, when there is any problem occurred, the users may contact the admin to give their feedback and upgrade the application.

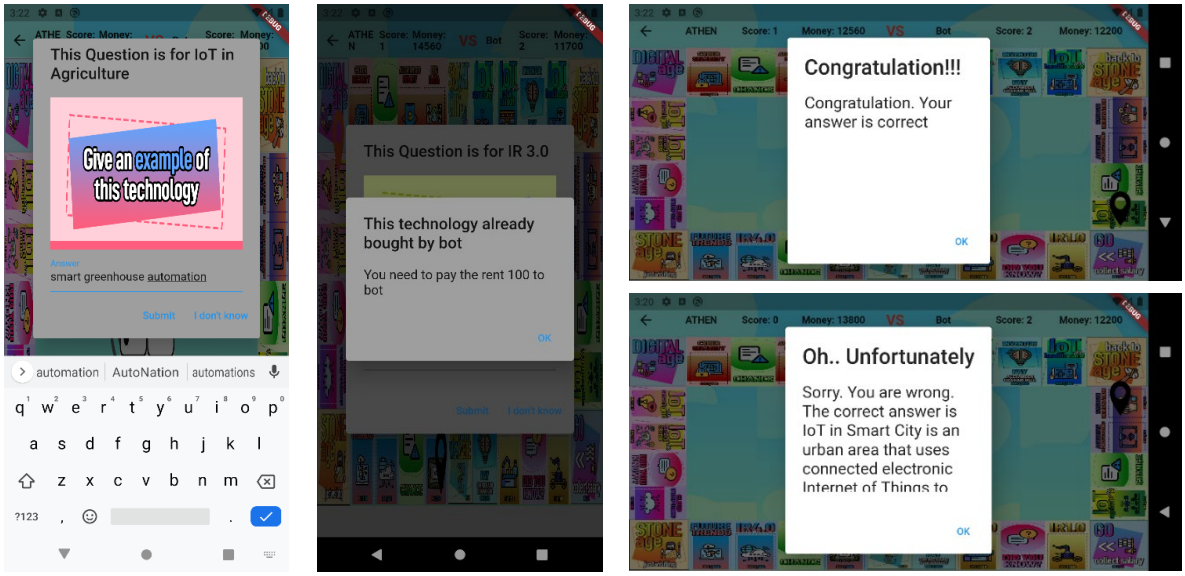

Figure 3: Several game functions of REV-OPOLY ON THE GO

3. Results and Discussion

3.1 The Evaluation Setting

The evaluation of the REV-OPOLY ON THE GO mobile application was conducted on 30 respondents. The instruments used for the evaluation were the REV-OPOLY ON THE GO application and a questionnaire. The questionnaire is consisting of 3 sections. Section A asked about the demographic of respondents, Section B asked about the application evaluation and Section C asked about the recommendation. The respondents performed the following step-by-step procedure for the evaluation: (1) install the APK file attached to test the application, (2) interact with the application, (3) evaluate the usability of the application, and (4) answer the questionnaire.

3.2 Demographics of respondents

Analysis of the demographic of respondents revealed that 56.7% of them are male and 43.3% are female. For the semester, there are 30% are from semester 6, 23.3% are from semester 4, 16.7% are from semester 7, while there are 10% are from semester 1, semester 2, and semester 3. About the age, 60% are 21-23 years old, 23.3% are 24-26 years, 13.3% are below 20 years old and 1 respondent are in 27-29 years old. For the school in UUM, 33.33% are from the School of Computing, 26.7% from the School of Economics, 16.7% from the School of Business Management, and 13.3% are from the School of Law. There is 1 respondent from the School of Education, School of Technology Management & Logistics, and School of International Studies. REV-OPOLY ON THE GO was tested by respondents from various backgrounds and ages to ensure the usability of the game to the public, not just to the students taking the Computer Application in Management course at UUM as the topic of the emerging technology revolution is relevant to understand about current and history of the technologies.

3.3 Application Evaluation

This section analyzed the respondents' perception and evaluation of the usability, interface, effort expectancy, mobile self-efficacy, behavioural intention, performance expectancy, perceived enjoyment, and satisfaction of REV-OPOLY ON THE GO. The result of the evaluation revealed that REV-OPOLY ON THE GO in its current state is satisfactory for the user.

In terms of the interface design, 16 (53.3%) and 17 (56.7%) strongly agree that the interface is pleasant to use, and they found the application attractive. They also strongly agreed that the overall REV-OPOLY ON THE GO is appropriate and satisfied with the layout of the application. This is due to the colour coordination that was chosen to attract the players while maintaining the simplicity of the

game. In addition, 19 (63.3%) strongly agree that REV-OPOLY ON THE GO is easy to be learned and used and they were able to navigate the game themselves without any difficulty. 19 (63.3%) stated that they would use REV-OPOLY ON THE GO given that they have access to the game. 17 (56.7%) strongly agree that REV-OPOLY ON THE GO increases their chances of achieving learning that is important and improves their learning performance. This shows that students are open to the idea of using games as one of the ways to learn due to their informal yet informative way of learning that enables them to use them at any time. Overall, 21 (70%) stated that they are satisfied with REV-OPOLY ON THE GO where they found it to be enjoyable in learning about the emerging technology revolution through the game.

4. Conclusion

In the area of the emerging technology revolution, REV-OPOLY ON THE GO is a single-player mobile game that aims to improve the student's comprehension level in terms of their capacity to make explicit references to prior learning as well as demonstrate and apply the knowledge in the game-based environment. It is anticipated that adding game features will increase students' learning while also piquing their interest in the subject on which this game is based. REV-OPOLY ON THE GO is based on REV-OPOLY and has been changed such that player must defeat the bot. Through this report, a lot of limitations of the REV-OPOLY ON THE GO mobile application could be reviewed and the possible improvements were also discussed to provide a better capability.

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