

Design and Build Role Play Game Application - Business Simulator (Simbiz-Rpg) as a Life-Based Business Learning Media

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ABSTRACT

Learning media in an educational perspective is a very strategic instrument and helps determine the implication of the teaching and learning activity. This is due to the limitations that humans have in capturing and responding to things that are abstract or that have never been recorded in their memory. This study aims to design, build and test a business simulator application integration system with the Role-Playing Game (SIMBIZ-RPG) format as a life-based learning media and the use of business application media in subjects that have a business and entrepreneurial basis. The research stage began with a preliminary study with a requirements analysis in media preparation. In the second stage, it starts with planning a game-based business simulator system application program framework and then developing a business simulator media system (SIMBIZ-RPG) as a prototype of the final product. In final stage, it starts with the preliminary test by each of field expert for content, material, and media validation. It is hoped that the business simulator software with the Role-Playing Game (SIMBIZ-RPG) format can become a life-based learning medium to support the implementation of independent learning. In addition, through this research, it is hoped that the current condition of the use of media in life-based learning and the effectiveness of the use of business application media in subjects that have a business and entrepreneurial basis.

Keywords: SIMBIZ-RPG, Business Learning Media, Life-Based Learning

1. INTRODUCTION

The development of technology today has almost touched all aspects of human life, one of which is the world of education. The touch of technology in education is considered useful to make it easier for students to receive learning materials (Hujair, 2009)[1]. Digitization of education is also able to present a variety of creative and innovative learning media so as to provide convenience for teachers in delivering material. One of the goals of learning media is to increase the absorption of student learning towards learning materials (Musfiqon, 2012: 32). Cross et al., (2019) and Abbas et al., (2019) in their research stated that an effective learning media for the process of learning is learning

media using game applications. Kirkwood and Price (2014) and Cross et al., (2019) argued through the media of learning in the form of games, business education materials were able to make students active in honing their analytical and decision-making skills independently.

In reality, students' comprehension of the material provided is strongly influenced by the learning activities carried out by the teacher. Students can only absorb 5% of learning materials if the lecture activity is carried out by the teacher in teaching students. Meanwhile, if learning activities are carried out with peers or using a practice doing model, the retention power of students is

able to reach 90%. More details will be explained in the Figure 1.

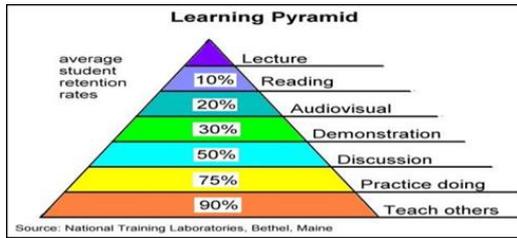


Figure 1 The learning pyramids

Based on the picture of the learning pyramid above, the effectiveness of learning will be achieved by teaching staff if applying a learning model that brings students directly involved with learning experiences such as demonstrations and practice doing. Prestridge et al., (2019) stated that a deeper understanding of learning materials through the learning media that based on game experiences. A concept of simulators in teaching can be done by building teaching media based on Role Playing Game (RPG). RPG is a game format that carries the form of a role-playing game. This game format is very suitable when applied to learning game applications (Udjaja et al., 2019). The advantage of the RPG game format is that players will be more immersive, so players will feel more about what they are playing in the game. This is because when the learning process can be carried out immersively, it will increase the effectiveness of the learning process (Moizer et al., 2019).

The development and demand for the quality of education in Indonesia is one of the reasons for the government through the Ministry of Education to initiate the concept of independent learning. The concept of independent learning that has been proclaimed contains the concept that education must provide the freedom to innovate and the freedom to learn independently and creatively. The concept of independent learning is a reflection of the life-based curriculum that has been implemented by the State University of Malang since 2018. Through this learning, it is hoped that this learning can be an inspiration and solution for the world of education to face world globalization and the acceleration of technological progress. Based on the above background, the main problem in this research is the unavailability of business learning media that are able to hone students' entrepreneurial skills and provide the freedom to innovate and the freedom to learn independently and creatively. Therefore, this study aims to design, build and test the Role Play Game Application - Business Simulator (SIMBIZ-RPG) as a life-based learning medium to support the application of independent learning.

2. METHOD

2.1. Research Design

In building an integrated learning media system based on the Role Play Game Application - Business Simulator (SIMBIZ-RPG), The steps of product development approach are conducted in this study. Based on Borg & Gall design approach, it contains a guide, which steps that taken by researchers. This approach needs to be accommodated. Thus, the design will have a standard that feasible (Cavendish et al., 2019). The following are the stages that will be applied in this research.

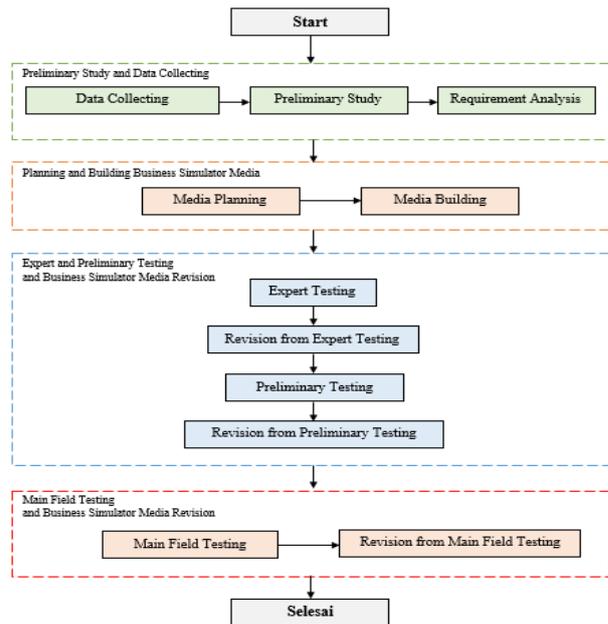


Figure 2 Research Stage

Based on the picture above, the research stages of the SIMBIZ-RPG application design were carried out in several stages, namely,

1. Phase of Literature review and collecting data

In this phase, the author collecting literature from previous study that help for the underpinning of current study. After that, analyze what needs will be included in the SIMBIZ-RPG application that will be created.
2. Phase of the planning and preparation stage of the application

In this phase, the author starting in the setting the research framework, and after that compiling the app-based SIMBIZ-RPG as the prototype of final product.
3. Phase of Field Expert testing and limited scale testing

In this phase, the author is starting in designing and conduct testing from field expert in validation of materials, media, and program on applications. After that, field expert given several inputs as improvement of the product.

4. Large-scale trial phase

At this stage, what was carried out was a trial of the SIMBIZ-RPG application which had been validated and improved by experts as well as a trial on a limited scale sample. The result of this stage is to see the performance of the SIMBIZ-RPG application that was made and make final improvements to the product of this research

2.2. Analysis Method

2.2.1. Testing of Instrument Validity

Purpose of the testing for instrument validity is to test how valid of items in an instrument in term of reflecting the condition of research subject. Product moment equation are used in this study to validate the constructs.

There are several thresholds that need to be fulfil in validating instruments. It is valid when Corrected Item-Total Correlation values is higher than r-table and a positive, vice versa. After that, the result from the validity test is compared with product moment. It is valid when the result from equation is higher than r-table.

2.2.1. Testing of Instrument Reliability

In the current study, to determine the stability of instrument measurement result, the authors applied reliability test. Cronbach Alpha Equation is applied to test the reliability of instruments.

Alpha equations are applied to testing reliability by calculating reliability number of each question. Then, authors need to comparing the alpha value with the alpha value from the table. The reliability test alpha accordance to number of questions is represented in Table 1.

Table 1 Reliability Test Accordance to Number of Questions

Total Question	Threshold
5	0,20
10	0,33
20	0,50
40	0,67
80	0,80

3. RESULT AND DISCUSSION

3.1. Preparation of Business Simulator Learning Media - Role Playing Game (SIMBIZ-RPG)

3.1.1. Preliminary Study

The first step in this research is to conduct review of previous study and continue proceed with study in the

field based on problem. The review of previous study was conducted by researching for articles regarding development in the game-based business media of learning. While observation is done in the field by analyzing the needs in the development of Business Simulator Learning Media - Role Playing Game (SIMBIZ-RPG). Following are the preliminary study result activities.

1. The experience of playing games can be applied as a way of delivering material. Especially game applications that have been adapted to simulation conditions in the business scope.
2. The scheme of the role-playing game makes the students to better understand the conditions and the material because with this game scheme, the playing experience will be more interesting and real.

3.1.2. SIMBIZ-RPG Development

Based on the analysis conducted in the preliminary study and planning in the development of learning media, the following are the results of the development of SIMBIZ-RPG.

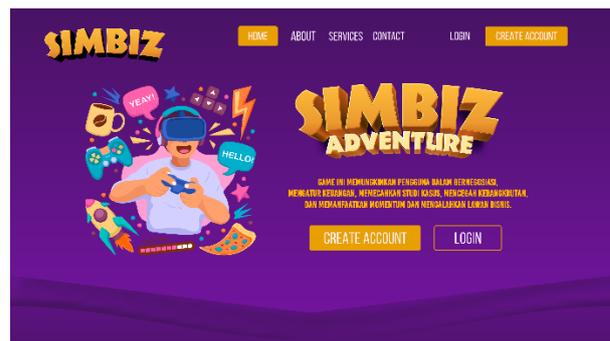


Figure 3 Website Screen

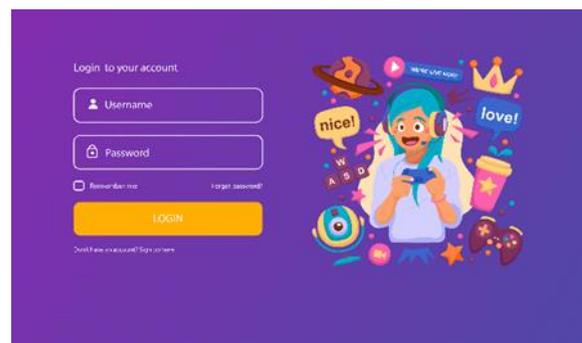


Figure 4 Login Screen

We can see in Figure 3 and Figure 4, there are two interfaces, namely the website screen and the login screen. The website screen contains general information about the application and its developer. This interface also explains how to use and the services provided by the developer. Meanwhile, the login screen contains a slot to enter the identity needed to play the game. If the user does

not have an account yet, they will be directed to create an account first.



Figure 5 Home Screen



Figure 6 Main Player Screen

We can see in Figure 5 and Figure 6, there are two interfaces, namely the main home screen and the main player screen. The main home screen contains the initial screen before entering the core game. In this interface, the user can use the available menus to make settings for the game to be played. While the main player screen is the main page in the game when the game is played. This view is the core view of the game developed because it contains information and features that need to be used in this game.



Figure 7 Financial Dept. Screen



Figure 8 Financial Dept. Screen

We can see in Figure 7 and Figure 8, there are two interface that have the same interface group, namely the business functional interface. In addition to the display shown in Figure 7 and Figure 8, there are several other displays, such as the operational dept. and human resources dept. All of these displays will have a special designation in accordance with the functional business. With the creation of these special functions, it is hoped that users can experience the game more realistically.

3.1.3. SIMBIZ-RPG Trial

In the confirmation of the questionnaire result, the model needs to be tested the validity and its reliability. Not only questionnaire filled by end users, but also from expert teams.

1. The Validity and Reliability test of the Questionnaire

By comparing the Pearson Product Moment correlation index with its critical value with a significance level of 5%, the validity test demonstrates the extent to which the measuring instrument to measure what is being measured is valid or not. Validity and reliability tests are separated into two categories: expert and student validity and reliability tests. Based on the findings of the expert validity test, it is known that all items in the expert and student questionnaires have a probability value (sig) of less than 0.05, indicating that all question items in the expert questionnaire are legitimate. Alpha Cronbach's alpha reliability test was utilized. The reliability test findings demonstrate that the variables in the questionnaire have a Cronbach Alpha coefficient value greater than 0.6, implying that the question instrument used in student and expert surveys is reliable.

2. The Judgement of the Field Experts

The validity of the assessment in this study adheres to Sugiyono's (2013: 168) definition of a valid instrument, which indicates that a valid instrument is one that is utilized to acquire data (measures). The term "valid" refers to an instrument's ability to measure what it claims to measure. Experts or practitioners examine business simulator learning media using assessment instruments based on current

theories, which are subsequently employed as indications in expert evaluations.

Table 2 Field Expert Judgement Result of Learning Media

Constructs	Final Score	Interpretation
Programming	73,2%	Sufficient
Material	70,9%	Sufficient
Display	75,8%	Sufficient

Based on three assessment components, namely features of programming, content, and look of business apps that are produced, it is said that they are regarded effective learning medium and can enhance abilities in business decision making (see Table 2). As a result, the experts in this study decided to accept the learning medium that had been generated.

3. Students Acceptance Test of Media

Students' levels of media acceptability are assessed to see if they are happy with and assisted by SIMBIZ-RPG media in their business learning. The following table summarizes the findings of student evaluations of business apps as learning media:

Table 3 Students Acceptance Test Result of Media

Constructs	Scoring	Interpretation
Display	85,3%	Good
Material	85,7%	Good
Benefit	84,5%	Good

Table 3 demonstrates that media acceptability as a learning medium has a score of more than 80%, indicating that students perceive the media to be very excellent in terms of appearance, substance, and advantages, and that the media can entice students to utilize it.

3.2. Game-based business learning media through SIMBIZ-RPG

Interesting learning is obtained from interesting learning media as well. In the business learning process, students will be more interested in learning to use learning media compared to classical learning where students listen more to the teacher's explanation in front of the class. The process of developing learning media on application-based business materials has been developed through the Integrated Business Simulator (SIMBIZ-Integrated) product. However, based on the development of the environment and culture of the community, especially children, who currently prefer application-based games, the process of developing the SIMBIZ-Integrated application into a game-based learning media will be very important. Game-based learning media can

provide quite effective benefits. With a fun learning process will be able to increase the effectiveness of the teaching and learning process. This is because game-based learning media can package knowledge and practice in packages.

In addition to being a fun learning medium, game-based learning media also provides an immersive experience for students. This is because with an immersive experience, students will feel directly the material from a learning process. By experiencing directly, the materials that have been prepared in the learning media, students will more easily understand and understand more of the material provided.

The Role Play Game Application - Business Simulator (SIMBIZ-RPG) is a game format that carries the form of role playing in business learning. Players in the role-playing game (RPG) format will have an important role in the game based on the cases that have been prepared. Generally, this role is the main role as a manager who has to make decisions in the areas of finance, marketing, operations and human resources. The main role will undergo a series of scenarios that have been determined or designed by the game maker. Through the SIMBIZ-RPG learning media, students will be more immersive, so that players will feel more about what is being played. From these advantages, this game is very suitable when applied to the learning process.

4. CONCLUSION

The goals of this study were to develop a business simulator media application and assess its validity and efficacy, which may be summarized as follows:

1. Business apps that are developed are regarded good as learning media and can increase students' abilities based on three assessment components, namely features of programming, content, and appearance.
2. It is deemed very excellent by students and may draw students' attention to use the media based on the element of look, substance, and also the advantages of the media created.

AUTHORS' CONTRIBUTIONS

Each of authors have specific role in this study. Suryo Hadi Wira Prabowo, as a first author, managing the team and developing the software. Achmad Murdiono and Jefry Aulia Martha provide insight in terms of education theory and also analysing the data. Ika Zutiasari help interpret the data and give discussion. Nik Mohd Hazrul Nik Hashim, as our foreign-peer researchers, provide insight through FGD.

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