

Research article

Evaluation of Geometry Education Game Products With Prospective Users From Universities

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Abstract.

Learning geometry is considered difficult by most students as understanding geometric concepts requires strong thinking skills. It is necessary to have the right learning media to help lecturers convey concepts in geometry learning. The purpose of this study was to find out how to evaluate educational game products to attract customers. This research uses an ADDIE model covering Analysis, Design, Development, Implementation, and Evaluation. However, this article discusses only the evaluation stage. The subjects in this study were users of geometry education game products from universities and user companies. Based on the results of this study, it can be concluded that prospective users of geometry education games agree that this geometry education game product is one of the innovative media products and can help improve the learning of geometric concepts. However, product security must be improved as many users were unwilling to use the game because it has not been launched on the Playstore.

Keywords: evaluation, geometry, educational game

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1. Introduction

The geometry course is a subject that is considered difficult by students because it requires the application of diagrams, solving problems with empirical evidence using deductive reasoning. Different theoretical approaches and application of technology have been used to make the interaction between students and lecturers enjoyable in learning geometry [1]. Geometry learning is very important in the curriculum at the school to college level. Geometry can be taught and learned well if using the use of information and communication technology. Until the twenty-first century, learning geometry is a very important part of education that includes spatial thinking and visualization [2].

Information and Communication Technology is a powerful force for change in education. Developing countries cannot be passive to Information and Communication Technology if they want to compete globally. Advanced life in a country is highly dependent on the quality of education provided to its citizens. One of the steps to

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make changes can be taken by integrating technology with the educational curriculum [3]. Research that has been carried out by [4] concluded that changes in education and school-level learning quality through the use of technology in classrooms are very effective and useful. Teachers can deliver materials and integrate technology into the teaching and learning process in the classroom. Meanwhile, according to [5] the importance of technology policy is very dependent on this environment encouraging the dissemination of new ideas through new technology. Therefore, the main problem for technology policy is not to generate new ideas, but to facilitate their wide use. This can be seen from how much they involve technology in some educational activities.

An alternative educational activity that is interesting for students is implementing educational games. Attitude changes caused by educational games showed a significant increase in knowledge. So it shows that the approach through educational games is very effective in conveying a concept [6]. Educational games are media to facilitate learning and attract students to learn through games. In developing educational games, it is necessary to pay attention to the knowledge space about learning materials and the content space about games that will be used to deliver learning materials [7].

One of the most interesting learning media today is virtual reality and augmented reality. Both are the result of technological developments that have begun to be applied in the world of education. The use of this technology is proven to increase student interaction to be more active. The application of technology can help lecturers prepare students to use it productively in the world of work. Therefore, in this study the authors want to know about the evaluation of prospective users from universities and IT companies on VAR-based educational game products in geometry learning in universities.

2. Research Methods

This research is development research with the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). However, this research is limited to the evaluation stage. The subject of this research involves prospective users of geometry education game media products, namely several universities and Information Technology companies. Data collection techniques using questionnaires and documentation.

3. Results and Discussion

Based on the ADDIE development model that has been carried out and focused on the evaluation stage, the results of the questionnaire for prospective users are 25%

strongly agree and 75% agree that the geometry education game product is used in learning geometry. Based on input and advice from learning material experts in the field of Doctor of Basic Education, Dr. Rida Fironika from UNISSULA Semarang suggested that the product be given instructions for using the product along with the steps for using the application so that students can understand more better. From the leaders of mathematics education study programs at National and Private Campuses throughout Central Java and CEOs of IT companies in Central Java, they explained the advantages and disadvantages of VAR-based geometry education game products which are very suitable to be applied in State Universities and Private Universities. Private Higher Education Campus which has mathematics and mathematics education study programs.

Prospective users of geometry education games answered that 37.5% chose strongly agree and 62.5% answered agree that this VAR-based geometry education game product is one of the innovative products in geometry learning which so far geometry learning is still done in a conventional way. Powerpoint media only, have not used virtual reality applications that are interesting by surfing in cyberspace equipped with games. The calculation results are shown in Figure 1.

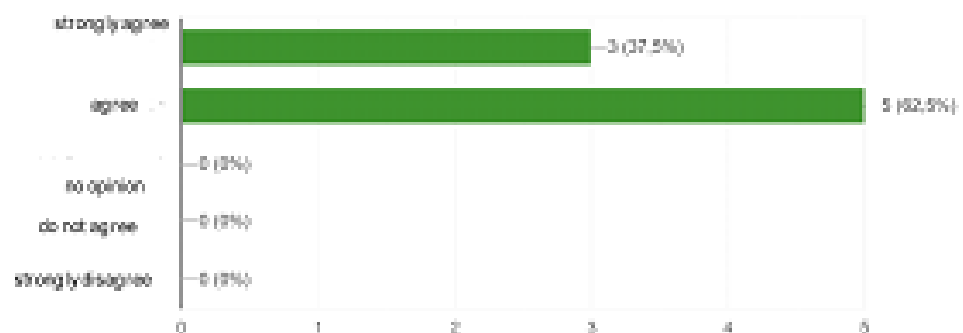


Figure 1: The graph of the response of potential users to geometric educational game products which are innovative.

In addition, based on the questionnaire responses from prospective users, 50% of potential users strongly agree and 50% agree that educational game products are able to improve students' mastery of geometric concepts, for example the Pythagorean theorem which is able to display concepts with a triangle area approach. The calculation results are shown in Figure 2.

The response of potential users who stated that they did not agree to be interested in this educational game product was 12.5%. This is because this product has not been launched in general on the Playstore so that the safety of this product needs to be improved, but 50% of potential users stated that they strongly agree and 37.5% agree

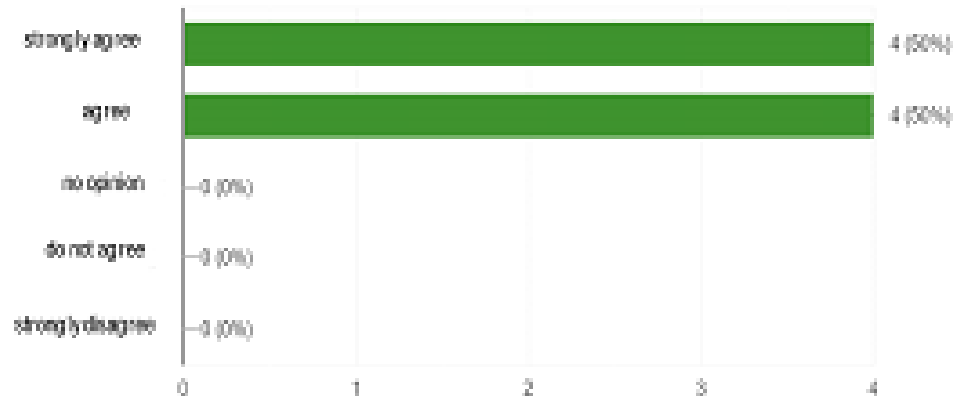


Figure 2: The graph of the response of potential users of educational game products to increasing mastery of geometric concepts.

that they are interested in this geometry education game product. The calculation results are shown in Figure 3.

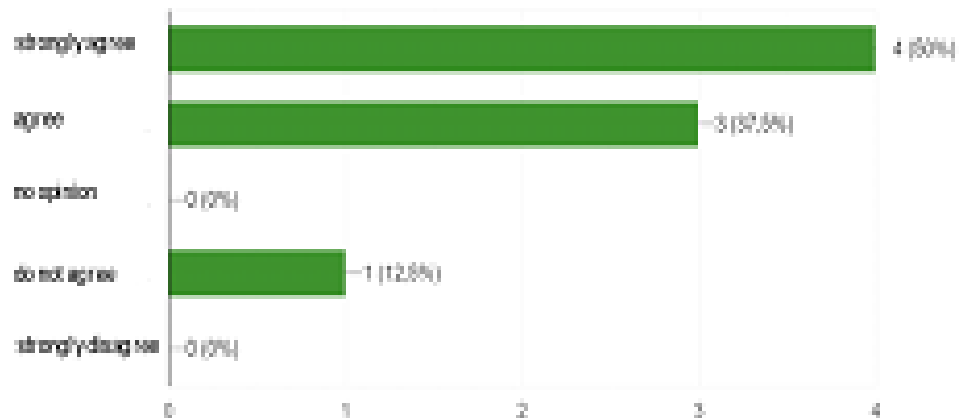


Figure 3: The graph of the response of potential users of educational game products to interest in using this geometry education game.

The results of this study are relevant to research conducted by [9] which concluded that VAR-based educational game design is appropriate for use in higher education. This is because many students are very interested in the existence of games, so integrating a game-based media with the curriculum is the right step. In addition, according to [10] states that the application of educational games in the learning environment is an interesting new trend. Students are more enthusiastic to learn so as to increase students' motivation and understanding of concepts.

4. Conclusion

4.1 Prospective users of geometry education games stated that 37.5% voted strongly agree and 62.5% answered agree that this VAR-based geometry education game product is one of the innovative products in geometry learning.

4.2 Prospective users of geometry education games stated that 50% strongly agree and 50% agree that educational game products can improve students' mastery of geometry concepts.

4.3 Prospective users of geometry education games stated that 12.5% did not agree that they were interested in using this educational game because this product had not been launched in general on the Playstore, so product safety still needed to be improved, however 50% strongly agreed and 37.5% agreed that they interested in this geometry educational game product.

Authors' Contributions

The author hopes that the results of research related to the evaluation of geometric educational game products will be useful for educators to better integrate technology with the learning curriculum. In this case, it is the development of educational games based on virtual augmentation reality. Then it can be applied to other mathematical concepts.

Acknowledgments

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