



DESIGNING DESKTOP-BASED LEARNING MEDIA USING EDUCATIONAL GAME APPLICATIONS IN INTRODUCTORY ACCOUNTING COURSES

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Abstract

This study aims to determine the effect of desktop game application design on the subject of Introduction to Accounting 2 with the topic of inventory at the Department of Accounting, State Polytechnic of Malang. In this study, the technique used is Research and Development and Model Analysis, Design, Development, Implementation, Evaluation (ADDIE) but is only limited to the Analysis, Design, and Development (ADD) stage. The main software used in making this educational game is the python framework, namely Pygame and the Pycharm application as a Python development. The survey was conducted at one of the universities in Malang, namely the Malang State Polytechnic which is located at *Jalan Soekarno Hatta No. 9, Jatimulyo Malang City*.

Keywords: Learning Media, Game, Education

INTRODUCTION

The Covid-19 pandemic has had a very significant impact on various sectors and one of them is the education sector. The application of online learning certainly requires readiness from various parties, both in college and the students themselves. Online learning can be carried out with e-learning such as the Zoom application, Google Meet, WhatsApp, and others. Online learning is a process of transforming conventional education into digital form so that it has its own challenges and opportunities (Harjanto & Sumunar, 2020).

The existence of online learning creates a dilemma for those who do it. For lecturers, the dilemma experienced is the difficulty of measuring learning achievement and sometimes there are students who do not complete assignments or are never present in learning. But another problem that is still often faced by the world of education in Indonesia is the weakness of learning developed by lecturers (Nashiroh et al., 2020). Some lecturers tend to prefer using traditional learning strategies (lectures and discussions) rather than using information technology, so that students are less active and creative in learning (Nurkhin A & Fachrurrozie, 2018).

In the College, the development of Information Technology has started to have a positive impact and has begun to show significant changes (Utami et al., 2019). It is important for educators to better understand and use technology as part of their approach to delivering material to improve student learning outcomes (Kim et al., 2013). Innovation in the education sector needs to be improved in online learning because of the decreased motivation and interest in learning in students as a result of the covid-19 pandemic. By looking at this problem, new innovations in online learning are created using desktop-based educational game learning media.

The effectiveness of learning media using technology has been tested and reported to increase the interest and motivation of students of all ages (Sung & Hwang, 2013). Boot et al.,

(2011) found that from several studies using educational games in learning can improve student performance and cognition. Educational games can be useful to support the teaching and learning process in a more fun and creative way and are used to provide teaching through an interesting media (Lauryn et al., 2019).

The results of research conducted by (Seow & Wong, 2017) shows that the learning media based on the android game "Accounting Challenge" in accounting learning is able to increase students' interest and motivation. The reason for using an android game application for the development of accounting education is because the android system ranks first as the most popular mobile operating system in Indonesia with 36.5% of users. (Onan et al., 2018). As a result of this problem, to improve student learning abilities at the Department of Accounting, State Polytechnic of Malang, it is necessary to develop interactive, creative and efficient learning when used, namely by developing learning media based on desktop-based educational games.

LITERATURE REVIEW

Learning Media

Mahnun (2012) states that "media" comes from the Latin "medium" which means "intermediary" or "introduction". Furthermore, the media is a means of distributing messages or learning information to be conveyed by the source to the recipient of the message. Falahudin (2014) argues that learning media can be understood as anything that can channel information from information sources to recipients of information. The media used in learning must be in accordance with the conditions of the school or college, students and the selection of media must be adjusted to the learning objectives. Meanwhile, according to (Adam et al., 2015) that learning media are everything both physical and technical in the learning process that can help teachers to make it easier to convey learning material to students so that it makes it easier to achieve learning goals.

Purwono et al., (2014) states that learning media has an important role in supporting the quality of the teaching and learning process. The purpose of using learning media in general according to (Lestari et al., 2014) is to assist lecturers in conveying messages or subject matter to students so that messages are easier to understand, more interesting and more fun for students. It can be understood that learning media are tools and techniques used as communication intermediaries between teachers and students in order to streamline communication and interaction between teachers and students in the learning process (Supriyati, 2019).

Inventory Theory

Inventories are goods held for resale or used to produce goods to be sold (Risto, 2015). In trading companies, inventories are goods purchased from other companies that are temporarily stored for later resale without being processed (Aisha, 2018). According to the Indonesian Institute of Accountants (2014: PSAK No. 14) the definition of inventory is an asset available for sale in normal business activities or in the production process. Meanwhile, according to Hidayah et al (2018) Inventories are items of assets held by the company for sale in the normal course of business, or goods that will be used or consumed in the manufacture of goods to be sold. Inventory is an important thing for the company, because inventory is a component of a company's capital which has a lower level of liquidity compared to receivables (Sumiati, 2019).

Educational Games

According to (Kocurek, 2014) A game is a form of art in which participants, called players, make decisions to manage their resources through objects in the game in order to achieve goals.

Prensky (2011) also explained that educational games are games that are designed to learn, but can still offer play and fun. Besides that, Desta (2016) explained the meaning of educational games are games made with learning objectives that are not only intended to entertain so that they are expected to increase knowledge. Meanwhile, according to Alya (2016) Educational games are games whose main purpose is to work, learn, and also entertain.

Games as an educational medium, it has several advantages, namely (1) the motivation of children's learning interest in the material that is learned while playing, (2) students feel happy and comfortable, (3) as a source of independent learning, (4) developing ability in solving problems, (5) increase students' self-confidence and self-esteem when they are able to answer and complete the game (Sari et al., 2014). Game types are divided into two (Agustina, 2015) that is:

1. *Mobile games*

Mobile games the same as video games, but played with mobile devices / smartphones. This video game will provide an interesting social experience, cognitive and emotional and can improve mental or mental health in children and adolescents. Video games can also make them feel more prosperous (Granic et al., 2014).

2. *Mobile Learning*

Mobile learning has the same meaning as e-learning except that mobile learning can only be accessed with mobile devices. M-learning has the following advantages: (a) probability, (b) supports learning because today's young generation is more familiar with devices such as tablets or smartphones than conventional learning methods, (c) increases motivation for device ownership and can also increase commitment to using and learn it, (d) wider reach because its use reaches all levels of society, (e) timely learning increases learning according to needs (Andy, 2007).

METHOD

Types of research

The type of research used in the preparation of this research is Research and Development (R&D). Research and Development is a research method used to produce certain products and test the validity of these products. This method contains steps to develop new products or improve existing products, which can be accounted for. The development model that is used as a reference in this research is the ADDIE model. The ADDIE model was developed by Dick and Carry (1996) which consists of Analysis, Design, Development, Implementation, and Evaluation. Analysis, the first stage is to conduct an analysis to find out the right problems and solutions for students.

Design, the design phase consists of creating and gathering content in research as well as selecting and preparing strategies. Development, the development stage is product creation, product usage guidelines, and validation. Implementation, preparing students, using the product, and analyzing the data obtained from students for an assessment of the learning media created. Evaluation, the evaluation stage aims to evaluate the products developed at each ADDIE stage. After the implementation phase, the activity carried out is to analyze the changes resulting from the use of the product to see the quality of the product. The expected change is an increase in student learning outcomes in accounting learning. The use of the learning process provides suggestions and recommendations for improvement.

The following are the stages of data analysis carried out in the development of desktop-based educational games:

Analysis stage. At this stage, it is done by analyzing the problems that exist in the State Polytechnic of Malang, the Department of Accounting which is a priority so that this educational

game will be able to help alleviate these problems. This stage includes requirements analysis and software analysis:

1. Needs analysis

In the needs analysis, it is necessary to collect the requirements that will be used as the development of educational game applications, namely, the material needs to be developed. In this study, the material requirements developed were in the Introduction to Accounting 2 course with the topic of Inventory.

2. Software analysis

Software analysis is defined as the software needed in making the application. The main software used in making this educational game uses the python framework, namely Pygame and the Pycharm application as a Python development.

Design Stage. At this stage, the formulation of materials and content that will be the main ingredients in educational games, formulation of levels in the game and content at each level is carried out. Then, a storyboard is created that contains navigation buttons between pages. From this design, the interface design includes the background, navigation buttons, material image assets, layouts and so on. From the software aspect, this game was developed using a desktop. Design designs for desktop-based educational games using Python Game or PyGame. Python is a programming language that can execute a number of multi-purpose instructions directly with object orientation methods. PyGame is a python module that contains the functions and classes needed to create games.

Development Stage. This process is the provision of program code from various designs that have been made. In making program code, it can be formulated into several functions including navigation between pages, game interaction functions, scoring functions, leveling functions, feedback functions, voice functions and several other functions. After all these functions are made, the application is tested whether it can run properly or there are still errors. After that the last process is to export the project into an .exe file so that it can be run. In developing the design of educational games, this research uses Pycharm. Pycharm is an Integrated Development Environment (IDE) that can develop Python applications.

CONCLUSION

Covid-19 has changed the learning patterns and methods of students of all ages around the world. Schools and College are closed to limit the spread of the Corona Virus. The policy of closing College creates difficulties for students, lecturers and parents. The application of distance learning is a solution for the sustainability of the education system. This requires motivation and readiness from various parties, both in college and within the students themselves. The dilemma experienced by lecturers is that it is difficult to measure the achievement of learning outcomes and sometimes there are students who have not completed assignments or have never attended learning.

Innovation in the education sector needs to be improved in online learning because of the decreased motivation and interest in learning in students as a result of the covid-19 pandemic. By looking at this problem, new innovations in online learning are created using desktop-based educational game learning media. Learning based on the android game "Accounting Challenge" in accounting courses can increase students' interest and motivation. The reason for using this android application is for the development of education in accounting learning, because the android system is very popular as a mobile operating system in Indonesia. Therefore, the purpose of this study is to design and develop interactive, creative and efficient learning when using learning media, namely desktop-based educational games.

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