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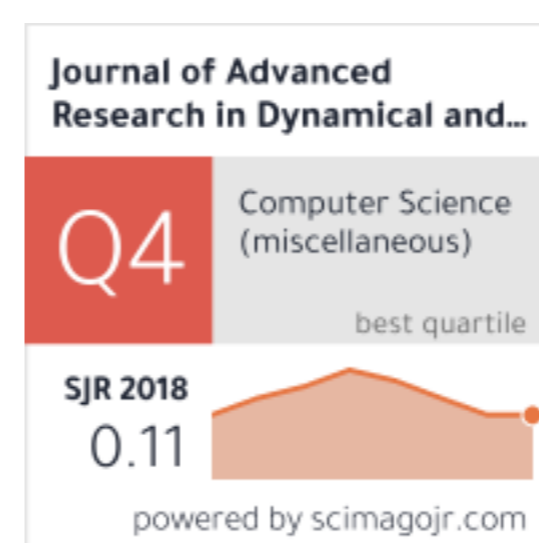
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Whiteboard Animation for Android Design Using Think Talk Write Model to Improve the Post Graduates Students' Concepts Understanding

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Abstract-As the development of Science and Technology also influence the development of learning media. Media learning is one of the determinants of student learning success. Utilization of android technology so far is not only used as a means of communication, or just entertainment but now can be developed for learning media. This research aims to develop whiteboard animationwith Think Talk Write model to improve understanding of post graduates students concept about Educational Policy Courses. The research method used is Research and Development and the type of research used is ADDIE. (1) Analyze, student needs analysis shows students need learning media. (2) Design, the products produced in this study media whiteboard animation. (3) Development, media developed then validated by 84% media experts, 82% material experts, and 85% design learning experts so it is said to be valid. (4) Implementation, post graduates student responses achievement rate 89% are in the practical category. (5) Evaluation, the data in this study consists of preliminary data in the form of values obtained through pretest and final data in the form of values obtained through posttest. The result of the second posttest of the class is tested equality of two averages (right-t test) obtained $\alpha = 0.05$ obtained t_table = 1.669 and t_count = 3.251 because Since t_count>t_table then H_0 rejected and H_1 accepted, so it can be concluded learning using whiteboard animationwith Think Talk Write model to improve concept understanding is said to be valid, practical, and effective than the conventional learning model.

Keywords:whiteboard animation, Think Talk Write, Understanding Concepts

Introduction

The development of learning media is very rapid in the last 10 years, this is very challenging for the world of education in Indonesia, especially universities in using it in lectures, one of the renewable media such as interactive whiteboard has not been used in general in universities in Indonesia, whiteboard animation is a large touch screen panel that can function as a regular whiteboard animation or as a computer projector screen that can control images on a computer by touching the panel surface without using a mouse or keyboard. This technology allows users to write or draw directly on the surface and store it on a computer. (Bradford, L. E., &Bharadwaj, L. A. (2015)

Based on relevant studies conducted by Türkay, S. (2016), as many as 95% of students and teachers observed in the UK stated that whiteboard animation can provide added value to learning, even though 76% felt that with this whiteboard animation will increase their preparation time, like having to learn howoperate it effectively. In early 2008, Carnegie Mellon University student introduced a simple way to create interactive whiteboards by utilizing applications from the wii remote, which are controls in the Nintendo Wii game console game.The development of Science and Technologyaautomaticallyso influences the development of learning media. Learning media are importantfactors for the students' learning success. The learning activities and processes include transferring information from learning sources to thereceiversof information through certain models and media (Buchori, A., Setyosari, P., Dasna, I. W., &Ulfa, S. (2017). With the development of Android-based whiteboard animation, the learning atmosphere becomes more interesting and attractive. Besides that, PowerPoint has the ability to import sounds, images and video files. In this case, the whiteboard animation is modified in such ways that it can generate an apk (Android Package) file. According to (Douglas, S. S., Aiken, J. M., Greco, E., Schatz, M., & Lin, S. Y.

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(2017). Android allows its users to install third-party applications, either obtained from application stores such as Google Play, Amazon Appstore, or by downloading and installing apk files from other sites.

In the teaching and learning process, the students' ability to think creatively and active in learning becomes an important factor (Kurniaman, O., Yuliani, T., & Mansur, M. (2018). There are several cooperative learning models that have recently been developed at schools, one of which is Think Talk Write. This model consists of three stages namely Think, Talk and Write). Think Talk Write is a learning model that starts from the students' involvement in thinking or dialogue with themselves after the reading session, then talking and sharing ideas with their friends before writing. Therefore, through the Think Talk Write model, it is expected that it can improve the post graduates students' concepts understanding (Listiana, L., Susilo, H., Suwono, H., &Suarsini, E. (2016).

In the last few decades, technology has been rapidly developing, especially cell phones and mobile devices. Cell phone is one of the most widely used gadgets by the people. The use of mobile phones as the media for telecommunications today is still not utilized optimally through educational process. The use of mobile phones as learning media is certainly interesting and practical, because it can be accessed anywhere and anytime (Blair, J. M. (2014). This shows the need to innovate presentation media that is not only be able to be operated on computers or laptops with the Windows operating system, butcan also be operated on Android devices. Therefore, the whiteboard animation as a medium of educational learning needs to be developed more. (Siregar, E., Syahradila, C., Bakri, S., &Hafid, D.; 2018)

Educational policy is an assessment of the value system and situational needs factors, which are operated in an institution as a general plan for guidance in making decisions, so that the desired educational goals can be achieved. (Sutton, M., & Levinson, B. A. (Eds.). ; 2001).Educational policy as a consideration based on a value system and several assessments of situational factors, these considerations serve as the basis for implementing institutionalized education. This consideration is a plan that is used as a guide for making decisions, so that institutional goals can be achieved. (Henry, M., Lingard, B., Rizvi, F., & Taylor, S. ; 2013).

Based on the research background above, while the formulations of the problems to be discussed in this study are: 1) how to develop whiteboard animation using Think Talk Write models to improve the post graduates students' concept understanding in educational policy material?; 2) Can the use of whiteboard animation using Think Talk Write model improve the ability to understand concepts post graduates students in practical educational policy material?; 3) has the development of whiteboard animation using Think Talk Write models to improve the post graduates Students' Concept Understanding been effectively applied?

Methods

The method used in this study was research and development, which consisted of the questions on how to hold research, design, produce, and test the validity of products that have been generated (Sugiyono, P. D. ; 2015). The development itself was defined in general as an attempt to improve technical, theoretical, conceptual, and moral skills of the students according to their needs through education and training. Development was a method used to develop a product through somedetermined stages in accordance with the analysis of effective learning design models used at the schools. From the definitions above, it could be concluded that development was a process of developing something andgenerating a new product.

The steps of the research or development process consisted of a study of product research findings that would be developed, developing products based on the findings, conducting field testsbased with the setting in where the product would be applied, and revising the results of the field tests (Setyosari, P; 2012). The model in this study wasADDIE model. It stands for Analysis, Design, Development or Production, Implementation or Delivery and Evaluations. The ADDIE model was developed by Dick and Carry to design a good learning system. In addition, this model

could be used for various forms of product development such as models, learning strategies, learning methods, media, and learning materials.

This model consisted offive main stagesnamely (A)nalysis, (D)esign, (D)evelopment, (I)mplementation, dan (E)valuation.
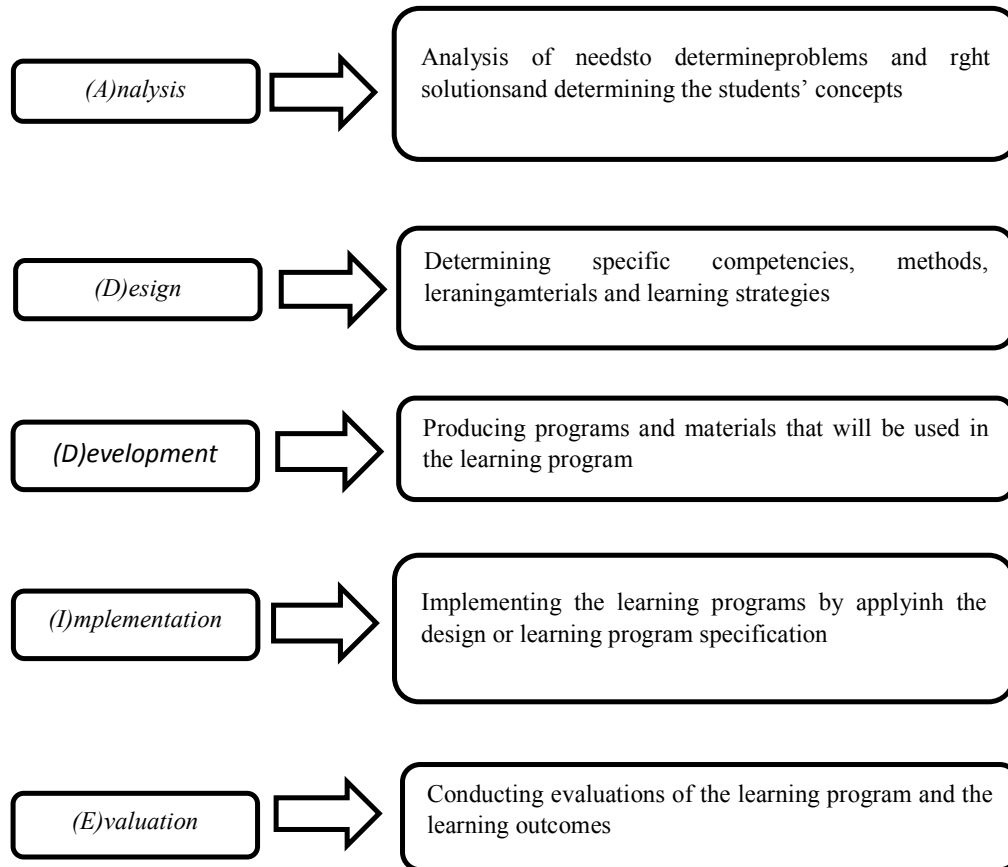

Chart1 Addie Model Stages

The development type in this study wasthe development research used by thewriters to generate products in the form of whiteboard animation learning media using Think Talk Write model, with the ADDIE development model.

Results And Discussions
Analyze

Before conducted the research, the writers firstly conducted some observations on the learning media used and analyzed the curriculum that would be developed through the materials. Based on the results of an interview with one of the lecturer at post graduates program on Universitas PGRI Semarang, it is found that the students' motivation and interest towards educational policy is still very low, especially in rectangular topic, cecausethistopic is considered difficult by most students and it is not interestingto learn.They only memorize the formulas without understanding the concepts of obtaining them, so that their ability to understand the concept is very low in rectangulartopics and influencesthe learning outcomes.

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Based on the observations that have been conductedatpost graduates program ,the main problem found is that the students' concept understandingis still low. It can be seen that if they are given a simple problem, they can solve it easily, but if they have been given more complext problems, they will get confused and feell difficult to understand the existing concepts.

The students' low ability to understand the concepts in educational policy is caused by several things. First, the learning method used by the teacher is still conventional. The teacher still uses the lecturing method, so that the learning is olny teacher-centered. This causes the students to be less active because they have only to listen. Second, less use of the media is. The media commonly used by the teacher are in the form of props. The props are of course only used on certain materials, so that the utilization of media is also less optimal.

In this research, the media that will be developed is whiteboard animation.This media has many benefits because it is able to display various application programs such as slides, animations, graphics, audio and images. In addition, most teachers have already been able to create and use whiteboard animation for the learning at campus. Usingwhiteboard animation, it is easy for the teachers to create media presentations innovatively and attactively.

Based on the observations made at post gradustes Universitas PGRI Semarang, most students have used Android-based cellphones, but this tool has not been yet fully utilized in the learning process. This shows the need to innovate the presentation media that is not only able to be operated on computers or laptops with the Windows operating system, but on Android devices. Therefore, the development of whiteboard animation as a medium of educational policy learning needs to be developed more. In this research, the media that will be developed is whiteboard animation with public policy material

Design

The product that will be generated in this research is whiteboard animationin public policy topic for the first grade on post graduates students. The following image is the product design that has been made.
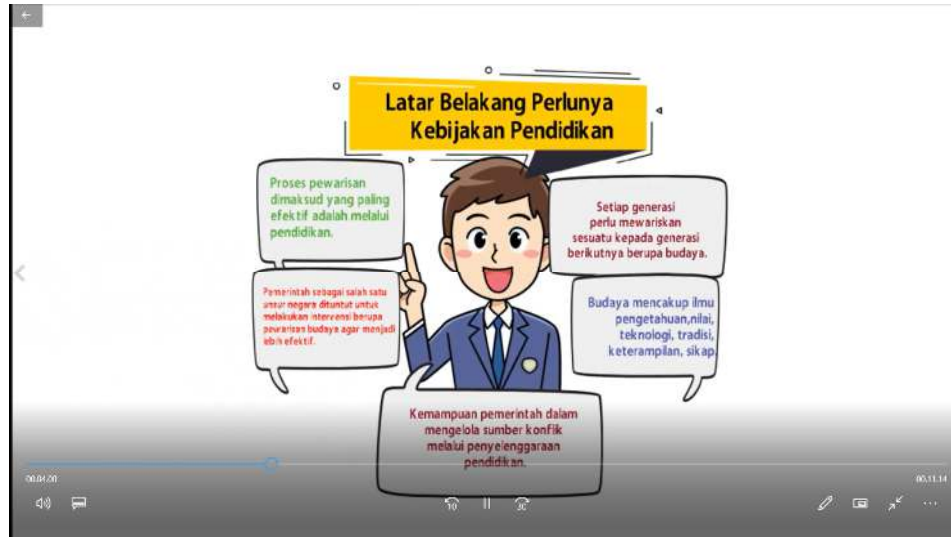

Figure 1 whiteboard animation media

Figure 2material of whiteboard animation

Development

On this stage, the expert validation is carried out on the product made. The learning media product, in the form of whiteboard animationusingthink talk write model to improve the post graduates students' concepts understanding in public policytopic in educational policy material as a result of this development is tested on the level of validity, practicality and effectiveness.

Results of Learning Media Validation

The media expert analysis is viewed from the aspects of: (1) application, (2) creativity, (3) innovation, and (4) visual communication. Based on the calculations, it is identified that the percentage = 84%, and after being converted to a scale conversion table, the percentage of achievement level of 84% is classified as good, so the learning media is worth testing. The general comment from validator 1 is that the media is good to provide the students with the convenience of learning through technology and should be given more varied images. Meanwhile the general comment from validator 2 is that the packaging into the APK will attract the students more because the development of technology has been followed by many school-age children.

Results of Learning Materials Validation

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Results ofLearning Design Validation

The expert learning design analysis is viewedfrom the aspects of: (1) learning model, and (2) learning scenario. Based on the calculations of the results from validator 1 and validator 2, it is identified that the percentage = 85%, and after being converted to a scale conversion table, the percentage of achievement level of 85% is classified as good, so that the learning design is worth testing. The general comment from validator 1 and validator 2 is the adjustment of the images with rectangular and the use of whiteboard animation media with a think talk write model is apparently able to improve the understanding of concepts in educational policy learning, and it needs to be developed moreto make it useful for learning in general.

The overall analysis of the experts concludes that the whiteboard animation learning media is suitable for use with necessary improvements. Thus, the mobile learning media is said to be valid to be used as a media for learning educational policy courses. This is in line with the research of Sankey, M., Birch, D., & Gardiner, M. (2012). Showed the impact of multiple representations of content using multimedia on learning outcomes across learning styles and modal preference, more 80% student very happy to learning with multimedia because student can looked material with enjoyable. So impact multimedia was discussed byIssa, R. R., Cox, R. F., &Killingsworth, C. F. (1999). showed Impact of multimedia-based instruction on learning and retention give student motivated to learn any material in the university.

Implementation

After the product is validated by the media and material expert,s the next step is to distribute the students response questionnaire in form of small group test. After getting the response percentage, the students meet good category, then followedby testing the learning media in learning activities within experimental class. After being spproved worthy testing by the media, material, and learning design experts, the researchers will use whiteboard animation media usingthink talk write model to improve the students' ability to understand the concepts in educational policy learning in real situations within the classroom. This learning media is responded by 22 students of class IA magister educational management program on Universitas PGRI Semarang. The students respond to this media by filling out questionnaires given by the researchers to. Based on the calculations, it is identified that the percentage of 89%, and after being converted to a scale conversion table, the percentage of the 89% achievement level is in very good category.

Thewhiteboard animationusing talk write think model to improve the students' understanding of practical concepts has been effectively used, and this is seen in the experimental class students' response questionnaire. Based on the results of questionnaire analysis, the students' responses to whiteboard animationwith talk write writing model to improve the concepts understanding reach 89%. This is in line with a research conducted by Bodemer, D., Ploetzner, R., Bruchmüller, K., &Häcker, S. (2005). Showed supporting learning with interactive multimedia through active integration of representations, more student very interesting with multimedia to learning in the class average 75% student supporting to more good outcome learning. The research is supported by Mukti, N. A., &Hwa, S. P. (2004). Showed Malaysian perspective: Designing interactive multimedia learning environment for moral values education. The results of the study show that the students arehighly interested, as seen in the percentage level which reaches 89.25%.

Evaluate

After the learning activities have been conducted onthecontrol andexperimental class, the evaluationof the learning program andanalysis of the effectiveness data is done. This is the fifth stage (last stage) of ADDIE *i.e.* Evaluate. The final data are analyzedusinglilieforstestto identifythe

data normality level from the both classes. For the control classL_{table}based onlilieforstable, with the significance level is 5% and n=32 that it is obtained$L_{table} = 0,157$and$L_{count} = 0,123$, and because$L_{table} < L_{count}$then$H_0$is accepted. Meanwhile,for the xperimental one,based onlilieforstabewith the significance 5% and n =32 it is obtained$L_{table} = 0,157$and$L_{count} = 0,134$.Because$L_{table} < L_{count}$then$H_0$is accepted. It can be concluded thatboth samplescome from normally distributed population.

To find out whether there is a difference between the experimental class using whiteboard animation learning media and Think Talk Write model, and the control one that use conventional learning, it is used one-sided (right-hand) test. From the analysis, it is obtained the average value of the experimental class and the control one, with the number of 32 students for each class, tcount = 3,251. From the t-table distribution with dk = 62 and α = 5% it is obtained ttable= 1.669. Because tcount>ttable, then H0 is rejected and H1 is accepted, thus it can be concluded that learning process using whiteboard animation with Think Talk Write model to improve concepts understanding in rectangulartopic is better than the conventional learning model.

Then, based on the data of students' learning outcomes, the percentage of classical learning completeness of the experimental and control class is presented as follows:
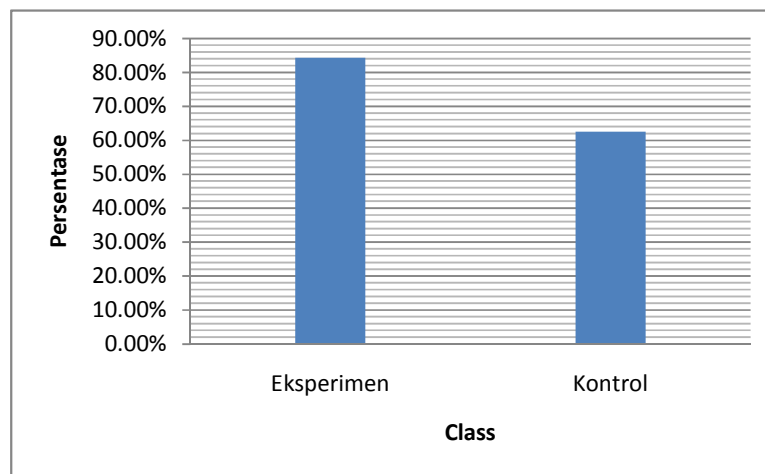

Figure 2 Percentage of Classical Learning Completenss

Based on figure 2, the experimental class classical learning completeness is 81%. Because classical completeness> 75%, the students' learning outcomes in the experimental class are classified as fulfilling the classical completeness. Meanwhile, the percentage of control class classical learning completeness is 73%. Because the classical completeness <75%, the learning outcomes of students in the control class do not yet meet the classical completeness. This shows that the average scores of experimental class arehigher than the control one. Therefore, it can be concluded that the use of whiteboard animation media using talk writing model to improve the students' concepts understanding is more effective than conventional method. This is in line with Neo, T. K., & Neo, M. (2004) showed classroom innovation: engaging students in interactive multimedia learning, with interactive multimedia basic whiteboard animation must be effectively used media before lecture give post test to student.

The completeness level of students' concepts understanding in this research for the experimental class is 83% included as a very good category, while for the control class the average scoreis 73% classified asfair. So, that it can be seen that the students' concepts understanding with the think talk write model in the experimental class is better than using conventional approach

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applied the control class in rectangulartopic. This is in line with Giardina research (Giardina, M. (Ed.). (2012). Showed Interactive multimedia learning environments: Human factors and technical considerations on design issues, which states that from the results of the research and discussion, it can be concluded that interactive learning media is suitable to be used as a learning medium to improve the students' concepts understanding concepts in the topic ofeducational policy

Conclusions

Based on the results of the analysis and discussion in this study, it can be concluded that from the results of the validation of media, material, and learning design experts, the whiteboard animationmedia usingthink talk write model is able to improve the students' concepts understanding developed using appropriate ADDIE which is applied in educational policy learning activities in rectangulartopic. The percentage of material validation is 84%, media validation is 82%, and the learning design is 85%. Meanwhile, for the results of questionnaire analysis for the students of class first grade in the postgraduates program, the learning process usingwhiteboard animation with think talk write model is able to improve students' understanding of concepts by 89%. Therefore, it can be concluded that this learning media is practically used. Based on the analysis of the t test (right side) t_count> t table is 3.251> 1.669, and H0 is rejected and H1 is accepted. It isalso proved with the classical learning completeness for the experimental class is 84.3%, and for the control class is only 62.5%. This shows that the average experimental class is higher than the control one. So, the learning using whiteboard animation with Think Talk Write modeleffectively improves the students' concepts understanding in rectangulartopic than the conventional learning methods.

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