DEVELOPMENT OF INTERACTIVE WHITEBOARD MEDIA WITH A CONSTRUCTIVIST APPROACH IN PUBLIC POLICY COURSES

Rosalinan Ginting, Maryanto, Ika Menarianti and Achmad Buchori

The aim of this research is to develop Media Interactive WhiteBoard with Constructivist Model in Public Policy course. The specific targets to be achieved in this study is to test the effectiveness of Interactive WhiteBoard learning media with the Constructivist Model in the course of Public Policy Studies Program Pancasila and citizenship of PGRI University of Semarang. Procedure of learning device development using model developed by Borg and Gall covering 10 stages, namely (1) Research and information collecting, (2) Planning, (3) Develop preliminary form of product, (4) Preliminary field testing, (5) Main product revision, (6) Main field testing, (7) Operational product revision, (8) Operational field testing, (9) Final product revision, (10) Dissemination and implementation. In this study, the steps taken are only limited to major product revisions. The results showed that Media Interactive Whiteboard has been validated by two material validators and 1 media validator obtained percentage indicator of 90.8%. While the assessment from media experts showed the percentage indicator of 91.7%. These percentages are categorized as "Excellent" criteria because they are located between 81% -100%. And it has been declared eligible to be used in the learning process in public policy courses.

Keywords: Learning Media, Interactive Whiteboard, Public Policy, Constructivism

INTRODUCTION

The development of learning media is very rapid and very challenging for the world of education in Indonesia and one of the renewable media is interactive whiteboard. Interactive whiteboard is a large touch screen panel that can function as a normal whiteboard or as a computer projector screen that can control images in a computer by touching the panel surface without the use of a mouse or keyboard. This technology allows users to write or draw on its surface directly and save it to the computer. (Glover and Miller 2002).

Based on relevant studies conducted by Steve Kennewel and Alex Morgan (2003), 95% of students and teachers observed in the UK stated that interactive whiteboards can add value to learning, although 76% feel that with this interactive whiteboard will add time to their preparation, as must learn how to operate it effectively. In early 2008, Johnny Chung Lee, Carnegie Mellon University student introduced a simple way to make interactive whiteboard by utilizing the application of wii remote, which is a control tool in the game console game nintendo wii.

Glover, D. and Miller, D. (2002): about The Interactive Whiteboard As A Force For Pedagogic Change: The Experience of Five Elementary Schools in An English Education Authority. Information Technology in Childhood Education.

* Universitas PGRI Semarang, Central Java, Indonesia, *E-mail: gintingrosalina24@yahoo.co.id*

Norfolk, Vermont, AACE, which shows that elementary school children are greatly helped in their pedagogical abilities by interactive whiteboards. Mercer, Neil. (2010) about. "Can the Interactive Whiteboard Help to Provide 'Dialogic Space' for Children's Collaborative Activity?". shows that the students in the school are very happy with the interactive whiteboard because students can collaborate in the delivery of ideas and ideas directly in front of the class.

While Fariz darmawan *et al.* (2013) about. "The design of interactive whiteboard using wii remote application with high touch design process approach in ITS Surabaya shows that students majoring in informatics engineering are very happy with the interactive whiteboard media because it helps understanding the concept of students.

Departing from that it is necessary to explore how to design an interactive whiteboard using wii remote using high touch design process approach so that later produced tools that meet the ergonomic aspects, which is easier to use, better in terms of performance, more able to accommodate the click function right, and more effectively in relation to the Human Computer Interation system that emphasizes how users feel comfortable in their interaction with a tool, so that later can be applied as a medium of learning in the classroom, and furthermore as a medium of learning in the classroom, the use of interactive whiteboard with this remote application will also be applied to college or school as a media presentation in learning.

Constructivism sees learners build their knowledge from their own learning experience. Learning can be seen as an active process, and knowledge can not be received from outside or from others. Learners should be given the opportunity to build knowledge rather than be given knowledge through teaching. The nature of constructivist learning by Brooks says that knowledge is non-objective, temporary, constantly changing, and uncertain. Learning is seen as the compilation of knowledge from concrete experiences, collaborative activities, and reflections and interpretations. Teaching means organizing the environment so that students are motivated in exploring meaning and appreciating uncertainty.

If it is associated with using interactive whiteboard in public policy course lectures, lecturers do not have to draw many times just once. the lecturer explains simply by using stylush to show the latest policy diagrams of the government, and can be seen until what the contents are.

Then in the study of public policy courses in Pancasila and citizenship study program at PGRI University, Semarang, lecturers have not used it in explaining and fostering student creativity in addressing the public policies that are growing rapidly today, therefore with this interactive whiteboard media students are expected to be able to construct their thoughts on the touch screen directly without having to linger to convey the idea in front of the class.

Based on the description, it can be formulated as follows: (1) how to develop interactive whiteboard media in public policy course with constructivist approach

based on student interest and motivation? and (2) does learning by using interactive whiteboards with a constructively effective approach be used in the public policy study course?.

RESEARCH METHOD

The research method used is R & D (research and development) or type of research development. The development is the Interactive Whiteboard-based Interactive Media Course. Procedure of learning device development using Modified model developed by Borg and Gall (1983) covering 10 stages, namely (1) Research and information collecting, (2) Planning, (3) Develop preliminary form of product, (4) Preliminary field testing, (5) Main product revision, (6) Mainfield testing, (7) Operational product revision, (8) Operational field testing, (9) Final product revision, (10) Dissemination and implementation.

Borg & gall (2003), states that the development research procedure basically consists of two main objectives: (1) developing the product, and (2) testing the effectiveness of the product in achieving the goal. Population in this research is all student of semester VI Prodi Education Pancasila and Citizenship University PGRI Semarang academic year 2017.

Data collected on the development of interactive whiteboards in the form of quantitative data as the principal data and qualitative data in the form of suggestions and input from respondents as additional data. The data gives an idea of the feasibility of the developed product.

Data from material experts

The quality of the product is viewed from the aspect of the contents of the material, namely: the suitability of the syllabus, the relevance to the student's ability, the clarity of the learning topic, the material demands, the material coverage, the appropriateness of the evaluation design, the relevance of the image, the video, and the illustration with the material, ease of use, .

Data from media experts

Product quality in terms of media aspects, namely: interaction with users, the use of text format language, the use of color, image quality, sound quality.

The development procedure carried out in this study is only done until the fifth stage. Further research will be developed to know the effectiveness in the class.

Research and information collecting

Activities undertaken are conducting literature studies that underlie the learning products to be developed by reviewing some of the earlier relevant research results for reference, classroom observation, and designing research product development
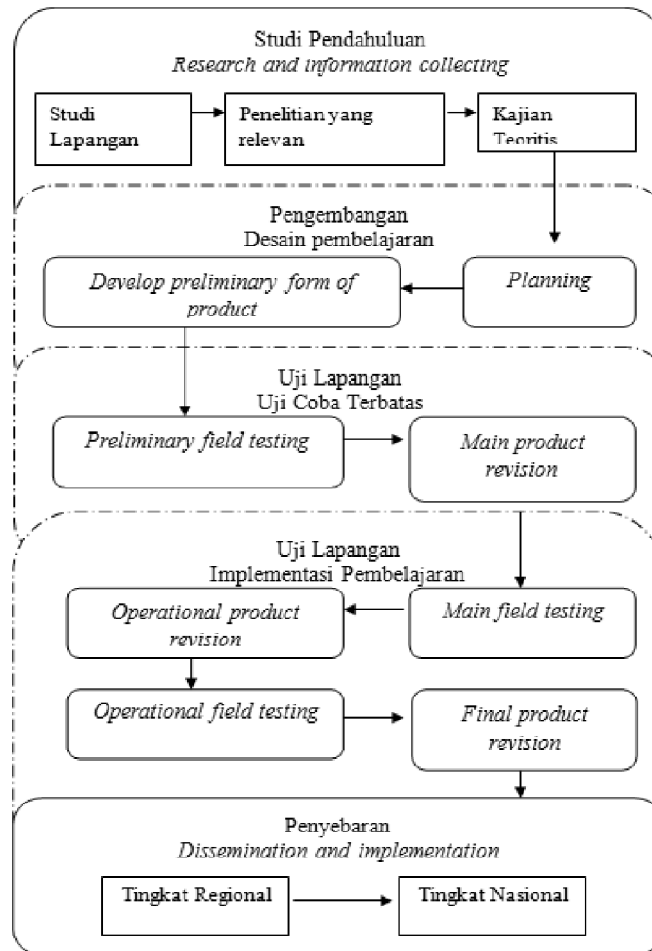
Figure 1:   Modification Scheme of Borg and Gall Development Model

and development frameworks. The result of this activity is the acquisition of learning system implementation profile, especially related to the activity or object of learning which want to be improved in this case is the design of learning media of public policy course based on Interactive Whiteboard

Planning

Further designing various activities and procedures that will be pursued in research and development of learning products. Activities that need to be done in this stage, namely to formulate specific goals to be achieved with the development of a product; estimate the funds, personnel, and time required to develop a product; formulate

the researcher's ability, working procedures, and other forms of participation required during the research and development of a product.

Develop preliminary form of product

This stage is the initial design stage of interactive learning products whiteboard that has been validated and revised based on the input of experts to produce a revision

Preliminary field testing

The purpose of this stage is to obtain a description of setting (setting) the application or feasibility of a product in this interactive whiteboard. This preliminary trial is limited to two classes. The results of this limited trial is conducted to determine the weakness and used as material to make a revision of a product to be developed.

Main product revision

This activity is to fix weaknesses based on validation results resulting in product improvements. Based on the validation that has been done the product has been declared eligible to use without revision.

RESULT AND DISCUSSION

The assessment of Interactive whiteboard-based public policy instructional media design covers 7 subjects: Public Policy, State Administration Relations Public Policy, State Policy Formulation Process, Public Policy Formulation Model, State Policy Analysis, Public Participation in Public Policy and Value System in Public Policy. Assessment done by 1) Prof. Warella from Diponegoro University, as a material validator 1, 2) Dr. Munawar Noor, M.S from the University of Seventeen August as a material validator 2, and 3) Dr. Achmad Buchori, M.Pd as a Media validator.

Data Presentation

Table 1 presents descriptive expression of the results of expert assessment of learning materials on the development of this material submitted through questionnaire method with validation sheet instrument.

TABLE 1: RESULTS OF THE ASSESSMENT OF MATERIALS EXPERTS THROUGH THE VALIDATION SHEET INSTRUMENT

No	Aspects of Assessment	Validator		Appropriateness
		1	2	
1	General	100%	90%	95%
2	Learning Presentation	94,3%	77%	85,7%
3	Language Feasibility	100%	85%	92,5%
4	Graphical feasibility	97,7%	86,7%	92,2%
	Average	98%	84,7%	91.4%

From table 1 can be seen 95% for general aspects of the material, 85.7% for the presentation of learning, 92.5% for language eligibility and 92.2% for the aspect of graphical feasibility.

Table 2 presents a descriptive expression of the results of expert media assessment on the development of this material submitted through questionnaire method with validation sheet instrument.

TABLE 2: MEDIA ASSESSMENT RESULTS THROUGH VALIDATION SHEET

No	Aspects of Assessment	Appropriateness
1	General	90%
2	Learning Presentation	97%
3	Language Feasibility	90%
4	Graphical feasibility	88,9%
	Average	91,5%

From the above table can be seen 90%, for general aspects of media, 97% for learning presentation, 90% for language feasibility, 88.8% for feasibility of graduation.

Data Analysys

From the above table can be seen 90%, for general aspects of media, 97% for learning presentation, 90% for language feasibility, 88.8% for feasibility of graduation

$$Persentase = \frac{\Sigma(jawababan \times bobot\,tiap\,pilihan)}{n \times bobot\,tertinggi} \times 100\% \qquad (1)$$

Data obtained from expert material validators are substituted into the formula, can be calculated by the following calculation:

$$Persentase = \frac{101 + 117}{24 \times 2 \times 5} \times 100\% = \frac{218}{240} \times 100\% = 90,8\%$$

From the percentages that have been obtained then transformed into qualitative sentences. To be able to give meaning and decision-making, accuracy is used as an indicator of successful validation of learning material experts. The percentage results indicate that the percentage of indicators is 90.8% and lies between 81% - 100% of the "Excellent" criteria. And it has been declared eligible to be used in the learning process without revision.

Analysis of data conducted from the expert of learning media developed can be calculated percentage of achievement level of learning media as follows:

$$Persentase = \frac{110}{24 \times 5} \times 100\% = \frac{110}{120} \times 100\% = 91,7\%$$

The percentage results show that the indicator percentage is 91.7% ranging from 81% -100% to the "Excellent" criteria. And declared eligible to be used in the learning process without revision.

The resulting product is the learning media of Interactive Whiteboard based public policy class are:
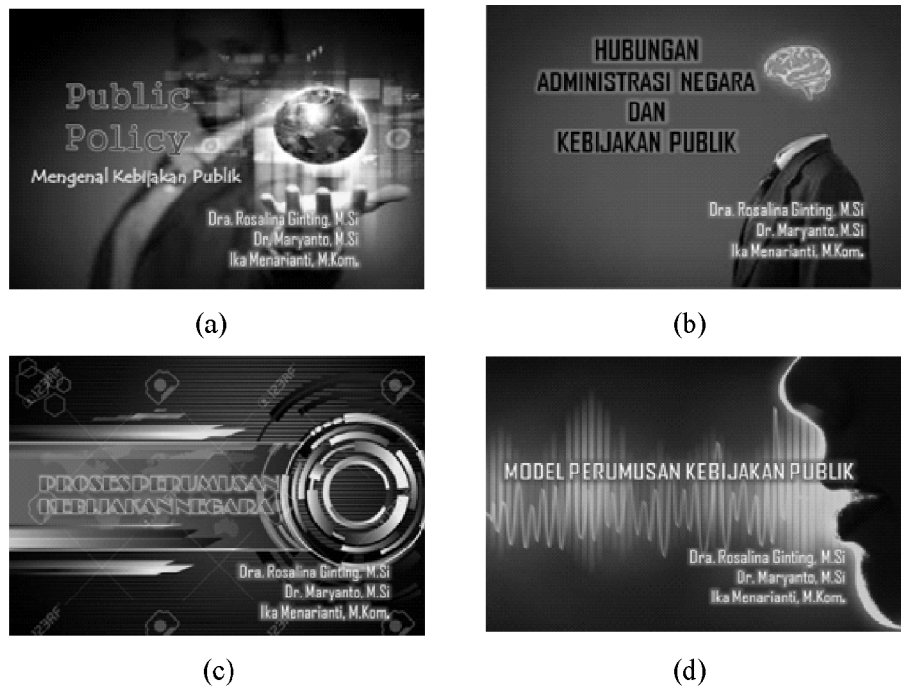

(a)   (b)

(c)   (d)

Figure 2: Examples of public policy learning media that have been made are: (a) Knowing Public Policy, (b) Public Administration & Public Policy, (c) State Policy Formulation Process, (d) Public Policy Formulation Model

CONCLUSSION

The conclusions of this research are:

1. Interactive Whiteboard media has been produced with a constructivist approach to the public policy course where the media is more attractive and easier to apply.

2. A valid media product has been generated and is categorized as "Excellent" based on the percentage of indicator results from validation. And declared eligible to be used in the learning process without revision.

Referencess

Chaeruman. A. Uwes. (2009). PembelajaranInteraktif Dengan Memanfaatkan AnekaSumber Belajar. Pusat Teknologi Komunikasi Departemen Pendidikan Nasional.

Glover, D. dan Miller, D. (2002). The Interactivewhiteboard As A Force For Pedagogic.

Change: The Experience of Five Elementary Schools in An English Education Authority. InformationTechnology in Childhood Education. Norfolk, Vermont, AACE.

Holzinger. A. (2009). "Intuitive E-Teaching by Using Combined HCI Devices:Experiences with Wiimote Applications. Medical UniversityGraz. Institute for Medical Informatics, Statistics & Documentation (IMI) Research Unit HCI4MED.

Jelarwin. D. (2008). Pengaruh Media Pembelajaran Terhadap Hasil Belajar Pengelasan Pada Siswa yang Berprestasi Tinggi dan Rendah di SMK Swasta 1 Trisakti Laguboti -Kabupaten Toba Samosir.

Kennewell, Steve dan Alex Morgan. (2003). "StudentTeachers' Experiences and Attitudes.

Towards Using Interactive whiteboards in the Teaching and Learning of Young Children." Department of Education, University of Wales Swansea.

Lee. J. Chung. (2008). "Hacking The Nintendo Wii Remote". Camegie Mellon University.

Myun. W. Lee, dkk. (1995). "High Touch: Ergonomics in a conceptual design process- Case studies of a remote controller and personal telephones. Departemen of Industrial Engineering, Seoul National University. Korea.

Myun. W. Lee, dkk. (2000). "High Touch- an innovative scheme for new product development: case studies 1994-1998. Departemen of Industrial Engineering, Seoul National University. Korea.

Saaty, T.L., (1980). The Analytic Hierarchy Process. McGraw-Hill, New York.

Supriatna. D. (2009). Pengenalan media pembelajaran. Bahan ajar untuk diklat etraining.

pppptk tk dan plb. Pusat Pengembangan dan PemberdayaanPendidik dan Tenaga Kependidikan Taman Kanak-kanak dan Pendidikan Luar Biasa.

Tanaka, John (2009). "Nintendo Shares SummerPlans for Japan". IGN. IGN Entertainment.

Thin. D.Huy dan Dung. V. Tan. (2009). "InteractiveTeaching & Learning with Low-costInteractive Smart Boards." SoutheastAsian Ministers of Education Organization Regional Training Center Ulrich, K.T., Eppinger, S.D., 1995. Product Design and Development. McGraw-Hill, New York.