The Application of Construct 2 Application the Development of Interactive Digital Modules as Learning Media in Effective Communication Course in Education PG PAUD FIP UNIMED

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Abstract

This study aims to (1) develop and implement the construct 2 application as an interactive digital module, (2) determine the feasibility of the construct 2 application as an interactive learning media, (3) determine the assessment of students, media experts and material experts. This research is a type of method used by Research and Development (RnD) with the ADDIE development model. which includes analysis, design, development, implementation, and evaluation, but only carried out up to stage four, namely implementation. Data collection techniques were carried out using a questionnaire. In general, the results of the assessment of the material aspect validation test are classified as Good with a total score of 88 and the range of values and media aspect validation are also classified as Very Good category, namely 93 with an average value of 4.65. So that the Application of Construct 2 Application-Based Interactive Learning Media in Effective Communication Courses in Education PG PAUD FIP UNIMED is worthy of being used as a learning medium and independent learning resource.

Keywords: Construct 2 Application, Effective Communication in Education, Interactive Learning Media, PG PAUD

Abstrak

Penelitian ini bertujuan (1) Mengembangkan dan menerapkan aplikasi construct 2 sebagai modul digital interaktif, (2) Mengetahui kelayakan aplikasi construct 2 tersebut sebagai media pembelajaran interaktif, (3) Mengetahui penilaian mahasiswa, ahli media dan ahli materi. Penelitian ini merupakan jenis metode yang digunakan *Research and Development (RnD)* dengan model pengembangan ADDIE. yang meliputi *analysis, design, development, implementation*, dan *evaluation*, namun hanya dilakukan sampai tahap empat yaitu *implementation*. Teknik pengumpulan data dilakukan menggunakan kuesioner. Secara garis besar, hasil penilaian uji validasi aspek materi tergolong Baik dengan total skor 88 dan rentang nilai serta validasi aspek media juga tergolong kategori Sangat Baik yaitu 93 dengan rata-rata nilai 4,65. Sehingga Penerapan Media Pembelajaran Interaktif Berbasis Aplikasi Construct 2 Pada Mata Kuliah Komunikasi Efektif Dalam Pendidikan PG PAUD FIP UNIMED ini layak dijadikan sebagai media pembalajaran dan sumber belajar mandiri.

Kata Kunci : Aplikasi Construct 2, Komunikasi Efektif Dalam Pendidikan,Media Pembelajaran Interaktif, PG PAUD

Introduction

The development of science and information technology today is increasing rapidly. Advances in technology cause changes in all aspects of human life, especially in the world of education so that technology is used as a medium in learning. In the field of Education, the learning process is identified with the process of delivering information and communication through learning multimedia applications in the form of interactive learning media development applications. Learning media continues to develop along with developments in technology and the world of education. Utilization of learning media is a creative and innovative effort systematically to create experiences that can teach students so that in the end educational institutions will be able to produce quality graduates.

According to Yaumi (2018) that the selection of media to be used in the learning process needs to consider several aspects, including the expected abilities of students, the characteristics and learning styles of students, the learning environment, and the development environment. Media are all physical tools that can present messages and stimulate students to learn such as films, books and tapes (Arief S. Sadiman: 2011). Learning media is needed by educators to help students understand a concept in learning, especially media that can be operationalized by students themselves. In this case, computer technology is an important factor that can assist educators in making instructional media and conveying learning. In addition, Android can also be used to implement learning media for students.

Sanaky (2013) describes the criteria for learning media which include: (1) Aspects of software engineering consisting of developing to use effective and efficient learning media, learning media can be installed and run on various hardware and software (compatibility), can be maintained easily (maintainable), easy to use and simple in operation (Usability), reliable (reliable), accuracy in choosing the type of application/software/tool for development, some and all learning media programs can be reused to develop other learning media (Reusable), packaging of media programs easy-to-execute learning, complete instructional media program documentation includes: clear, concise, and complete installation instructions, clear, structured, and anticipatory trouble shooting), clear program design and describes program workflow, (2) design aspects learning consists of clarity of learning objectives (formula, realistic), Relevance of learning objectives with SK/KD/Curriculum, Scope and depth of learning objectives, Appropriate use of learning strategies, Interactivity, Providing motivation to learn, Contextuality and actuality, Completeness and quality of learning aid materials, Suitability of material with learning objectives, Depth of material, Ease of understanding, Systematic, coherent, clear logical flow, Clarity of description, discussion, examples, simulations, exercises, Consistency of evaluation with learning objectives, Accuracy and determination of evaluation tools, Providing feedback on evaluation results , (3) Aspects of visual communication consisting of Communicative; in accordance with the message and can be accepted/in line with the wishes of the target Creative in the following ideas pouring ideas, Simple and attractive, Audio (narration, sound effects, backsound, music), Visual (layout design, typography, color), Mobile media (animation, movie), Interactive Layouts (navigation icons).

Learning activities must be interconnected with one another. Learning activities can be regarded as a process of communication because it carries messages that are communicated between the communicator and the communicant. Communicators are Educators, while Communicants are Learners. This is related to the way educators convey the contents of messages through the media. Basically, a systems approach to learning requires a relationship between one component and another. According to Zaman, Pd, & Eliyawati (2010) Media is a channel for driving messages from communicators to communicants, so that they can stimulate the thoughts, feelings, concerns, and interests and attention of students, so that the teaching

and learning process takes place effectively. and efficiently as expected in education. Along with advances in information technology, media has become an interesting study and is in great demand in almost all disciplines. Clark in Hastings and Tracey (2005) states that the media is only a driving force for learning. Therefore, given the limitations inherent in media conventions, the quality of media dialogue needs to be improved or even replaced by developing more innovative and interactive media learning. The way that can be done in developing learning media is to design using a computer using an application.

The success of the learning process must have several components, including learning objectives, learning materials, learning strategies, learning media, and learning evaluation (Cepi Riyana, 2015). Factors that influence the success of an educator in transferring knowledge to students, one of which is the accuracy of the teacher in choosing methods and media in his learning (Ramli Abdullah: 2016). In current teaching and learning activities learning media must be quite effective and efficient to use because they can provide enthusiasm, motivation, and interest in learning activities. Improving the quality of the learning process requires efforts to develop an interactive learning media, so that in designing learning media it can combine several media so that learning becomes more interactive, effective, efficient, interesting, and fun. If it is supported by learning media that can attract the interest and attention of students, especially if it can be operated by students themselves.

Learning methods using information and communication technology media tend to be in demand by students, but in reality not many educators use them in the teaching and learning process they manage. So that students are less enthusiastic and less interested in following the learning process. Learning media is an important component of the learning process, because in the learning process the media has a function as a carrier of information from sources (lecturers) to recipients (students). Learning media or facilities contain materials, methods, limitations of learning materials, instructions for learning activities, exercises that are designed systematically and interestingly to achieve the expected competencies and are used independently (Hamdani, 2011). Learning without the media tends to be less varied, learning methods tend to be conventional so that they read, listen and take notes more, and memorize teaching materials, educators are still focused on using textbooks. So to encourage an increase in the quality of learning in the course of Effective Communication in Education it is necessary to have a learning media that is more attractive, effective and efficient. Learning using interactive media based on the construct 2 application can help students learn independently so that students can learn effectively and efficiently. Suggestions that students are not bored and bored in participating in learning, attractiveness, beauty and interactivity are needed in a learning media, so that students are expected to be motivated and easy to accept material (Fanny, 2013).

The application of interactive learning media based on the construct 2 application in the Effective Communication in Education Course is specifically for undergraduate students of the Bachelor of Early Childhood Education Teacher Education program at the Faculty of Education, Medan State University. The scope of this course includes the basic concepts of effective communication (definition, scope, elements, functions, principles, types of communication), the theory of effective communication science in education (characteristics of communication science, conceptual framework, approaches and perspectives). , educational communication in a practical perspective (communication process), problems of communication effectiveness and PAUD/TK organizational institutions, intrapersonal, interpersonal, and cross-cultural communication within organizations, communication media (visual, audio, audio-visual) as a means of conveying information, technological developments communication in education, language, logic, codes, and symbols in communication, verbal and non-verbal communication, communication ethics and communication politeness in learning.

Method
1. Research Type and Design

The type of method used is Research and Development (RnD). Research and Development (RnD) is a research method used to produce certain products and test the effectiveness of these products (Sugiyono, 2014). This type of Research and Development (RnD) research is a process used to develop and determine the feasibility of learning media. The application of interactive learning media uses the ADDIE Research and Development (RnD) development model. According to (Sugiyono, 2014) The ADDIE development model has 5 stages which include analysis, design, development, implementation, and evaluation (Sugiyono, 2014). In addition, according to Hishamudin (2016) in preparing the research design, namely: 1) Analysis, namely analyzing curriculum and materials, media analysis and target user characteristics; 2) Design, namely the design of the material items to be presented, the preparation of manuscript material, and the arrangement of the flow of inserting the material in the form of a flowchart; 3) Development, namely making media using software to articulate storylines, assessment by experts, validation and revision; 4) Implementation, namely the limited trial phase; and 5) Evaluation stage, namely the revision of the media from the results of suggestions and comments after a limited trial. This research is an implementation research, namely applying learning methods using interactive learning media with Construct 2. The type of method used is Research and Development (RnD). Research and Development (RnD) is a research method used to produce certain products and test the effectiveness of these products (Sugiyono, 2014).

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$$\bar{X} = \frac{\sum x_i}{N}$$

namely analyzing curriculum and materials, media analysis and target user characteristics; 2) Design, namely the design of the material items to be presented, the preparation of manuscript material, and the arrangement of the flow of inserting the material in the form of a flowchart; 3) Development, namely making media using software to articulate storylines, assessment by experts, validation and revision; 4) Implementation, namely the limited trial phase; and 5) Evaluation Stage, namely the revision of the media from the results of suggestions and comments after a limited trial. This research is an implementation research, namely implementing learning methods using interactive learning media with Construct 2. Construct 2 is software that can be used to create creative and innovative learning media. Apart from that, construct 2 is also a game maker software. Construct 2 is software developed by Scirra as a game maker based on Hyper Text Maxup Language 5 (HTML5) specifically for 2D platforms (Ridoi, 2018). The interactive module in question is a computer-based module using software as the main display which contains text, images, sound, animation, video and films as needed equipped with interactive buttons (Ratna, Razali, & Ayob: 2018).

Data Collection Techniques

The population in this study included material experts and media experts, while the respondents in the validation test were students taking the Effective Communication in Education course and lecturers teaching the Effective Communication in Education course as subject matter expert validation respondents. Students taking the Effective Communication in Education course totaled 5 classes (120 people) and lecturers who taught the course Effective Communication in Education (2 people).

The sample is a mirror of the population, the nature and characteristics of the population must be reflected in the sample. One of the conditions in sampling is that the sample must be representative, meaning that it must represent the population (Hidayat, 2012). The sample in this study

was 1 lecturer as a material expert, namely a lecturer in the Effective Communication in Education course, and 1 lecturer as a media expert, namely a lecturer/teaching staff in the field of Educational Technology. The sample in this development research field practice test was PG-PAUD study program students taking the Effective Communication in Education course in the Odd Semester of 2022/2023, totaling 60 people (50% of the population). The data collection technique in this study was to use a questionnaire or questionnaire. This questionnaire is used to assess media based on material experts (lecturers) and students. The questionnaire was used to measure the feasibility of the developed media in terms of the relevance of the material, organizing the material, evaluating/practicing questions, language, software engineering, and visual appearance.

3. Research Instruments

The instrument used in this study is the assessment of the questionnaire using a Likert scale (scale 5). , N (Neutral) = 3, TS (Disagree) = 2, and STS (Strongly Disagree) = 1.

Kategori	Nilai
SS (Strongly Agree)	5
S (Agreed)	4
Neutral	3
TS (Disagree)	2
STS (Strongly Disagree)	1

Table 1. Provisions for Giving Grades
Source: (Risnita, 2012)

Then, the collected data is analyzed by calculating the average score obtained by the formula:

Note:
= average value
= sum of values
= number of subjects
Data were analyzed using

4. Data Analysis Techniques

The research method used in this study is the Research and Development (RnD) method or the research and development method. RnD research is a research method used to produce a product and test the level of effectiveness of the product. To produce a certain product, then used research that is needs analysis. Meanwhile, to test the level of effectiveness of a product so that it can function optimally, it is necessary research to test the level of effectiveness of these products so that research and development methods are gradual.

Results and Discussion

Based on the research conducted, the aim is to produce construct 2-based learning media that can be accessed on Android and laptops that can support the student learning process independently. This research begins with the stages of data collection as well as literature studies and analysis (analysis) of user needs. Then, it is continued with the stages of learning media design by analyzing hardware and software requirements, namely the design of a flowchart that describes the navigation flow for operating the system.
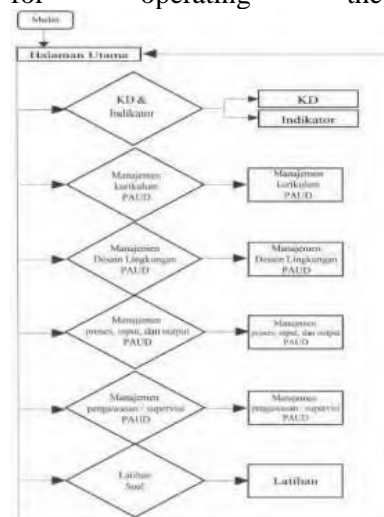

Figure 5.1. Flow chart Flowchart

The development product is an interactive digital module for Effective Communication in Education that can be operated on Laptops and Computers, as well as Android devices. The display of the material provided in the construct 2 application consists of: (1) Display of the Application Installation Menu, (2) Display of loading applications, (3) Display of the Introductory Menu; (4) Main Menu Display; (5) Display Material Menu; (6)

Display of general instructions for questions, (7) Display of practice questions, (8) Display of practice questions values. Digital modules that have been designed with a more complete system in the form of applications implemented using a programming language.
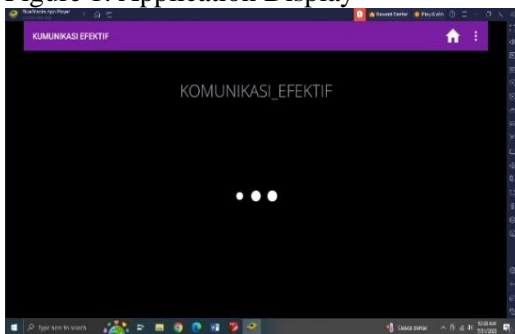

Figure 1. Application Display

Figure 2. Application loading display
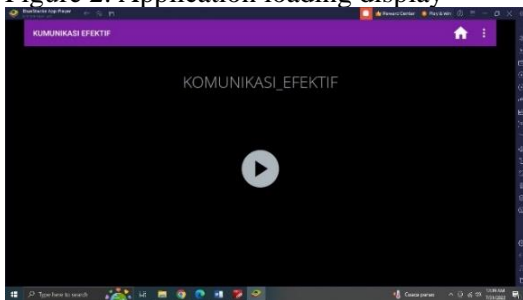

Figure 3. Display of the Introduction Menu

Figure 4. Main Menu Display
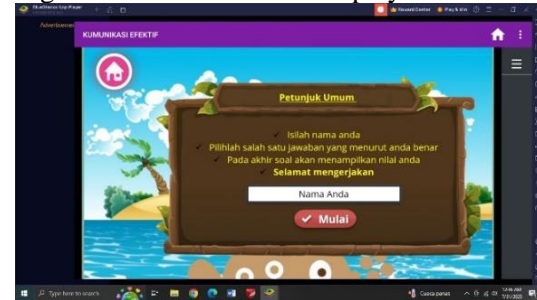

Figure 5. Material Menu Display

Figure 6. Display of Question Instructions

Figure 7. Display of practice questions

Figure 8. Display of the value of the practice questions

Furthermore, applying research media products to users (students) with the initial step of installing the product so that it can be used and operated in independent learning. Finally, the Material Expert and Media Expert tested and validated the application of construct 2-based learning media in the Effective Communication in Education course. Input from media experts, material experts, and users is revised according

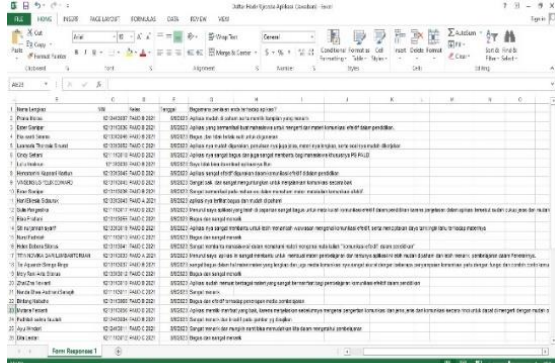to the input contained in the media product application.
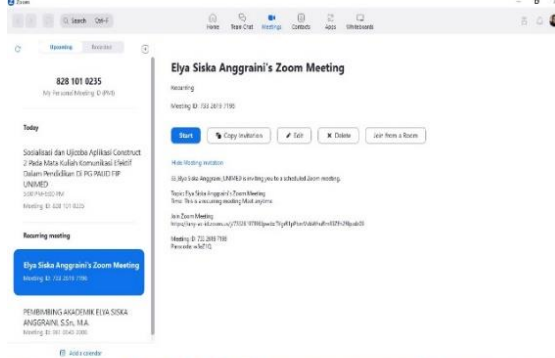

Figure 9. List of Attendees for the Image Trial

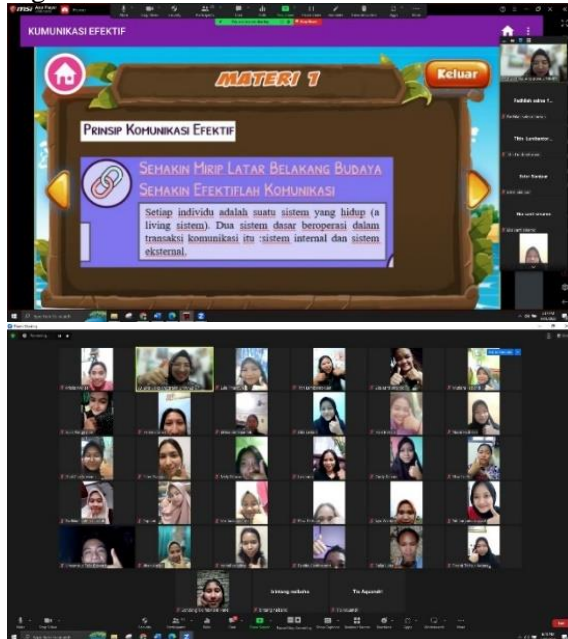Figure 10. Zoom Trial Invitation

Figure 11. Implementation of Online Testing

Tabel 5.1. Hasil Validasi Ahli Materi

Rated aspect	Score
Learning	
1. The suitability of the material with basic competence	4
2. Clarity of the formulation of learning objectives	4
3. Conformity of material with indicators of achievement of competence	4
4. Relevance between KD, Indicators, Materials, and Evaluation	4
5. Clarity of language used in the material	5
6. Systematic presentation of material	5
7. The material presented is interesting	4
8. Appropriateness of the completeness of the material flow	5
9. The suitability of the concept of practice questions with the material	4
10. Clarity of work instructions	5
11. The ease of understanding the flow of material through the use of language	4
12. The ability of the media to increase student enthusiasm for learning	5
13. The ability of the media in increasing student knowledge	5
content	
1. The suitability of learning materials with basic competencies	4
2. Suitability of the material with the Indicators	4
3. The suitability of the material with the learning objectives	4
4. Clarity of the material presented	5
5. Systematic delivery of material	4
6. The suitability of the variation of questions with the material	4
7. The suitability of the visual appearance with the material	5

Total Score Max	100
Total score	88
Rating Average = $\frac{\text{number of scores}}{\text{spec count}}$	4,4

Based on table 5.1 above, the results of material validation from interactive digital modules of effective communication in education by the validator can be seen that the material from the learning media developed is categorized as "Good" with a total score of 88 out of a maximum score of 100, then the average result is converted into a Likert scale 1 – 5 so that the results are 4.4 from a maximum scale of 5. So from these data it can be concluded that the material from the learning media developed is categorized as Good, so that the learning media developed can be tried out.

Table 2. Media Expert Validation Results

Rated aspect	Score
Quality of Content/Material	
1. Veracity	5
2. Accuracy	5
3. *Blanced Presentation of Ideas*	4
4. *Appropriate Level of Detail*	4
Learning	
1. Activities	5
2. Alignment among learning goals	4
3. Characteristics of students	4
4. Assesment	4
Feedback and Adaptation	

Learning model content can be feedback and driven by different students	5
Motivation	
The ability to encourage student curiosity	5
Media capabilities increase student knowledge	5
Media capabilities increase student motivation in increasing student understanding	5
Presentation Design	
The design of the image display presented is attractive and contains visual and audio information to enhance learning	5
Usage Interaction	
1. Ease of touch and drag function	5
2.Easily manageable (Maintable)	5
3. ease of operation of learning media	5
Accessibility	
1. Easy access to interactive digital module applications	5
2. Format design and presentation controls accommodate students	4
Reusability	
The ability of interactive digital modules to be used in various learning variations and can be accessed by different students.	5
Meet the standards	
Compliance with international standards and specifications	4
Total Maximum Score	100
Total score	93
Rating Average = $\frac{\text{number of scores}}{\text{spec count}}$	4,65

In table 5.2 above, the validation results of effective communication learning media in construct 2-based education by the learning media validator are categorized as "Very Good" with a total score of 93 out of a

maximum score of 100, then the average results are converted into a Likert scale of 1 - 5 so that the results obtained 4.65 from the maximum scale of 5. From these data it can be concluded that the learning media in the form of interactive digital modules developed are categorized as valid so that the learning media developed can be tested on users, namely students.

CONCLUSION

Learning media in the Effective Communication in Education course in the Early Childhood Education Teacher Education Study Program, Faculty of Education, Medan State University have been successfully developed using the Construct 2 application. According to the results of the material expert validator's assessment results a total score of 88 with a value range of 4.4 categorized as good, as well as the results of the assessment by media experts, a total score of 93 was obtained with an average value of 4.65 so that it was included in the very good category. Therefore, the development of interactive digital-based learning media for Effective Communication in Education is appropriate as a learning medium and independent learning resource for students.

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