Developing Instructional Media Based on Interactive Multimedia in Thematic Learning For Grade V Students

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Abstract. This study aims to determine the feasibility, practicality, and effectiveness of developing interactive multimedia learning media for classroom theme learning grade V SD Negeri 101774 Sampali T.A 2021/2022. This study uses a research and development (R&D) methodology with development steps aligned with the ADDIE development model developed by Dick & Carry. This development model consists of five phases: analysis, design, development, implementation and evaluation. The results of this study indicate that the media feasibility test by material experts is 97% included in the "very feasible" category and media expert verification results, namely 87%, are included in the "very feasible" category. The results of the practicality test conducted by practicality experts are 95% included in the "very feasible" category, and the results of student responses, namely 96%, are included in the "very good" category. The effectiveness trial with the implementation of multiple choice questions was carried out before (pretest) and after (posttest) the media was implemented. Get student average before the media was implemented (pretest) was 62.6 and the results of the average value of students after the media was implemented (posttest) was 83 thus the interactive learning media assisted by PowerPoint iSpring was declared to be effectively implemented in the learning process at class V-A SD Negeri 101774 Sampali.

Keywords: Instructional Media, Interactive Multimedia, Hematic Learning

1 Introduction

The improvement of information and communication technology has a big impact on various fields education and learnig is one of them. Educators must think about and implement learning according to student needs and make the learning process more meaningful, and interesting, follow the development of science and technology, and help students improve their learning achievement [1]. The development of science and technology also encourages more reform efforts in the use of technological achievements in the learning process. Teachers need to use various media to achieve their learning objectives[2]. The most popular learning media today is technology-based media in the form of interactive multimedia. Interactive multimedia can contain several media at once in one package [3].

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iSpring is software that works as a PowerPoint add-in and uses flash, to make PowerPoint files more interesting and interactive, and can be opened on almost any computer or platform [4]. It is designed to support e-learning anda allows the insertion of media in various formats, making the resulting learning media more interesting [3].

Thematic learing is blended learning that uses themes to connect multiple subjects and provide meaningful experiences for students. Based on observations and observations of several characteristics of students in thematic learning, teaching media is needed to overcome the problems that exist in directing the creativity and curiosity of students in thematic learning [5].

The use of media withinside the mastering system is very influential on learning outcomes, competencies to be achieved, and the objectives of learning [6]. The final purpose of learning is the achievement of good learning outcomes [7]. Good learning outcomes are supported by the provision of appropriate methods or methods during the learning process which is the provision of learning media that motivate students to leaning and can interact directly with students, so that by creating learning media that can increase students' interest in learning the goal learning will be achieved and student learning outcomes will increase [8].

ADDIE stands for Analysis, Design, Development or Production, Implementation or Delivery and Evaluation. Below are examples of activities at each stage of the ADDIE development methodology. Analysis, the main activity of this phase is to analyze the need to develop new learning models/methods. 2) Design, in the design of learning models/methods, the design stage is analogous to the design of teaching and learning activities. This activity is a systematic process that begins with setting learning objectives, designing scenarios or teaching and learning activities, designing learning tools, designing learning materials and tools for evaluating learning outcomes. 3) Development and activities for the realization of product design are included in the ADDIE model. During the design phase conceptual framework was prepared for implementing the new learning model/method. 4) Implementation, at this stage, the developed concepts and methods are implemented in real situations, i.e. classrooms. A formative assessment is conducted at the end of each face-to-face meeting (weekly) and a summative assessment is conducted after the end of the overall activity (semester). Summative assessment measures the final ability of a subject or learning objective to be achieved. Evaluation results are used to provide feedback to users of the model/method. Revisions are made according to evaluation results or requirements not met by new models/methods.

Several previous studies regarding the development of interactive media can be used as reinforcement for researchers in researching the developing interactive multimedia learning media [9]. Research conducted by Hidayatul Maulidta and Wahyu Sukartiningsih under the research title "Development of Adobe Flash-Based Interactive Learning Media for Learning to Write Exposition Texts for Class III Elementary School Students" concluded that the study showed that there was a significant difference between the results of learning to write exposition texts before and after its implementation. The interactive learning media based on Adobe Flash, from this can concluded that the use of interactive learning media is based on Adobe Flash is valid, practical, and effective to be applied in learning how to write exhibition texts to third-grade elementary school students [10]. Furthermore, the research conducted by Imam Nuraini under the research title "Development of Power Point-Based Learning Media iSpring Suite 8 in Elementary Schools" with research results showing that based on the data analysis results of this study, the iSpring Suite 8 power point-based learning media developed was declared valid, practical and effective. Based on several

previous research results regarding the development of interactive media, the researchers tried to develop interactive multimedia-based learning media [11].

By developing interactive learning media assisted by PowerPoint iSpring in thematic learning, in addition to providing motivation, interactive learning media can minimize the role of teachers so that participants are expected to be more active participate in the learning process and can use interactive learning media as aids learn as independent students at home [12].

2 Research Method

The type of research is research and development expenses to the ADDIE model which is used to manufacture certain products and test the feasibility and effectiveness of those products. This is due to the research goal of being , able to develop interactive multimedia learning media in subject learning for class V-A SD Negeri 101774 Sampali. The stages are carried out according to the ADDIE model, namely: Analyst, Design, Implementation, and evaluation. Collecting data through a questionnaire that aims as a guide for validators to assess or validate the products developed. The test in the study was given before (pretest) and after (posttest) the media was implemented as reference material for improving the abilities achieved by students [13].

3 Result and Discussion

Explanation and consideration of research results according to the development stage based on ADDIE:

a. Analysis Stage

Phase analysis is the first step to study this. Phased Analysis in Course This includes learning about analytical needs, analytical instruments, analytical materials and curriculum, and training of analytical participants.

1) Analytical Needs

Based on the results of past interviews, teachers face many obstacles during the learning process as they are restricted in the way the learning process proceeds during the pandemic of the century. To confront limitations and fixed optimization outcomes, research participants educate researchers' initiative to collaborate with teachers by making learning media interactive to support outcomes.

2) Learn from the analyzer

In device analysis, learning researchers look at media used by teachers. It is based on the results of previous interviews conducted by teachers using PowerPoint-based learning media as a tool for communicating theory to participants. Teachers demonstrate the weaknesses of the media they use. Participants can only read and understand the media themselves without the teacher support typically provided in schools and classrooms. Based on the analysis already conducted, we can conclude that teachers need media that can support fossilized results in educating research participants. Researchers interested in

developing interactive multimedia learning media wanted interactive multimedia learning media to be able to interact with participants in a live manner or to have feedback between media and participants. .

3) Analysis materials and curriculum
   In analyzing the material, the teacher concludes and indicates that the teacher experienced difficulty communicating the material on Topic 1 "Animals and Human Locomotive Organs" Subtopic 1 "Animal Locomotive Organs". Included in the rules of Pancasila and Social Studies of Eyes loads theory about the state of geography in Indonesia. choose deep learning-based interactive media development. Analysis Curriculum_The school uses the 2013 curriculum. In this phase, this researcher uses his iSpring Power Point on Topic Learning to analyze Competency Cores, Competency _d Bases, Indicators and Learning Objectives _ in the development of learning media. Follow this table outlining Competence Scores, Competence_d Bases, Indicators, and Learning Objectives in Curriculum 2013
4) Educate the analysis participants
   Based on observational and activity-learning observational researchers, the researchers conclude, among other things, a number of features that train participants in subject-learning.
   a) The participant did not educate her learners to be sufficiently active. It is found in activity, they learn in the moment.
   b) Some of the participating students may not notice what the teacher is explaining out loud, or they may be answering questions, completing assignments on board, or educating only certain ranks within the class. There are many active students who write only
   c) Articipants are taught only to listen, take notes, and perform duties as instructed by the teacher.
   d) Students are not competent enough when they have to do things related to everyday life without living a certain way.
      Students hope to have sufficient knowledge when given questions are given with different answers.
   e) Educate participants into thematic learning based on traits known by direct creativity and curiosity to students who need materials to solve existing problems. Because researchers are using iSpring Power Point to develop interactive learning media for topic learning. Additionally, interactive learning media may minimize motivation

b. Design Stage
   After do analysis to product like what _ will developed based on data analysis need and observation , then Step next thing to do is designing media learning interactive help *iSpring power point* . At stage this more focus for designing product to be developed . Steps performed in stages this is designing material and design appearance as well as the layout of learning media interactive on *Microsoft Power Point* .
   Stage this started with sorting Theory based on results analysis material and fit data collection that has been conducted previously for designing learning media interactive . Theory in learning media made corresponding book used _ class VA SD Negeri 101774 Sampali namely

Themes 1 " Motion Organ Animals and Humans " subtheme 1 " Motion Organ animal " learning 3. After conducted drafting material , stage next thing to do is determine design *background* , display media, main menu, related buttons, animation, and music the accompaniment of the learning media used .

Steps taken next that is enter framework existing learning media structure _ made to in *Microsoft PowerPoint.* In *Microsoft Power point software* done design with combine text materials , pictures , animations , videos, quizzes , music and effects special others can _ produce learning media good interactive .

c. Stage *Development*

As Step carry on on plans that have conducted in design stage , then researcher do stages next that is development , as for Step in development as following :

1) Media Creation

Stage this is Step realization from *flowcharts* and *storyboards* on Step design . Product design embodied to in shape application with method modify *powerpoint* files be HTML 5 use *iSpring,*

2) Validation Media Eligibility

At stage this is the media already developed validated by experts material and media experts . Validation do for determine appropriateness of the media created . At stage these are suggestions and input from the validator will made as guidelines for media revision . Following this results validation that has been done.

3) Material Expert Validation

Material expert do validation to material on learning media interactive help *powerpoint* ie Dr. Neneng Sri Wulan as lecturer PGSD UPI Campus Purwakarta . Validation conducted with fill in questionnaire validation . Questionnaire validation use scale *likert* with alternative 5 answers i.e. very decent , decent , enough decent , less worth it , no worth . results expert assessment _ Theory obtain score eligibility 97%. Based on table conversion Sudayan and Indrawati , values the including in very decent category , ie lies in the range of 81% -100%.

4) Media Expert Validation

Media experts do validation on learning media interactive help the *power point* is Ms. Reni Rahmadani as lecturer in Technology Education UNIMED Informatics and Computers . Validation conducted with fill in questionnaire validation. Questionnaire validation use scale *likert* with alternative 5 answers i.e. very decent, decent, enough decent , less worth it , no worth . Following this results recapitulation results validation expert Theory could seen in the table following. The results of the assessment by media experts obtained score eligibility 87%. Based on table conversion Sudayan and Indrawati , values the including in very decent category , ie lies in the range of 81% -100%.

5) Validation About Test

a) Validity Test Instrument Study

Based on validity test table question above _ so could is known that valid questions out of 30 questions _ is as many as 20 questions with r table is 0.396.

b) Reliability Test Instrument Study

Reliability test conducted for know level consistency answer or consistency to be tested when just instrument the served . Reliability test needed for support formation validity .

As for the results of the reliability test about based on calculation so coefficient reliability grain about obtained KR_{20}= 0.766, while r_{tabel} with a significant level of 5% and n = 25, $r_{tabel} = 0.396$ is obtained. Because $KR_{20} > r_{tabel}$ it can be concluded that the reliability test of items ir about could said reliable , so grain about could tested when just with results stay on the same respondent.

c) Difficulty Level Test Test
After conducted testing reliability grain question , then Step next is a level test hardship test. Stage this is for know level hardship question , that is easy , medium , and difficult . As for the results calculation level hardship test could seen as following :
Based on table on so could is known about with criteria easy as much 10 grains questions, criteria currently as much 10 grains question . So with thus questions that can made for test the effectiveness of learning media interactive is as many as 20 items question .

d) Power Difference Test
Good test is also a must capable Becomes power differentiator Among participant students who have ability high , average and low . So from it's a power test different must analyzed especially first . As for the results from power test different From the results analysis power different above _ so could is known classification power different with description bad as many as 6 items question , description enough as many as 4 items questions , and classification with description good by 10 grain question . Then 20 grains already matter _ through validity test stage , reliability test, level test difficulty , and power test different could made as about *pretest* and *posttest* in test the effectiveness of learning media interactive .

d. Stage *Implementation*
After learning media interactive help *iSpring power point* stated qualified by experts material and media experts , then learning media interactive help *iSpring power point* could implemented into the activity learning. Trial _ product will implemented in SD Negeri 101774 Sampali . In implementation learning using learning media interactive help *iSpring power point* researcher explain method use of learning media covered. In the trial of learning media interactive help *iSpring power point* the teacher as companion. Whereas role researcher is as teacher.
Learning with using learning media interactive help *iSpring power* point done could seen that participant educate interested and motivated for following the learning process with using learning media interactive help *iSpring powerpoint* , p this seen from response participant educate ask to researcher. After implementation of learning media interactive help *iSpring power point* carried out , researchers give questionnaire response participant educate on learning media interactive help *iSpring power point* this held for get related data with score practicality learning media users interactive help *iSpring power point* as reference revision and for know response participant educate on learning media interactive help *iSpring power point*.

1) Practicality Expert Validation
Practitioner education in study this is a class VA teacher at SD Negeri 101774 Sampali namely Mrs. Cici Suwarsih, S.Pd. Validation conducted with fill in questionnaire validation. Questionnaire validation use scale *likert* with alternative 5 answers i.e. very

decent, decent, enough decent , less worth it , no worth . Following this results recapitulation results validation expert Theory could seen . The results of the assessment by experts practicality obtain score eligibility 95%. Based on table conversion Sudayan and Indrawati , values the including in very decent category , ie lies in the range of 81% -100%.

2) Response Participant educate
   Questionnaire related response participant educate regarding learning media interactive help *iSpring power point* carried out by the participants educate class VA SD Negeri 101774 Sampali . Response participant educate conducted with fill in questionnaire response participant educate on learning media interactive help *iSpring power point* . Questionnaire response participant educate use scale *likert* with alternative 5 answers i.e. strongly agree, agree, neutral, less agre, no agree. Results response participant educate on learning media interactive help *iSpring power point* obtain score eligibility 96%. Based on table conversion Sudayan and Indrawati , values the including in category strongly agree , ie lies in the range of 81% -100%.
3) Effectiveness Test
   Average value before media applied *pretest* is 62,4 and after medium is applied *posttest*. With exists increase in test results media so could concluded learning media interactive help *iSpring power point* could increase results learning, motivation learn, and quality learning . Based on these data could concluded that learning media interactive help *iSpring power point* said effective implemented in SD Negeri 101774 Sampali .

e. Stage *Evaluation*
   At stage end in the ADDIE development model is evaluation stage . Evaluation conducted by researchers with analyze the outcome data research obtained _ from validation expert material, media expert , expert practicality and questionnaire response participant educate for know the feasibility of learning media interactive help *iSpring power point* . Based on results validation already _ obtained in stages previously that is results percentage expert Theory obtained 97% incl into the kagoti very worthy, results percentage media experts obtained 87% incl into the very decent category, results percentage expert practicality earned 95% incl into the very decent category , and results percentage response of 10 participants educate obtained 96%.

3.1 Media Feasibility Test Results

Feasibility test results product is obtained from charging instrument questionnaire . In study this for know appropriateness media , media rated or validated by two expert namely, (1) expert validation material, (2) expert media validation. Developed mediain study this already due diligence and assessment is carried out by experts, so could is known developed media worthy or no to apply in the learning process. On the feasibility test Theory only conducted once, p this happen because expert Theory evaluate loaded material in learning media already good and can implement in the learning process although there is still a little input for improvement of learning media so that the media is applied more good again . Result score validation expert Theory of 15 items statement is 73, if score end shared with the ideal score is 75 then results obtained ie 0.97 and multiplied by 100% for get results in shape percent , so the results obtained from the

validation test eligibility Theory ie 97% and validation Theory categorized as very feasible . Furthermore, in the media feasibility test only conducted once , p this happen because expert Theory evaluate loaded material in learning media already good and can implement in the learning processM. Result score validation media expert of 12 points statement is 52, if score end shared with the ideal score is 60 then results obtained ie 0.87 and multiplied by 100% for get results in shape percent , so the results obtained from the validation test eligibility Theory ie 87% and yield media validation is categorized as very feasible.

Based on data results above show that results expert assessment Theory obtain score 97% eligibility and media experts gain score eligibility 87 % . Based on table conversion Sudayan and Indrawati, values the including in very decent category , ie lies in the range of 81% -100%.

3.2 Practicality Test Results

The test results to the practicality of the media were obtained from charging instrument questionnaire by experts practicality and participants educate . Result score validation expert practicality of 12 items statement is 57, if score end shared with the ideal score is 60 then results obtained _ ie 0.95 and multiplied by 100% for get results in shape percent , so the results obtained from validation practicality i.e. 95%. Then the total score results response of 10 participants educate of 10 items statement is 484, if score end shared with the ideal score is 500 then results obtained _ ie 0.96 and multiplied by 100% for get results in shape percent , so the results obtained from validation practicality i.e. 96%. Based on data results above show that results expert assessment _ Theory obtain score 95% eligibility and media experts get score eligibility 96 % . Based on table conversion Sudayan and Indrawati , values the including in very decent category , ie lies in the range of 81% -100%.

3.3 Media Effectiveness Test Results

Media effectiveness test were carried out for know results the effectiveness of existing learning media developed with method share about in shape choice doubles and questions the already analyzed its validity. In implementation of media effectiveness test , sheets about given to student before (*pretest*) and after (*posttest*) media implemented in the learning process . Another goal of gift questions (*pretest*) and (*posttest*), for know how much big enhancement ability participant educate in answer about after learning media implemented in the learning process .

4 Conclusion

Based on a proven track record in developing of interactive learning media assisted by PowerPoint iSpring as a learning resource is effective, this is supported through the implementation of the pretest and posttest which obtained an increased result of 20.6 compared to

before implementing the learning media. The results obtained before the media was implemented (pretest) was 62.4 and after the media has implemented the post-test was 83. Based on the implementation of the pretest and posttest, the results obtained increased, and from this can conclud that it is an interactive learning media assisted by PowerPoint iSpring can be said to be effective.

References

[1] Annisa, N., & Simbolon, N. 2018. Pengembangan Media Pembelajaran Interaktif Ipa Berbasis Model Pembelajaran Guided Inquiry Pada Materi Gaya Di Kelas Iv Sd Negeri 101776 Sampali, School Education Journal Pgsd Fip Unimed, Vol. 8, Pp. 217–229. Doi: 10.24114/Sejpgsd.V8i2.10199.

[2] Saroha, E., & Simbolon, N. 2019. Pengembangan Media Pembelajaran Berbasis Prezi Pada Pembelajaran Tematik Di Sekolah Dasar.

[3] Yaumi, M. 2018. Media Dan Teknologi Pembelajaran, 1st Ed. Jakarta: Prenadamedia Group

[4] Surjono, H. 2017. Multimedia Pembelajaran Interaktif: Konsep Dan Pengembangan.

[5] Muklis, M. 2012. Pembelajaran Tematik, Fenomena, Vol. 4. Doi: 10.21093/Fj.V4i1.279.

[6] Faisal, & Lova, S. M. 2018. Pembelajaran Tematik Di Sekolah Dasar. Medan: Cv. Harapan Cerdas.

[7] Siadari, C., & Ananda, L. J. 2020. Media Pembelajaran Kogerbe (Kotak Gerak Benda) Pada Materi Gerak Benda Mata Pelajaran Ipa Kelas Iv Sekolah Dasar. Jurnal Guru Kita. DOI: https://doi.org/10.24114/jgk.v4i4.20349

[8] Mualimah, A., Praherdhiono, H., & Adi, E. P. 2019. Pengembangan Kuis Interaktif Nahwu Sebagai Media Pembelajaran Drill And Practice Pada Pembelajaran Nahwu Di Pondok Pesantren Salafiyah Putri Al-Ishlahiyah Malang Article History. Jurnal Kajian Teknologi Pendidikan, Agustus, Vol. 2, No. 3, Pp. 203–212. [Online]. Available: Http://Journal2.Um.Ac.Id/Index.Php/Jktp/Index

[9] Kurnia, N., et al. 2018. Efektivitas Pemanfaatan Multimedia Pembelajaran Berbantuan Ispring Dalam Meningkatkan Motivasi Dan Hasil Belajar Pada Mata Pelajaran Bahasa Arab. Jurnal Teknologi Pembelajaran. DOI: https://doi.org/10.31980/tp.v3i1.158.

[10] Suryana, Novita M., and Delia Indrawati. "Pengembangan Media Pembelajaran Berbasis Permainan Tradisional “Gaprek Kaleng” untuk Menanamkan Konsep Pecahan Siswa Kelas III SD." Jurnal Penelitian Pendidikan Guru Sekolah Dasar, vol. 6, no. 3, 2018.

[11] Arikunto, S. 2018. Dasar Dasar Ilmu Pendidikan, 2nd Ed. Jakarta: Pt. Bumi Aksara.

[12] Widoyoko, E. P. 2012. Teknik Penyusunan Instrumen Penelitian, 1st Ed. Yogyakarta: Pustaka Pelajar, 214ad.

[13] Ananda, L.J., & Nuraini, N. Pengembangan Media Pembelajaran Berbasis Multimedia Interaktif Dengan Pendekatan Saintifik Pada Tema Indahnya Keragaman Di Negeriku Di Kelas Iv Sd Negeri 101969 Tanjung Purba. School Education Journal Pgsd Fip Unimed, Vol. 9, Pp. 8–16, Jun. 2019, Doi: 10.24114/Sejpgsd.V9i1.13683.