PROJECT BASED E-MODULE DEVELOPMENT FLIPBOOK APPLICATION-ASSISTED LEARNING FOR IMPROVE STUDENTS' CRITICAL THINKING SKILLS ELEMENTARY SCHOOL

I Made Astra Winaya[1)] and Ni Luh Gede Karang Widiastuti[2)]

[1)]Dwijendra University
astrawinayadwijendra@gmail.com
[2)]Dwijendra University
karangwidhi@gmail.com

ABSTRACT

This research aims to improve the critical thinking skill of fourth grade elementary school students, through the development of e-modules based on project-based learning assisted by flipbook applications. This research type was a type of research and development ADDIE model adopted from Dick and Carry in 1996. In summary, this research included 5 stages, namely: Analyse, Design, Depelovment, Implementation and Evaluation. The subjects of this research were fourth grade students of SD Negeri 1 Petang with a total of 15 students, consisting of 8 male students and 7 female students. Data regarding students' critical thinking skill were obtained using test questions in the form of essays. The data that has been collected, analyzed using descriptive quantitative. Material, media and language validation on e-module products meet good qualifications with very high material expert criteria, very high media validity and high language validity. The practicality of the e-module product was 92.5%, meeting the criteria of being very practical. And the results showed a classical student percentage of 87% with product effectiveness criteria which is very high. Based on the results of the analysis that has been carried out, it can be concluded that the Development of E-Modules Based on Project Based Learning Assisted by the Flipbook Application can improve the critical thinking skill of fourth grade students of SD Negeri 1 Petang.

Keywords: E-Module, Project Based Learning, Flipbook, Critical Thinking

1. INTRODUCTION

Education is one of the important aspects for realizing a good human life progress and prosperity. This is because prosperity is no longer based on natural resources and physical capital, but also resources in intellectual and social capital. Life The 21st century is life without borders, globalization, internationalization, and technological exploration very easy information and communication.

According to NCREL and Metiri Group (in Punia, 2011). The era of the digital economy in the 21st century requires a workforce that is knowledgeable and skilled in producing innovation as well increase a country's productivity. The world of education has a very important role in increasing quality human resources. Education in schools should be develop students' abilities in solving various problems with ability superior thinking to be ready to enter global society. Along with this, education is starting to experience a paradigm shift where learning must be changed from horizontal to knowledge circle that combines knowledge, application, and contribution goes on continuously. To overcome the challenges of the 21st century, students need to be equipped with skills 21st century to strengthen the competitive spirit in this era. NCREL and Metiri Group (in Punia, 2011) identified four main components of 21st century skills, namely literacy skills digital, creative thinking, effective communication skills, and high productivity. Based on these four main components, critical thinking ability is one an important aspect and a skill that

students must have to face the challenges of the century 21. An opinion was expressed by Trilling and Fadel (2009), that critical thinking and solving problems are considered to be a new basis for learning in the 21st century. Critical thinking skills, according to Schafersman (2012) is one of the competencies that must be developed and trained on students through learning activities, so that these abilities continue to grow and develop because this ability is very important in various aspects of life.

Critical thinking skills must be instilled from an early age. In this case, elementary school become the starting point in cultivating critical thinking attitudes and skills. Maulana Research (2013) provides an illustration of how important it is to develop higher-level thinking abilities focuses on critical and creative thinking skills. In this research it was explained that The demands of human resources in the global era lie in individual readiness to face all the problems that occur. This is assessed by the way a person faces and looks for solutions best for all existing problems, then it needs to be instilled in primary school education critical thinking skills because elementary school is the beginning of a student's education after returning home.

Based on the results of interviews with the class IV homeroom teacher at Petang 1 Elementary School, it is clear Natural Sciences learning tends to be text book oriented, so that students do not fully understand the material being taught. Many students are lacking likes science subjects, because they are considered boring subjects. This situation shows that students will find it difficult to accept, meaning students are passive in thinking. Apart from components The complex problems of students can be seen from the competence of a teacher. Things to do A teacher must be able to optimize the classroom as a supportive learning space understanding of learning towards students. Then produce maximum educational practices by using meaningful teaching strategies, especially learning materials Elementary School Science. But in practice, a teacher mostly uses the lecture method Indeed, science subjects are reading texts. So that students' understanding when learning science It is very lacking if you only listen to the teacher's explanation and students are less able to explore his thinking ability. Apart from that, the use of learning media is still very rare. This shows that the learning process used has not been able to accommodate and facilitate all The learning abilities of each student are different from each other. The teacher's efforts to encourage students to Critical thinking is still relatively minimal, the teacher only asks simple questions students can answer directly, so students can answer directly without pushing students to think critically. Teachers should use more teaching materials for learning can be more attractive to students as the main subject of learning and develop abilities critical thinking in students. Module or e-module teaching materials are one way to improve students' critical thinking skills.

A module is a printed teaching material that contains a summary of the material explained in simple language and by adapting materials and basic competencies, so that it is easily understood by students according to IM Sadjati (2012). At the moment, The increasingly rapid development of technology is encouraging the replacement of printing technology with computer technology in learning activities. The module was originally a media printed learning, its presentation is transformed into electronic form so that it gives birth The new term is electronic module or better known as e-module (Winatha, Suharsono, & Agustin, 2018).

E-modules do not only display two-dimensional media as is the case on print-based modules. E-modules are also called interactive multimedia because of the variety of media Learning can be presented in it such as displaying text, images, graphics, audio, animation and videos in the learning process. So that students can be more interested in the process learning. To make e-modules more interesting, researchers have innovated to develop modules model-based. Currently, many learning models have been introduced, including: is a Project Based Learning Model. Project learning model Based learning according to Saefudin (2014: 58) is a project-based learning

model or produce products. Project Based Learning can improve critical thinking skills learners. The use of project based learning is known to also improve abilities students' cognitive abilities. Applying the project method can also improve learning achievement and skills students in learning when compared with lecture and discussion methods. Apart from that, researchers Use flipbooks as assistive media in the learning process later to attract more interest student learning.

Flipbook is a form of presenting book learning media in virtual form. Life (2015) explained that flipbooks are a development of e-books as an alternative to facilitates independent learning. Rasiman (2014) explained that students were more interested follow the lesson using a flipbook. Flipbook can contain text, images, videos, music or songs and moving animations. Through this feature, flipbook makes it easier for students to understand abstract material. Abstract things that cannot be proven and are difficult to see directly by eye and then can be presented easily in a flipbook. Therefore researchers choose an E-module based on project based learning assisted by flipbook media to improve students' critical thinking attitudes. Because with this model students can experiment make a work, especially in science learning and this trains students to think critical since elementary school.

The results of observations in Class IV of the Evening 1 Elementary School found several the problem is. Students' critical thinking skills are low because students memorize more often learning to get high grades. Students do not dare to express their opinions for fear of making mistakes and being criticized. Students are also less interested in studying using printed books, but more enthusiastic when the teacher presents material through learning media such as videos and Images. Apart from that, learning activities are still centered on educators (teacher centered). educators only use the lecture method as a way of delivering learning material, without paying attention to the character of elementary school students who prefer to play, sing, be active, want to know and others. Lack of use of modules based on Problem Based Learning, Project Based Learning, Discovery, Inquiry and others. Based on the problems found, and with the advantages of project-based E-Modules based learning assisted by the flipbook application, researchers have a solution to answer the problem namely by developing Assisted Project Based Learning E-Modules Flipbook Application to Improve Students' Critical Thinking Skills.

2. RESEARCH METODOLOGY

The research method used in this research is the research method and development. The Research and Development method is a research method produces a product in a certain area of expertise, followed by certain by-products as well as the effectiveness of the product (Budiyono, 2017). Development model used to develop e-modules based on Project Based Learning, namely models development of ADDIE, which was developed by Dick and Carry in 1996. Model selection This is based on the consideration that this model was developed systematically and based on the basis of learning design theory. This development model is structured systematically as follows: problem solving efforts in learning that are appropriate to the characteristics of students. The participants who are the subjects of this research are Material Experts, Media Experts, Linguists and Practitioners. Material experts, media experts and language experts are educational expert lecturers in the Dwijendra University environment. Meanwhile, the practitioner is a class IV teacher at SD Negeri 1 Evening. The object in this research is a Project Based Learning E-Module Assisted by Flipbook Application to Improve Students' Critical Thinking Skills in Class IV Elementary school. The data that will be collected in this research is quantitative data in the form of results validation from material experts, media experts, language experts, users, and students.

Apart from that, it is also collected Qualitative data in the form of literature studies that support product development and descriptions input from validators regarding the feasibility of the final product. The data sources for this research are: others: 1) lecturer/material expert 2) lecturer/media expert; 3) lecturer/language expert; 4)

fourth grade teacher at SD Negeri 1 Evening, 5) fourth grade students at SD Negeri 1 Petang and 6) literature review that supports development e-module products based on project based learning assisted by flipbook applications to improve critical thinking skills of fourth grade elementary school students.

On research In this case, instrument validation is obtained from assessments carried out by experts. Test the validity of the instrument content carried out by two experts on each type of instrument. The content validity test formula used is Gregory's Formula. According to Candiasa (2011), there are several things that are done in the Gregory test, including other: 1) experts provide an assessment of the instrument for each item using (scale 4 ; 2) the scale categorization, namely 1 and 2, is the result of the instrument being invalid/not suitable for use, while 3 and 4 are the results that the instrument is valid/suitable for use, and 2) perform cross tabula expert assessment results with a matrix.

3. RESULTS AND DISCUSSION

The data from this research are grouped into four, namely material validity data, media validity, Linguist validity, product practicality, and effectiveness of learning outcomes. as for the results of data recapitulation from the main points of the product being developed are presented in Table 1 below.

Table 1 Results of Material Expert Validity

Butir	Penilai		S_1	S_2	∑s	n(c-1)	V	KET
	I	II						
Butir 1-20	76	76	56	56	112	140	0.80	Validitas Sangat Tinggi

Material Expert Validation Results: E-Module material based on project based learning in the qualification "very tall". So the e-module product is very suitable for use for its function in learning.

Table 2 Media Expert Validation Results

Butir	Penilai		S_1	S_2	∑s	n(c-1)	V	KET
	I	II						
Butir 1-14	53	53	39	39	78	98	0.80	Validitas Sangat Tinggi

Results of E-Module Media Expert Validation based on project based learning in "very high" qualification so that e-module products are very suitable for use for their function in learning.

Table 3 Linguist Expert Validation Results

Butir	Penilai		S_1	S_2	∑s	n(c-1)	V	KET
	I	II						
Butir 1-9	33	34	24	25	49	63	0.78	Validitas Tinggi

Results of E-Module Language Expert Validation based on project based learning in "high" qualifications so that e-module products are very suitable for use for their function in learning.

Practicality testing is a test stage that functions to determine the level of practicality of the product used. The practicality test was carried out by 1 practitioner, namely the fourth grade teacher at 1 Petang Elementary School, giving a percentage score

of 92.5% or in very practical qualifications so that the emodul product very practical to use for its function learning.

Based on the percentage of student completeness obtained, it reached 87% with high product criteria. There were 2 students who did not complete and 13 students who completed. So project based learning based e-module products are declared effective in improving skills students' critical thinking.

This research uses the research and development method, namely ADDIE development model. This model consists of 5 steps, namely: Analyze, Design, Development, Implementation and Evaluation. First there is the Analyze or analysis stage, this stage is an activity analysis of various factors from the innate development targets which includes analysis of student needs such as Learning resources and infrastructure such as laptops and internet networks at school are already available to students The average person also has a cellphone as a means of learning at home. At the load analysis stage.

Learning at SD Negeri 1 Petang uses the Merdeka curriculum in accordance with demands applicable curriculum. At the environmental analysis stage the school is located in a strategic location close to main road, so there are no problems with internet network access. Design or planning stage contains product specifications and product design plans. Product specifications are e-module based.

This projectbased learning contains a cover, foreword, instructions for using the e-module, table of contents, instructions information, projects, materials (content) regarding the topic of learning about energy transformation around us, evaluation questions as well as a summary of the material. This e-module product design uses Canva pro software as the application used to design e-module layouts. Based on the design that has been carried out, at the development stage an emodule was successfully developed. Stage development This use Canva And Flip PDF Pro For add a number of object like videos, link and can change appearance e-module so that Can in flip or in shift worthy book. Stage Implementation product e-module based projects based learning This in implement to Teacher And student in elementary school Evening, on stage This Teacher will evaluate use e-module Which has developed for know level practicality e-module and test try on student used for know effectiveness emodule in increase skills think critical student. After stage implementation next with stage evaluation, on stage This done review in a way comprehensive to e-module as well as do repair to e-module based projects based learning Which developed.

The validity of the e-module based on project based learning in science learning is highly qualified Good. This can be seen from the validation results of material experts who had a score of 0.85 with the qualification "very high" where the e-module implemented is relevant to the curriculum objectives and learning suggestions. Results media expert validation which has a score of 0.85 with a "very high" qualification, the selected e-module is capable achieve learning goals and help construct students' concepts. Language expert validation results has a score of 0.78 with high qualifications, the language used in the e-module is straightforward, communicative, dialogical and interactive and in accordance with the rules and cognitive development of students. Based on the results of the e-module validation above, the science content e-module is based on project based learning with the help of the flipbook application is very suitable to be applied to help in the learning process. This matter is also in line with the opinion of (Helna, 2015) which states. Benefits of using E-module media as Learning resources in the learning process include, among other things, being able to add to and expand the offerings in the class, and being able to stimulate thinking, behavior and further development.

The material developed in an enriching e-module. Students can broaden their horizons by study additional materials presented in the e-module. According to (Fitri Nurmayanti, Fauzi Bakri, 2015), "electronic learning modules have certain properties such as easy to use, adaptive, and consistent". Any of the software tools or

instruments designed with the aim of converting files PDF in the form of a digital book or publication flip page, namely Flip PDF Pro. Device or instrument This software can convert PDF files so that they are more attractive, like a book which can display images, video and sound. Learning resources are in the form of application-assisted E-modules It is hoped that this flipbook can attract students' attention and interest so that they are motivated to learn can improve critical thinking skills of elementary school students.

The results of the practicality test of the science content e-module based on project based learning are highly qualified practical, this can be seen from the product percentage results, namely 92.5% or with very practical qualifications, Based on user experience, the e-module is very easy to use, helps in understanding The material presented is very practical to use anytime and anywhere. So the e-module product Project based learning is very suitable to be used for its function in learning. This is also supported by the opinion of (Laili, 2019) who states that E-Modules can help teachers in explaining the subject matter that will be explained. E-Module has an important role in learning. Learning can take place effectively and practically when using E-modules because it can help students who experience difficulties in learning. Apart from that, Rahim's opinion (2017) where the research results show that e-modules can improve critical thinking skills and motivate students because the e-module already has very good criteria.

The results of the effectiveness test of the science content e-module based on project based learning show the effectiveness qualifications tall. This can be seen from the results of the student completion percentage, which is 87% with product effectiveness criteria tall. Based on the results of high product effectiveness test calculations, the e-module product contains Sains project based learning assisted by the flipbook application is suitable to be applied to help learning. This is supported by researchers (Fitrayani & Hunaepi, 2016) namely electronic development modules that are supported by audio and video with the help of technology such as cellphones/laptops/computers become independent teaching materials for students, and the educators only serve as facilitators process of teaching and learning activities. This is also supported by (Prastowo, 2015:14) along with the development of increasingly sophisticated technology, the module format has changed from printed to format electronics which are also commonly called electronic modules (e-modules). E-Modules can help students to learn independently and can improve students' critical thinking skills. In the E-module there are objectives the end of the learning activities that will be carried out so that students can know what they need to do they master or understand to achieve goals. Scientific Journal of Education and Learning which has been determined (Laili, 2019).

The qualifications for validity, practicality and effectiveness have been fulfilled, emodule products based on project based learning assisted by flipbook applications in science learning with topics The transformation of energy around us is worthy of application in learning. This is in line with (Laili, 2019) which shows that the E-module was developed using a project based learning model help students play a more active role in learning, with projects carried out by participants students make students more involved in learning and can improve students' critical thinking skills.

4. CONCLUSION

E-modules can be developed using the ADDIE Development model. Validation of materials, media and the language in the e-module product meets good qualifications with material validity details of 0.85 (very high) media validity 0.85 (very high) and language validity 0.78 (high). The practicality of e-module products is 92.5% met the very practical criteria. The effectiveness of e-module products meets high qualifications with the percentage of student completion was 87%. Based on these results, the e-module product is project based learning is suitable to be applied in science learning in class IV elementary schools. Thus, because it has met the qualifications of validity, practicality and effectiveness, the emodul product based

projects based learning help application flipbook on topic transformation energy around We worthy For applied in learning.

REFERENCE

Aisyah, s., Noviyanti, e., & Triyanto, t. (2020). Bahan ajar sebagai bagian dalam kajian problematika pembelajaran bahasa indonesia. Jurnal salaka: jurnal bahasa, sastra, dan budaya indonesia, 2(1).

Anazifa, r. D., & hadi, r. F. (2016). Pendidikan lingkungan hidup melalui pembelajaran berbasis proyek *(project based learning)* dalam pembelajaran biologi. In prosiding symbion (symposium on biology education), prodi pendidikan biologi, fkip, universitas ahmad dahlan.

Anggraini, p. D., & wulandari, s. S. (2020). Analisis penggunaan model pembelajaran project based learning dalam peningkatan keaktifan siswa. Jurnal pendidikan administrasi perkantoran (jpap), 9(2), 292299.

Ardithayasa, I Wayan (2020).tentang Pengembangan Modul Berbasis Project Based Learning Untuk Meningkatkan Literasi Sains Dan Pemecahan Masalah Pada Materi Perkembangbiakan Tumbuhan Kelas III SD

Arsanti, M. (2018). Pengembangan Bahan Ajar Mata Kuliah Penulisan Kreatif Bermuatan Nilai-Nilai Pendidikan Karakter Religius Bagi Mahasiswa Prodi PBSI, FKIP, Unissula. Kredo: Jurnal Ilmiah Bahasa Dan Sastra, 1(2), 69-88.

Asmuni, A. (2020). Problematika pembelajaran daring di masa pandemi covid-19 dan solusi pemecahannya. Jurnal paedagogy, 7(4), 281-288.

Astuti, K. W. (2021). Pengembangan E-Modul dengan Pendekatan Kontekstual Pada Mata Pelajaran IPA Kelas V Sekolah Dasar. Jurnal Imiah Pendidikan dan Pembelajaran, 5(3)

Candiasa dan Bigsteps. (2011). Pengujian Instrumen Penelitian Disertai Aplikasi Iteman. Singaraja: Undiksha Press., I.M.

Daryanto,(2003).Menyusun Modul Bahan Ajar untuk Persiapan Mengajar: Gava Media.

Depdiknas,(2008). Panduan Pengembangan Bahan Ajar. Jakarta: Departmen Pendidikan Nasional.

Desi Rahmawati, Sri Wahyuni & Yushardi (2017). Pengembangan Media Pembelajaran Flipbook Pada Materi Gerak Benda. Jurnal pembelajaran fisika.

Dewi, m. S. A., & lestari, n. A. P. (2020). E-modul interaktif berbasis proyek terhadap hasil belajar siswa. Jurnal imiah pendidikan dan pembelajaran, 4(3), 433-441.

Dewi, M. S. A., & Putri Lestari, N. A. (2020). E-Modul Interaktif Berbasis Proyek Terhadap Hasil Belajar Siswa. Jurnal Ilmiah Pendidikan Dan Pembelajaran, 4(3), 433–441.

Diarini, i. G. A. A. S., ginting, m. F. B., & suryanto, i. W. (2020). Penerapan model pembelajaran project based learning berbasis lesson study melalui pembelajaran daring untuk mengetahui kemampuan berfikir kritis dan hasil

belajar. Ganaya: jurnal ilmu sosial dan humaniora, 3(2), 253-265. Di kutip pada 22 oktober 2021.

Diarini, i. G. A. A. S., ginting, m. F. B., & suryanto, i. W. (2020). Penerapan model pembelajaran project based learning berbasis lesson study melalui pembelajaran daring untuk mengetahui kemampuan

berfikir kritis dan hasil belajar. Ganaya: jurnal ilmu sosial dan humaniora, 3(2), 253-265. Diakses pada 22 oktober 2021.

Ela Aldeliana, E. A. (2019). Pengembangan E-modul Berbasis Challenging Task untuk Meningkatkan Kemampuan Pemahaman Konsep Matematis Peserta Didik Kelas X di SMA Negeri 1 Tempilang (Doctoral dissertation, UIN Raden Intan Lampung).

Elvarita, a., iriani, t., & handoyo, s. S. (2020). Pengembangan bahan ajar mekanika tanah berbasis e-modul pada program studi pendidikan teknik bangunan, universitas negeri jakarta. Jurnal pensil: pendidikan teknik sipil, 9(1), 1-7.

Eresti, a. (2021). Pengembangan e-modul ipa terpadu berbasis project based learning pada materi struktur dan fungsi jaringan tumbuhan siswa kelas viii smpn 6 kota bengkulu (doctoral dissertation, uin fas bengkulu).

Erviana, v. Y. (2018). Bahan ajar berbasis sosiokultural dan karakteristik dalam menghadapi masyarakat ekonomi asean (mea). Jurnal pemberdayaan: publikasi hasil pengabdian kepada masyarakat, 1(2), 265-274.

Fannani, t. (2017). Pengembangan media pembelajaran multimedia berbasis project-based learning pada pelajaran pendidikan kemuhammadiyahan siswa kelas x sma muhammadiyah 1 gresik (doctoral dissertation, universitas muhammadiyah gresik).

Hariani, n. R., nuswowati, m., & winarno, w. (2020). Pengaruh penerapan model inkuiri terbimbing berbantuan e-modul terhadap pemahaman konsep hidrolisis garam. Jurnal inovasi pendidikan kimia, 14(1), 2561-2571. (diakses pada 25 oktober 2021)

Maharcika, A. A. M., Suarni, N. K., & Gunamantha, I. M. (2021). Pengembangan Modul Elektronik (EModul) Berbasis Flipbook Maker Untuk Subtema Pekerjaan Di Sekitarku Kelas IV SD/MI.PENDASI: Jurnal Pendidikan Dasar Indonesia, 5(2), 165- 174.