International Journal of Elementary Education
Volume 6, Number 1, Tahun 2021, pp. 69-77
P-ISSN: 2579-7158 E-ISSN: 2549-6050
Open Access: https://dx.doi.org/10.23887/ijee.v6i1

KODI: Learning Media for Weather and Climate Topics

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ARTICLE INFO

Article history:
Received September 29, 2021
Accepted January 14, 2022
Available online February 25, 2022

Kata Kunci:
Media Pembelajaran, Offline, Pembelajaran Daring

Keywords:
Learning Media, Offline, Online Learning

ABSTRAK

Kurangnya ketersedian media pembelajaran yang dapat guru gunakan dalam pembelajaran daring menyebabkan guru jarang menggunakan media pembelajaran dalam pembelajaran daring sehingga menyulitkan siswa dalam memahami materi pembelajaran. Penelitian ini bertujuan untuk mengembangkan aplikasi KODI pada topik cuaca dan iklim di Indonesia kelas V Sekolah Dasar. Penelitian ini merupakan jenis penelitian pengembangan yang menggunakan model pengembangan yang digunakan dalam penelitian ini yaitu ADDIE. Subjek penelitian ini yaitu 4 orang ahli, keempat orang tersebut terdiri atas 2 orang ahli isi dan 2 orang ahli media, 2 orang guru sebagai praktisi, serta 5 orang siswa. Pengumpulan data pada penelitian ini menggunakan instrumen lembar observasi, kuesioner/angket, lembar studi dokumen, pedoman wawancara, dan rating scale. Data validasi isi yang diperoleh kemudian dianalisis menggunakan rumus Indeks Validitas Aiken. Dari perhitungan Indeks Validitas Aiken adalah 0,75-1, dengan kategori validasi sedang hingga tinggi. Berdasarkan perhitungan persentase respon, aplikasi KODI mendapat persentase respon guru adalah 90,4% dan respon siswa 96%. Kualifikasi respon tersebut adalah pada kategori sangat baik. Aplikasi komik digital (KODI) dinyatakan valid dan layak digunakan dalam proses pembelajaran khususnya pada materi topik cuaca dan iklim di Indonesia sehiingga dapat memberikan siswa pengalaman belajar baru dan tidak bosan saat mengikuti pembelajaran karena komik digital disesian dengan menggunakan animasi yang dapat menarik minat siswa.

ABSTRACT

The lack of availability of learning media that teachers can use in online learning causes teachers to rarely use learning media in online learning, making it difficult for students to understand learning materials. This study aims to develop the KODI application on the topic of weather and climate in Indonesia for fifth grade elementary school. This research is a type of development research that uses the development model used in this study, namely ADDIE. The subjects of this research are 4 experts, the four people consist of 2 content experts and 2 media experts, 2 teachers as practitioners, and 5 students. Data collection in this study used the instrument of observation sheets, questionnaires/questionnaires, document study sheets, interview guidelines, and rating scales. The content validation data obtained were then analyzed using the Aiken Validity Index formula. From the calculation of the Aiken Validity Index it is 0.75-1, with a moderate to high validation category. Based on the calculation of the percentage of responses, the KODI application got the percentage of the teacher's response was 90.4% and the student response was 96%. Qualification of the response is in the very good category. The digital comics application (KODI) is declared valid and suitable for use in the learning process, especially on weather and climate topic materials in Indonesia.

1. INTRODUCTION

The COVID-19 pandemic causes changes in all sectors, one of the sectors is education sector (Ghasem & Ghannam, 2021). Despite this challenging situation, most academic institutions in the world have strived to ensure the continuity of the learning process (Rafique et al., 2021). During the COVID-19 pandemic, the education system was transformed into a new learning method as face-to-face treatment was stopped to minimize the spread of the virus (Azubuike et al., 2021). In response to preventing students' inability to learn because face-to-face learning was stopped, schools have now turned to online learning (Jogezai et al., 2021). Online learning is a teaching and learning activity conducted over the internet where teachers send teaching materials to learning platforms (Tang et al., 2021; Wardani et al., 2018). Readiness of students in carrying out online learning during the Covid-19 pandemic is still lacking (Hussein et al., 2020; Mishra et al., 2020; Tang et al., 2021). Online learning that requires students to learn with the app makes students complain about difficulties in understanding learning materials (Hutauruk & Sidabutar, 2020). Online learning that takes place today in elementary school uses Power Point media and learning videos as the most commonly used mediums during distance learning.

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Site reality on the ground in the implementation of online learning there are still many obstacles that occur. The obstacle that is often faced is an unstable internet network or data, so that many students have difficulty following the learning carried out. Especially for students who live in rural areas, networking is certainly a problem that students face every day. If the problem is not immediately overcome, then students will quickly get bored in learning, students do not understand the learning material, and students are not ready to follow the learning (Amalia et al., 2020). In addition, another obstacle that occurs on the ground is the lack of use of learning media caused by the limitations of the teacher's ability to develop good learning media in learning process. The use of learning media in the online learning process will be able to help students to be easier to learn in the Covid-19 pandemic (Astini, Sari, 2020; Manurung et al., 2021). Learning media makes learning fun for learners because of the new things in learning (Nurdin et al., 2019; Pamungkas et al., 2018; Ridha, 2021; Tafonao, 2018). Especially now that the learning conditions conducted online are carried out due to the Covid-19 pandemic, the presence of learning media plays a big role in achieving learning goals (Wijayanto et al., 2021). With the problem of lack of learning media will cause students will feel unmotivated in following the learning (Adim et al., 2020; Pawicara & Conilie, 2020). Lack of use of learning media in learning even more in online learning will result in students having difficulty in understanding the subject matter, so that it can have an impact on students' learning outcomes that decrease (Ayu et al., 2021; R. N. Jannah et al., 2020). So that with these problems, it is necessary to have learning media in the learning process, especially in online learning.

The solution to this problem is to create an e-comic learning media. Digital comic media or e-comic with colorful images has its own appeal for children, so children become interested and enjoy reading (Budiarti & Haryanto, 2016; Fahyuni & Fauji, 2017). Comics are a form of visual communication that can be used to convey information popularly and easily understand (Wijaya et al., 2020). Comics have an arrangement of images in a box that contains a series of stories (Berlian et al., 2021; Hobri et al., 2019). Elementary school children love cartoon illustrations like those presented in e-comic so they will be interested in reading the e-comic media (Laksmi & Suniasih, 2021; Ntobuo et al., 2018). E-comic media has the advantage of being able to display interesting images and writing with an electronic digital-based display (Khotimah & Ratnawuri, 2021; Pelajaran & Di, 2017). In a variety of situations, e-comic can be used in delivering materials of various sciences (Aggleton, 2019; Purnamasari et al., 2018). This E-comic is an offline digital comic application for weather and climate topics. The offline application what it means is then packaged in the form of a digital comic application that can be accessed without cellular data, so that it can be opened anytime and anywhere (Rina et al., 2021; Setyaningsih & Sakti, 2020). Learning using offline apps can allow students to learn flexibly and motivate students to achieve their goals (Riastini et al., 2020; Rohmanurmeta & Dewi, 2019). The app is called Digital Comic (KODI). The topics selected are weather and climate in Indonesia. KODI application is expected to be an interesting and practical learning medium to help learners understand learning on weather and climate topics.

There has been a lot of research done before that develops digital comic media. Other research has found that the digital comic media developed is declared feasible because it can increase students' motivation and interest in thematic learning, help activate students physically and emotionally, and facilitate student learning (Mustikasari et al., 2020). Other research has also been done by producing that using digital comic media will be able to stimulate students in following learning because in digital comics contain stories with interesting character images (Wahyudin et al., 2020). Other research has also been done by developing digital comic media with flip book forms so that it can be used in offline learning and can make the learning process interesting (Izzah & Ma'sum, 2021). Although there has been a lot of development research conducted by developing digital comic media, there is still no development of digital comics for elementary school students in online learning. Reflecting on the problem where there is a need for learning media that can be used in learning remotely but can be used without using the internet network, then digital comic media will be developed offline. With the development of digital comics with offline application forms are expected to be a solution to the problems mentioned earlier.

This study aims to develop a KODI application on Social Science content of weather and climate topics in Indonesia for fifth grade elementary school that has been declared valid and has a good response from teachers as well as students. The validity of the developed product is obtained by conducting tests to several experts and conducting product tests directly to teachers and students to obtain responses from teachers and students. The implication of this research is the KODI application, teachers can design learning with various learning models. Teachers can carry out learning with role playing methods, namely students playing a role according to the character in the KODI application that is carried out at zoom meetings, so that students will get a new learning experience and not get bored when participating in learning. In addition, teachers can carry out problem-based learning, namely teachers give problems to students, then students look for problem solving in the KODI application and can answer the given problem. This will foster student's learning interest, because learning will feel fun.

2. METHOD

KODI application development research on weather and climate topics using the ADDIE model (*analysis, design, development, implementation,* dan *evaluation*) (Ismail, 2018). But due to financial constraints and time constraints, this development research can only be carried out through 3 stages, namely analysis, design, and development. Activities carried out at the analysis stage are carrying out needs analysis with observation, interview, and dissemination of questionnaires in fifth grade teachers of Buleleng Subdistrict Cluster IV Elementary School, analysis of student characteristics conducted by interviews with teachers to find out the characteristics of students, and curriculum analysis related to weather and climate topics in Indonesia. In the design stage, several activities were carried out, namely, creating conversational manuscripts, designing storylines, and giving color. At the development stage, media validation is carried out by media experts and material experts, teacher response retrieval, and student response to KODI applications. After obtaining validation results, further revisions were made to the KODI application developed in this study. The subject of this research is 4 experts, the four experts consist of 2 content experts and 2 media experts, 2 teachers as practitioners, and 5 students. The content expert is a lecturer who has competence in the learning load of Social Science in elementary school. Content experts are lecturers who have competence in learning media. Teachers as practitioners are teachers who teach in fifth grade elementary schools in Cluster IV of Buleleng Subdistrict. The students who were the subjects in this research were students who were in fifth grade of elementary school in Cluster IV of Buleleng Subdistrict.

Data collection in this research uses observation sheets, questionnaires, document study sheets, interview guidelines, and rating scales. Observations, questionnaire deployments, and interviews were conducted on needs analysis. Questionnaires are used for needs analysis, obtaining the response of practitioners and students to developed media. Document studies are conducted for the analysis of needs. Rating scale is used to determine the validity of the content of the media developed. Data for the validity of the content obtained is then analyzed using the Aiken validation index formula. The grid of KODI application development rating scale instruments in this study consists of six aspects, namely visual aspects, typography, characterization, material, disaster, and coherence. The validity of the contents of the KODI application development validation instrument is 1.00, with all relevant instrument items and is in the range of 0.80-1.00 with very high content validity criteria. In this research, we used data analysis methods and techniques thematic analysis used to analyze the needs in this research. In this research, to analyze the validation of media content conducted by 4 experts, the four people consisted of 2 content experts and 2 media experts and then analyzed data with Aiken index formula. In this research, the product developed also carried out the withdrawal of teacher and student responses involving two practitioners or teachers and five students involved to respond. The response data that has been obtained is then analyzed using the percentage formula.

3. RESULT AND DISCUSSION

Result

Analysis Stage

The findings of this stage show that the learning media used by elementary school teachers of Cluster IV of Buleleng Subdistrict in online learning is still small. In addition, there are obstacles in carrying out online learning, namely student network constraints. Social Science material in student books is also still narrow and dominated by class forms. While the students of fifth grade Elementary School Cluster IV Buleleng District averaged 11 years old. Judging from the stage of cognitive development, children of this age belong to the concrete opersional stage (6-12 years). Elementary students will experience obstacles if learning without the use of help from objects that can help clarify the learning material. When students learn to use learning media, this medium is very important in becoming an intermediary for students in learning. Weather and climate topics in Indonesia include weather, climate, climate conditions in Indonesia in general, wind patterns in Indonesia and the impact of weather and climate change on the environment. The basic competencies and indicators of competency achievement are used as benchmarks in this research shown in Table 1.

Table 1. Basic Competencies and Indicators of Competency Achievement

Basic Competencies	Competency Achievement Indicators
3.1 Explaining the weather, climate and climate conditions in Indonesia in general as well as wind patterns in Indonesia and the	3.1.1 Distinguishing the weather and climate in Indonesia. 3.1.2 Classify the existing climate in Indonesia.

Basic Competencies	Competency Achievement Indicators
impact of weather and climate changes on life	3.1.3 Find a connection between the climate and the seasons in Indonesia. 3.1.4 Draw wind patterns in Indonesia. 3.1.5 Analyzing the impact of weather changes in Indonesia. 3.1.6 Distinguishing the wind in Indonesia based on its type.

Planning Stage

The process of designing KODI application development on weather and climate topics in Indonesia begins with creating conversational manuscripts, designing storylines, and coloring. The KODI application developed has a size of 21 x 29.7 cm with 14 pages. Kodi application consists of 3 parts, namely the opening, content, and closing parts. In the opening section consists of a cover containing media titles and identities, basic competencies and indicators, learning objectives, and the introduction of figures. The contents section consists of a dialogue containing material on weather and climate topics in Indonesia for fifth grade. The closing part consists of assigning tasks and answer keys. Design creation in this media design uses Adobe Illustrator and Adobe Photoshop applications for E-comic creation. Creation of offline android apps using the Android Studio app.

Development Stage

At this stage, media validation is carried out by media experts and material experts, teacher response retrieval, and student response to KODI applications. The calculation of Aiken validity index is 0.75-1, with a high validation category. The result of the calculation of the percentage of teacher response is 90.4% with excellent qualifications. The results of the calculation of the percentage of student response are with a result of 96% with excellent qualifications. The results of the analysis of data on the validity of the contents, teacher response, and student response are presented in Table 2.

Table 2. Summary of Results

Aspects	Result	Description
Validity of Contents	0,75-1	High Validity
Teacher's Response	90,4%	Excellent
Student Response	96%	Excellent

Product revision has the goal of improving the validated KODI application. Product revision is done by following the input, suggestions, and comments given including on the cover adding the undiksha logo and providing space between the title and the developer. Product revision is also attributed to the competency section by adding learning goals. Product revision is done by adding the name of the lecturer at the end, changing the comic title using more plain letters, adding program goals on the cover page and revising the language used in products with a standard language. The final result of the developed project is presented in Figure 1, Figure 2, Figure 3, and Figure 4.

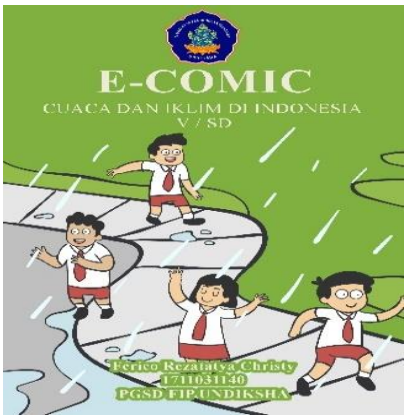

Figure 1. KODI App Opening Section

Figure 2. KODI App Contents Section

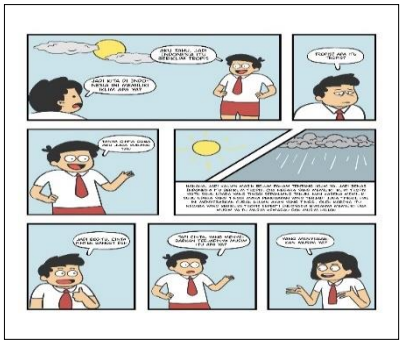

Figure 3. KODI App contents section

Figure 4. KODI App Cover Section

Discussion

The products produced in this development research are KODI applications on weather and climate topics in Indonesia fifth grade elementary school. KODI applications have high content validity and get excellent response. KODI applications are developed based on the ADDIE development model that only reaches the development stage. The analysis stage is the first stage in this research that is carried out to collect preliminary data that will be used in the research process. The problem found at this stage of analysis is the lack of availability of learning media in schools which causes teachers to rarely use learning media in the implementation of learning. Judging from the stage of development of elementary school students who are still at the concrete operational stage (Ekayani, 2017; Novita et al., 2019). Students who are at the concrete oprasional stage can only understand something that is still concrete so that to understand something abstract it is necessary to have tools such as learning media (Saputri et al., 2018; Setiawan, 2019). With the problem of learning media that makes teachers rarely use learning media in learning will have an impact on students who will find it difficult to understand the subject matter (I. Hidayah et al., 2018; Puspitarini & Hanif, 2019). The problem found at the analysis stage is found problems in the implementation of online learning, namely problems on inadequate internet networks. With an inadequate network, the learning process is disrupted. The results obtained at this stage of analysis are then collected to become a benchmark in the next product development process.

The next stage is the planning stage that is carried out with the intention of designing products developed based on data or needs that have been obtained in the previous analysis stage. At this stage, the product is developed with conversational scripts, designing storylines, as well as coloring. By designing conversations and creating storylines will make the comics developed can be well designed. The product developed is designed using characterization animations that can attract students' attention in learning. The results of this planning stage are then used in the process of developing actual comic. The last stage of this research is the development stage which is the stage where the product that has been designed is then made into a real product. At the stage of product development that has been developed also conducted testing to find out the validity of the product developed. KODI applications developed have high content validity and get an excellent response so that it can be declared feasible. The feasibility of KODI application developed can be seen weather and climate topic material in Indonesia packaged in the form of comic stories make it easier for students to capture abstract things (Agustiningsih, 2015). The use of learning media in the form of picture stories will help students in developing their imagination, because students use the sense of sight more to understand the material (Khamidah, 2017; Saputri et al., 2018). The use of media with the form of images will also greatly be able to help students in understanding abstract material so that it will be able to improve student learning outcomes (Nurrita, 2018; Pradilasari et al., 2019). In addition, using learning media packaged in the form of comics will make students feel happy in trying to understand the content of learning in comic (Agusvian, 2021; Putra & Putra, 2021). This will have an impact on students' increased learning interest due to the learning process that appeals to students (Damayanti & Kuswanto, 2021; Murti, 2020). In addition, it will have an impact on the learning process that is not monotonous.

The feasibility of KODI application can also be seen from the musty media design developed in the form offline applications. By being designed with the offline application will be able to facilitate students in accessing learning materials in comic form even in online learning. Applications in offline form also have advantages such as learning can be done asynchronously. Using offline apps can allow students to learn flexibly and motivate students to achieve their goals. The use of learning media designed in the form of offline applications will make it easier for teachers to carry out online learning because it will not be disturbed by the internet network or not. With the implementation of good online learning will be able to

facilitate students in achieving learning goals even though they are not taught directly by their teachers (M. Jannah & Nurdiyanti, 2021; Rohana, 2020). The results that have been obtained are relevant to the results of research that has been done before. Digital comics that have been developed before have been declared valid, effective and efficient to use in the learning process because they have designs that can attract students in learning (Kanti et al., 2018). Other research also mentions that digital comic media is declared feasible and increases students' enthusiasm in following the learning process, thus making them actively engaged, concentrated and focused in the learning that takes place. This is what is needed in creating learning conditions that are able to support student success and learning ability (Y. F. Hidayah et al., 2017). The results of the research have also stated that the development carried out on digital comics has been declared valid and suitable for use or can be implemented in the learning process in the classroom (Rohmanurmeta & Dewi, 2019). In accordance with the feasibility of media that has been developed that is adjusted to the results of research that has been done and relevant research results, it can be believed that digital comic learning media is very feasible to use in the learning process and has many advantages. The implication of this research is the KODI application, teachers can design learning with various learning models. Teachers can carry out learning with role playing methods, namely students playing a role according to the character in the KODI application that is carried out at zoom meetings, so that students will get a new learning experience and not get bored while participating in learning. In addition, teachers can carry out problem-based learning, namely teachers give problems to students, then students look for problem solving in the KODI application and can answer the given problems. This will foster students' learning interest, because learning will feel fun.

4. CONCLUSION

This research resulted a digital comic application product (KODI) that has been declared valid and worthy of use in the learning process, especially on weather and climate topic material in Indonesia. With this digital comic can give students a new learning experience and not bored when participating in learning because digital comics are provided by using animation that can attract students.

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