



# The Development of E-Comics Media Based on the Vark Model to Measure the Understanding of Elementary School Students

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## ABSTRACT

The purpose of this research is to develop digital-based thematic learning media, namely e-comics media for elementary school students. E-comics will be developed with the VARK (Visual, Auditory, Reading, Kinesthetic) learning model which displays illustrated stories with sound reflections and is related to students' reading and kinesthetic activities in using the media. Develop digital-based thematic learning media, namely e-comics media for elementary school students. E-comics will be developed with the VARK (Visual, Auditory, Reading, Kinesthetic) learning model which displays illustrated stories with sound reflections and is related to students' reading and kinesthetic activities in using the media. The e-comics media will discuss ethnic diversity material for fourth grade elementary school students. The results of the validity test above, conclude that the average e-comics media based on the vark model is 96%, which means that the media is valid. The application of media at SD Muhammadiyah Lamongan resulted in an increase in cycles 1 and 2, so e-comic learning media could increase students' understanding. The response results of using e-comics media based on the vark model were easy to apply by teachers and students at partner schools of PGSD UM Lamongan.

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## 1. INTRODUCTION

The development of education today is related to technological developments from the era of revolution society 5.0, which all affairs use digital. Education in the digital era can be used to support learning patterns, mindsets, and develop creative and innovative innovations from students in order to print the next generation of the nation that is superior and can compete. Digital era education is a phenomenon that responds to student needs adapted to the new curriculum according to the current situation, namely independent learning. This linkage is able to open a window in the world of education by utilizing Android as a learning medium. Teachers are able to implement digital as learning materials to achieve learning goals, think critically, solve problems with good manners ethics. The teacher plays a major role in education because it is the teacher who directs the learning process by selecting the right learning media. Students are able to solve learning problems with learning methods and media. Junarti et al. (2022) said that technology has an important role in the world of education so it must be utilized with as good as possible. Maritsa et al. (2021) also stated that technology is a solution what is needed to solve and solve existing problems is in world of education.

Thematic Learning is a theme-based learning that is used to connect several subject concepts. Students are easier to understand concepts because they are more focused on one topic or theme. Thematic learning consists of Indonesian language, PPKn, mathematics, science, social studies, and SBDP subjects. In 1 minimal theme there are 2 subjects that include concepts and exercises. Thematic learning can create integrated learning that encourages student involvement in learning, related to local problems as a theme or title so that it can provide a meaningful experience. According to Hidayah (2015) thematic learning is required for active students, critical thinking, and student-centered learning. Students can learn and play with high activity creativity. This encourages students to know (learning to know), learn to do (learning to do), to be (learning to be), and to live together (learning to live together). The achievement of student learning goals after thematic learning activities is supported by spirituality to God Almighty and an attitude of responsibility, discipline, courtesy, and virtuousness.

Thematic learning is very important to learn in elementary school students. This learning is usually in the high class (Zativalen, 2021). Thematic learning will affect student learning outcomes. These results will affect student learning activities (Humairah, 2022). Student learning outcomes in the form of cognitive, affective, and psychomotor. Student skills can be measured from the student learning process (Huda, M. M., Kharisma, A. I., and Afifah, 2022). Student learning outcomes will be seen from the process and student learning outcomes (Irmaningrum, R. N., Zativalen., and Khasanah, 2022). Student learning outcomes can be increased by using the learning resources used. Learning media is one source that can improve learning outcomes (Kharisma, 2022). Media is able to create the world of students into the learning that is being studied (Khasanah, and Irmaningrum, 2021). Students become more active and enthusiastic in learning. The enthusiasm of students is able to increase the level of creativity of students (Hairunnisa et al, 2019). Student creativity can improve student learning outcomes in order to be able to achieve learning goals (Irmaningrum, R. N., and Khasanah, 2021).

The problems to be solved in this study related to thematic learning tend to lack understanding of concepts in each subject. Students only understand the core of the material without being able to solve the problem. Students never use digital media such as android in the learning process even though many students currently have personal

androids. The independent learning curriculum should invite students to learn digital concepts together in the current era of society 5.0 revolution. The thematic learning process tends to be monotonous and students feel bored. If students are less enthusiastic in learning, it will have a negative impact on the learning objectives achieved. Students become less active, students' interest is less, and learning outcomes are not good.

The purpose of this research is to develop digital-based thematic learning media, namely e-comics media for elementary school students. E-comics will be developed with the VARK (Visual, Auditory, Reading, Kinesthetic) learning model which displays illustrated stories with sound reflections and is related to students' reading and kinesthetic activities in using the media. The e-comics media will discuss ethnic diversity material for fourth grade elementary school students.

### **1.1 Thematic Learning in Elementary School**

Thematic learning is a theme-based learning that aims to combine several subject concepts. Students are easier to understand concepts because they are more focused on one topic or theme. Thematic learning consists of Indonesian language, PPKn, mathematics, science, social studies, and SBDP subjects. Thematic learning aims for student-centered learning. (Ananda & Fadhilaturrahmi, 2018) Thematic learning is learning with meaningful experiences that are able to understand concepts in various subjects. Meaningful experience is that students understand the concept material learned through direct experience and connect it with concepts that have been previously understood by students.

Thematic learning that refers to the theme can be interpreted that the thematic learning pattern integrates knowledge, skills, skills, values, and learning attitudes (Sari & Yuniastuti, 2018). This relates to student learning outcomes that must be achieved, namely the value of knowledge, attitudes, and skills that meet the minimum standard values that have been agreed at each level of the Elementary School unit.

### **1.2 Learning Media**

Learning media is very important to use in the teaching and learning process. Teachers usually use the media as a supporting tool as a distributor of material to students. Learning media are learning resources used by teachers as distributors or liaisons for teaching messages that are held and/or created in a planned manner by teachers or educators (Munadi, 2013). There are various kinds of learning media. Before teaching, teachers usually choose learning media that are suitable for use according to the theme/topic of learning. The selection of media is related to the character and development of students in order to be able to help students understand the concept of learning materials (Zativalen et al., 2022). One of the learning media that can be created is e-comics because of the media Comics will open the mind and make it easier to convey information because comics are a visual medium with a concentrated story (Siregar & Siregar, 2017).

### **1.3 E-comics Media**

E-comics media is an image that is usually in the form of a cartoon image. Comics have story elements in their presentation, which contain large messages but are presented briefly and easily digested, and are equipped with dialogic verbal language (Sung & Putra, 2018). Technological developments, especially in the digital world, affect the world of

comics that have emerged as e-comics. E-comics media is one of the learning media that can be used by students in the thematic learning process. E-comics media began to be used in the world of education to make it easier for students to understand material through Android, which currently the average student has a personal Android. In the era of society 5.0, the use of gadgets is very necessary in the world of education, especially the presence of covid-19, which makes learning limited and more often done online. Today's society, especially the lower middle class, with limited internet quotas, which is insufficient, makes educators look for learning media that can deliver material through Android with minimal funds.

Content design is adjusted to the relationship between the image and the topic to be developed. The language used is everyday language. The choice of difficult topics by students, but using e-comics is presented in an interesting way (Aeni & Yusupa, 2018). The development of this content design refers to the thematic learning of elementary school students. The material in e-comics is Theme 7 The Beauty of the Diversity of My Country, Sub-theme 1 Ethnic and Religious Diversity in My Country which consists of Indonesian language, science, SBDP, IPS, PPKN subjects. These learning materials require digital technology that is already owned by many students, namely Android, so the form of learning media content used is e-comics based VARK .

Learning by using mobile-based comic media increases the attractiveness and mobility of students in learning and easy to use (Aeni, 2018). In this study, there are various kinds of ethnic figures in Indonesia with the beauty of single diversity. The appearance of the e-comics design contains the sound of songs from various tribal songs in Indonesia, such as one nusa one nation, apuse, bubuy month. The Figures/characters in the e-comics match the animated characters that are interesting and the language easy for students to understand. The design of making VARK-based e-comics using the comic master application.

The content design, display design, and production of VARK-based e-comics are adapted to the character and understanding of the students. The animated characters in the comics will be as interesting as possible and there will be material in each subject with the theme of ethnic and religious diversity in my country.

#### **1.4 VARK Model**

The VARK learning model is a visual, auditory, reading, and kinesthetic learning model. The VARK learning model is used for learning, processing, and communication (Rusijono & Suryanti, 2021). The use of the VARK model is suitable for elementary school students because the model covers all areas of the use of the human senses in students. Students understand the material better than what they do directly. The VARK model helps students learn to find and solve their own problems.

#### **1.5 4D Development Model**

The 4D development model aims to develop learning media. The 4D model was developed by Thiagarajan, Dorothy S. Semmel, and Melvyn I. Semmel in 1974. The 4D development model consists of stages, namely Define (defining), Design (design), Develop (development), and Disseminate (deployment) (Rusijono & Suryanti, 2021). See **Figure 1** below.



**Figure 1.** 4D Model Development Stage

### 1. Defining Stage

The definition stage is the stage carried out to analyze previous research according to needs. In this define stage, there are five activities that can be carried out, namely: preliminary analysis, student analysis, task analysis, concept analysis, and formulation of learning objectives.

### 2. Design Stage

The design stage has four stages that must be carried out, namely: preparation of test standards, media selection, format selection, and initial design.

### 3. Development Stage

The development stage is the stage carried out for the production of learning media development.

### 4. Deployment Stage

The dissemination stage is the stage to promote the production of learning media that has been made. It aims to be accepted by users, by individuals, groups, or systems. Product production must be really selective so that the results are good. The deployment stages consist of validation testing, packaging, diffusion, and adoption. (Thiagarajan et al. 1974).

## 2. METHODS

The development of VARK-based e-comics media in this study uses the 4D model proposed by Thiagarajan. The 4D development model has four main stages, namely: defining, planning, developing, and deploying. The following are the stages of developing VARK based e-comics:

### 1. Defining Stage

At this stage, it discusses the analysis of the requirements needed in the process of learning activities. The definition stage consists of five stages, namely preliminary and final analysis, student analysis, concept analysis, student analysis, task analysis, and formulation of learning objectives.

#### a. Final Preliminary Analysis

In defining the initial analysis, basic problems will be found so that it is necessary to develop suitable learning media for elementary school students.

#### b. Student Analysis

In defining the student's analysis by conducting an analysis related to the students who will be the research subjects, namely the fourthgrade students of Elementary School Semester 2. The analysis of students to be studied is the character of cognitive, affective, and psychomotor development.

c. Concept Analysis

In defining concept analysis, an analysis of the basic concepts to be taught is carried out. The analysis is carried out systematically and the basic concepts will be linked to other concepts.

d. Task Analysis

In defining the task analysis, the skills to be analyzed are discussed. These basic skills will be broken down into sub skills. The purpose of task analysis is a collection of procedures to determine the content in the learning process such as learning materials that will be studied by students. The learning materials are in accordance with the current curriculum, namely the independent learning curriculum.

e. Formulation of Learning Objectives

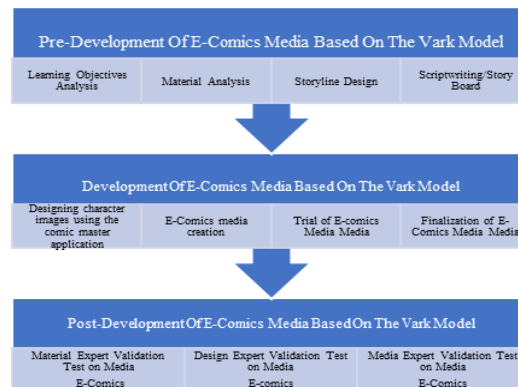
In defining the formulation of learning objectives related to the task analysis that has been defined. The learning materials that have been analyzed will determine what learning objectives are to be achieved.

2. Planning Stage

The planning stage is to be discussed the media to be used, namely VARK-based e-comics media. The planning stage carried out is needs analysis, analysis of themes and sub-themes that will be used, e-comics design. At this e-comics design stage, the stages include: preparation of material on the theme of learning, preparation of learning objectives, preparation of storylines, script writing/storyboards, application development, application testing, application preview, and finalization of production use on Android.

3. Development Stage

The development stage aims to produce digital learning media production, namely VARK-based e-comics. The media is useful for distributing material for students in the learning process. The design design for developing E-comics media based on the VARK model can be seen in **Figure 2**. Below.



**Figure 2.** Design Development of E-comics Media Based on the VARK Model

This study consisted of two tests carried out, namely as follows:

a. Learning Media Validity Test

The e-comics media that have been developed are tested for feasibility by experts to find out whether or not the media that will be used will be used. This validity test is also to get suggestions and improvements from experts so that e-comics media can be useful for teachers and students.

b. Media Implementation in Class

The e-comics media will be tested on fourth grade students of SD Muhammadiyah 1 Lamongan for the 2022/2023 academic year. The teacher in this study was a fourth grade teacher at SD Muhammadiyah 1 Lamongan and was observed by 2 observers from the authors' partners.

#### 4. Deployment stage

At the dissemination stage, the development of e-comics media was carried out in a limited manner. This dissemination activity was carried out in schools with a limited number of teachers through the stages of socializing the distribution of VARK-based e-comics learning media. This dissemination activity was carried out to determine the response of the learning media developed. If the response is good, more distribution will be carried out so that the learning media can be useful for many students.

### 3. RESULTS AND DISCUSSION

The development of VARK-based e-comics media in this study uses the 4D model proposed by Thiagarajan. The 4D development model has four main stages, namely: defining, planning, developing, and deploying. The following are the stages of developing VARK based e-comics:

#### 1. Defining Stage

At this stage, it discusses the analysis of the requirements needed in the process of learning activities. The definition stage consists of five stages, namely preliminary and final analysis, student analysis, concept analysis, student analysis, task analysis, and formulation of learning objectives.

##### a. Final Preliminary Analysis

In defining the initial analysis, basic problems will be found so that it is necessary to develop suitable learning media for elementary school students.

##### b. Student Analysis

In defining the student's analysis by conducting an analysis related to the students who will be the research subjects, namely the fourth grade students of Elementary School Semester 2. The analysis of students to be studied is the character of cognitive, affective, and psychomotor development.

##### c. Concept Analysis

In defining concept analysis, an analysis of the basic concepts to be taught is carried out. The analysis is carried out systematically and the basic concepts will be linked to other concepts.

##### d. Task Analysis

In defining the task analysis, the skills to be analyzed are discussed. These basic skills will be broken down into sub skills. The purpose of task analysis is a collection of procedures to determine the content in the learning process such as learning materials that will be studied by students. The learning materials are in accordance with the current curriculum, namely the independent learning curriculum.

##### e. Formulation of Learning Objectives

In defining the formulation of learning objectives related to the task analysis that has been defined. The learning materials that have been analyzed will determine what learning objectives are to be achieved.

#### 2. Planning Stage

The design phase was carried out to design the preparation of tests and design of VARK-based e-comics media. The results of the stages include:

a. Test Preparation

The test preparation stage is the activity of compiling items based on the results of the formulation of specific learning objectives to measure students' mastery of concepts after carrying out learning

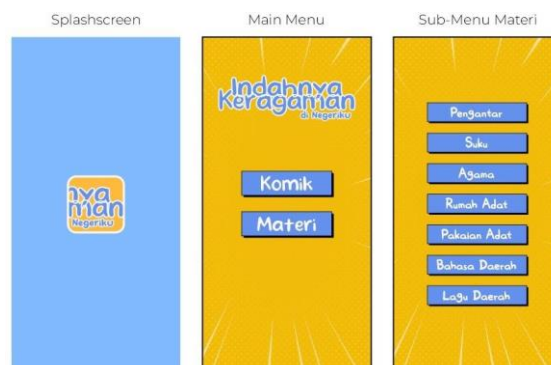
b. Planning e-comics media based on the VARK model

The media design stage is used to choose the right media in the presentation of learning materials, namely the use of VARK-based e-comics media. At the planning stage of making VARK-based e-comic media media through storyboarding. The storyboard display can be seen in **Figure 3**.



**Figure 3.** Storyboard e-comics based on the VARK

After making the design, the development of VARK-Based E-comics Media was carried out. The following is a display of the VARK-Based Media E-comics program. Can see **Figure 4** and **Figure 5**.



**Figure 4.** Main Display of e-comics media based on the VARK model





Figure 5. Display e-comics media based on the VARK model

### 3. Development Stage

After making the design, the development of VARK-Based E-comics Media was carried out. The following is a display of the VARK-Based Media E-comics program. This study consisted of two content and construct tests as follows:

#### a. Learning Media Validity Test

The following are the results of the media validity test

Table 1. Content Validity Test

Aspect	Criteria	Validator	
		I	II
Theory	Theory	4	4
	Contents	4	3
	Language	4	4
Presentation Validation		95%	

Table 2. Content Validity Test

Aspect	Criteria	Validator	
		I	II
Learning Media Design	Media content quality	4	4
	Ease of application	4	4
	Media display	3	4
	App compatibility	4	4
Presentation Validation		97%	

The results of the validity test above, conclude that the average e-comics media based on the vark model is 96%, which means that the media is valid.

#### b. Media Implementation in Class

The e-comics media will be tested on fourth grade students of SD Muhammadiyah 1 Lamongan for the 2022/2023 academic year in September 2022. The teacher in this study was a fourth grade teacher at SD Muhammadiyah 1 Lamongan and was observed by 2 observers from the authors' partners.

The results of the implementation in class can be seen from the increase in cycles I and II.

**Table 3.** Result Siklus I dan II

Siklus	Hasil
I	75,3
II	88,7

From the table above, it is concluded that there was an increase in cycles 1 and 2, so the e-comic learning media can increase students' understanding.

#### 4. Deployment stage

At the distribution stage, the development of e-comics media was carried out at partner schools from PGSD UM Lamongan, namely, HR 1 Babat, MIM 1 Payaman, SDN Tambakarigadung 2, HR 1 Sidoharjo, and HR 1 Sukodadi. The results of the response to the use of this media are easy to apply by teachers and students.

Based on the results of this study, it shows the development of VARK-based e-comics media in research using the 4D model proposed by Thiagarajan. The 4D development model has four main stages, namely: defining, planning, developing, and deploying. It has been maximized. VARK-based e-comics media is easy to use and able to increase students' understanding of the beauty of togetherness in ethnicity and culture.

#### 4. CONCLUSION

Based on the results of the research and discussion, it can be concluded that the results of the response to the use of e-comics media based on the vark model are easy to apply by teachers and students at partner schools from PGSD UM Lamongan, namely, SDM 1 Babat, MIM 1 Payaman, SDN Tabakarigadung 2, HR 1 Sidoharjo, and HR 1 Sukodadi. Students experience changes with the development of e-comics media based on the vark model, it can measure/improve the understanding of elementary school students based on the rarity and the method applied.

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