Development of Cooperative Flow Simulator Media Based on "Multimodal VARK" in an Effort to Improve Students Understanding of Cooperative Concepts in Elementary School

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Abstract

The limitation of learning media regarding the concept of cooperatives is one of the factors contributing to the low level of student understanding because the media used is only reading textbooks, which makes students feel bored during the learning process. This study aims to produce a learning media based on Multimodal VARK. Method: Design and Development (D&D) through the ADDIE research stages which consist of (1) Analyze, (2) Design, (3) Development, (4) Implementation, (5) Evaluation. The learning media developed in this research is the Cooperative Flow Simulator for the IPAS subject in phase C of Elementary School. The analysis results show that the Cooperative Flow Simulator learning media is declared "very feasible" to be used as a learning medium for the concept of cooperatives. Based on the validation: (1) subject matter experts received an average percentage of 100%, (2) media experts received a percentage of 89%, (3) learning experts received a percentage of 90%. This research is expected to provide a positive influence and good contribution, as well as a role in assisting teachers in their efforts to enhance understanding and implementation of the Cooperative Flow Simulator media development regarding the concept of cooperatives among students.

Keywords: Simulator of Cooperative Flow, Student Understanding, Multimodal VARK.

Pengembangan Media Cooperative Flow Simulator Berbasis "Multimodal VARK" Dalam Upaya Peningkatan Pemahaman Konsep Koperasi Siswa Di Sekolah Dasar

Abstrak

Keterbatasan media pembelajaran mengenai konsep koperasi menjadi salah satu faktor rendahnya tingkat pemahaman siswa karena media yang digunakan hanya buku teks bacaan yang membuat siswa merasa jenuh dalam proses pembelajaran. Studi ini bertujuan untuk menghasilkan sebuah media pembelajaran berbasis Multimodal VARK. Metode: Design and Development (D&D) melalui tahapan penelitian ADDIE yang terdiri dari (1) Analyze, (2) Design, (3) Development, (4) Implementation, (5) Evaluation. Media pembelajaran yang dikembangkan dalam penelitian ini adalah Cooperative Flow Simulator pada mata Pelajaran IPAS di fase C Sekolah Dasar. Hasil analisis menunjukan bahwa media pembelajaran Cooperative Flow Simulator dinyatakan "sangat layak" untuk digunakan sebagai media pembelejaran konsep koperasi. Berdasarkan validasi : (1) ahli materi mendapatkan presentase rata-rata sebesar 100%, (2) ahli media mendapatkan persentase sebesar 89%, (3) ahli pembelajaran memperoleh presentase sebesar 90%. Penelitian ini diharapkan dapat memberikan pengaruh positif dan kontribusi yang baik serta peran untuk membantu guru dalam upaya peningkatan pemahaman dan implementasinya dari pengembangan media Cooperative Flow Simulator mengenai konsep koperasi pada siswa.

Kata kunci: Simulator Cooperative Flow, Pemahaman Siswa, Multimodal VARK.

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INTRODUCTION

Cooperatives are an example of part of social studies learning because in cooperatives there are concepts of Social Studies (IPS) that are applied in everyday life. Speaking of economics, cooperatives are one type of creative economic activity. Generally, cooperatives are a topic that students are already familiar with. One example that students can find is student cooperatives in their schools. These student cooperatives ideally tend to be easily accessible because they are in the school environment, so students can be directly involved in the cooperative activities. Student cooperatives can also be an effective learning facility for students as they can be directly involved, helping in understanding the concept of cooperatives in a practical way. However, their understanding of how to get involved in cooperative activities is often inadequate. Therefore, before getting involved in student cooperatives, it is important for students to be given an understanding of the concept of cooperatives in general by the teacher, as well as how to become a member of a cooperative in accordance with applicable regulations and principles. Thus, it is expected that students' understanding of the concept of cooperatives will increase after they are actively involved in student cooperative activities at school.

Based on previous research, it shows that the average daily test score on understanding the concept of cooperative material shows a low level (Nurjanah et al., 2012). The data collected showed that the average score of students' concept understanding only reached 59.3%. Of the 20 students tested, only about 40% managed to achieve scores above the completion criteria. Likewise, with another writing using the lecture method on 29 students, only 62% of students managed to reach the KKM, while 38% of students had not reached the KKM which had been set at a value of 70 (Hanifah, 2013).

Therefore, the author made an observation to one of the elementary schools in Ciamis. Based on the results of interviews with teachers and questions and answers to students related to cooperative material, that students' understanding of the concept of cooperatives is still very low. From the interview, only 8 out of 20 students could answer the questions. This was triggered due to limited learning media regarding the concept of cooperatives which is certainly one of the factors for the low level of student understanding because it is only fixated on independent reading materials and the media used in learning are only reading textbooks which often make students feel bored in the learning process (Budi et al., 2023).

However, the concept of cooperatives will be more easily understood by students if carried out in the form of practice through the use of media that supports a basic understanding of how to become a member of a cooperative and the flow of cooperative activities that are good and correct in accordance with paying attention to the foundation, principles and objectives of the establishment of cooperative activities. This is in accordance with the statement that the lack of understanding of concepts is caused by the lack of practical opportunities for students in solving learning problems in the past (Anthony et al., 1980). In addition, many writings show that the use of aids or media is very effective in the learning process in the classroom, especially in improving student achievement (Danim, 1995). The limitation of media used in the classroom is a factor that causes the low quality of student learning (Danim, 1995).

Students need a simplistic approach to understand complex information. Therefore, simulative learning media is considered important to provide stimulation by simplifying concepts to attract students' interest and encourage their curiosity related to concepts that are considered abstract and complex through concrete and child-friendly media.

Therefore, the author took the initiative to develop a Cooperative Flow Simulator learning media product to increase learning motivation and students' level of understanding of the concept of cooperatives that they should have as a provision to become smart and characterized citizens by preserving the cooperative culture in the midst of its fading existence.

METHODS

This research uses Design and Development (D&D) method to develop Cooperative Flow Simulator learning media that will be implemented in phase C of Elementary School, SDN 2 Cisontrol. The model that will be used in this writing is the ADDIE model with stages consisting of Analysis, Design, Development, Implementation, Evaluation. The analysis stage is carried out by collecting data through observations of students and interviews with teachers, then analyzing several related things such as curriculum, learning outcomes, student learning styles, cooperative materials, and cooperative learning. The design stage is designing and creating a product storyboard. The development stage is the stage of making the product by referring to the worklog which contains the results of the analysis, then validating the product made by expert review to get an assessment of the feasibility of the product. The implementation stage is the stage of implementing the product implementation to phase c students, followed by student assessment of the product. Finally, the evaluation stage is carried out to improve and improve the quality of the product so that a final product is obtained.

One of the characteristics of the D&D writing model is in the data collection techniques, which can use quantitative and qualitative approaches in one writing (mixed methods research). In the qualitative approach, data obtained from interviews and worklogs are presented using narrative text. Quantitative data obtained through questionnaires are the results of validation from three experts, namely material experts, design experts, and linguists. Then, the Likert Scale formula will be used to analyze the data that has been obtained. In quantitative analysis, it is necessary to give a score to each answer. The following is the scoring using the Likert Scale that will be used in this paper. The Likert scale is a measurement technique that can be used to measure the attitudes, opinions and perceptions of a person or group of people about social phenomena (Sugiyono, 2022). In quantitative analysis, it is necessary to give a score to each answer. The following is the scoring using the Likert Scale that will be used in this paper.

Table 1. Likert Scale

No	Scale	Interpretation
1.	5	Strongly Agree
2.	4	Agree
3.	3	Undecided
4.	2	Disagree
5.	1	Strongly Disagree

After scoring using the Likert Scale technique, then the average percentage of each component is calculated using the feasibility value formula.

$$\text{Feasibility Score} \quad \frac{sum\ of\ respondents'scores}{highest\ score}\ x\ 100\%$$

The results of the calculation using the formula above show the feasibility of learning media. In order to know the assessment of the feasibility of learning media, an interpretation of the assessment criteria is needed.

Table 2. Assessment Criteria

Scale	Interpretation
81%-100%	Very Good
61 %-80%	Good
41%-60%	Fair
21%-40%	Deficient
0%-20%	Very Poor

FINDINGS AND DISCUSSION

In the development of Cooperative Flow Simulator learning media using the ADDIE model is preceded by the analysis stage. This stage is done by analyzing the curriculum, then the author evaluates the curriculum. This stage aims to determine the material used in the learning media to be developed. At the time of this research, SDN 2 Cisontrol was using the Merdeka Curriculum. Based on the curriculum analysis, the author designs learning outcomes and learning objectives to determine the material to be included in the application and its limitations.

Table 3. Assessment Criteria

Learning Outcomes	Learning Objectives
Students recognize various kinds of community activities and creative economy in the surrounding environment	a) Students can define cooperative activities correctly b) Students can classify the types of cooperatives c) Students can define school cooperative activities d) Students can identify the characteristics of school cooperatives e) Students can explain the function of school cooperatives f) Students can explain the purpose of school cooperatives g) Students can define savings h) Students can classify types of savings i) Students can explain the remaining results of operations (SHU) j) Students can explain reserve funds k) Students can practice a simple simulation of school cooperative activities.

Researchers also conducted diagnostic tests on fifth grade students of SDN 2 Cisontrol, totaling 20 people, to identify the characteristics and learning styles of these students. Table 4 below presents a recapitulation of the diagnostic test results to students.

Table 4. Student Diagnostic Test Recapitulation

No	Learning Style	Number of Students	Percentage
1.	Visual	7 Students	35%
2.	Auditory	8 Students	40%
3.	Kinesthetic	5 Students	25%
	Total	20 Students	100%

Based on the results of diagnostic tests on students to find out their characteristics and learning styles, it is known that students' learning styles are divided into three types, namely Visual, Auditory, and Kinesthetic. Therefore, researchers developed learning media that can facilitate all three. There is a guidebook that explains the flow and how to use the media. In the guidebook, there is a barcode that can be scanned to access materials that are arranged according to students' learning styles. Visual learning media presents material in several forms, consisting of: (a) guidebook, (b) material slides, and (c) animated videos provide material in the form of material slides and animated videos. The results of the development of visual learning media can be seen in Figure 1.

| (a) | (b) | (c) |

Figure 1. Visual Learning Media

Audio learning media is provided for students who have auditory learning styles, made in the form of podcasts that contain explanations of media use as well as case study activity guides that contain problems for students to find solutions in cooperative simulation activities. The audio learning media can be seen in Figure 2.

Figure 2. Audio Learning Media

Students with kinesthetic learning styles, who tend to prefer learning through practice, were given kinesthetic learning media in the form of a 4D Analog Mockup that symbolically simulates the flow of a small-scale cooperative: Member Meeting; Buying goods to the store; Transactions at the Cooperative. The results of the kinesthetic learning media development can be seen in Figure 3.

Figure 3. Kinesthetic Learning Media

The learning media that has been developed is then validated and tested on students. Expert validation is carried out by involving material experts, media experts, and learning experts to obtain a product feasibility assessment that determines the credibility of the product before the product is implemented in phase C elementary school students. The feasibility assessment by expert validators of the learning media development shows very good validation results, as shown in Table 5.

Table 5. Expert Validation Result

Expert	Maximum Score	Score	Percentage	Category
Material Expert	50	50	100%	Very Good
Media Expert	65	58	89%	Very Good
Learning Expert	50	45	90%	Very Good
	Average Percentage		93%	Very Good

The effectiveness test of the Cooperative Flow Simulator learning media is carried out on students through an exam which is divided into two parts, namely the pre-test and post-test with the aim of obtaining information about the initial and final abilities of students related to learning outcomes. After the pre-test and post-test exam scores are obtained, the improvement in student learning outcomes can be analyzed through the difference between the two scores using the N-gain formula. The n-gain value obtained is 0.57 which is in the medium category. Learning media effectiveness test data are presented in Table 6.

Table 6. Media Effectiveness Data Test

Pretest	Posttest	N-Gain	N-Gain Category
38,4	79,7	0,57	Medium

Teachers tend to be trapped in the role of a static speaker, and efforts are needed to change their role into a learning facilitator who is able to create a supportive learning environment. One strategy is through the development of effective learning media (Koban et al., 2023). Learning media plays an important role in the learning process, especially for students at the elementary school level because students like things that are concrete. In line with Piaget's opinion, children tend to gain more substantial learning experiences through play, direct experimentation with physical objects, and through concrete experiences (Sujiono & Nurani, 2009).

The results of data analysis show that learning will be effective if teachers can find out the characteristics of students, so that the learning process is carried out by adjusting the needs and difficulties of students. It is expected that if students learn according to their preferred way of learning, capacity and ability, then the learning outcomes of participants will be much more optimal. To identify the characteristics and learning styles of the students, the author conducted a diagnostic test. As a result, students can be grouped into 3 groups based on their learning styles, namely visual, auditory, and kinesthetic.

The development of multimodal-based learning media is made in various forms that are able to accommodate various learning styles of students in order to increase their learning motivation in understanding the concept of student cooperatives in elementary schools. The learning media include guidebooks, animated videos, material slides, podcasts, and 4D analog mockups.

Based on the results of expert validation, the feasibility value is obtained in the "very good" category, which means that the cooperative simulator flow learning media is suitable

for use and implementation as a learning media for understanding the concept of cooperatives for students.

CONCLUSION

The result of this research is a learning media consisting of three types, namely visual, auditory, and kinesthetic learning media. The learning media obtained a "very good" category for the validation results from the experts. Meanwhile, the media effectiveness test in improving student learning outcomes obtained a medium category based on the calculation of the N-Gain formula. Therefore, teachers can utilize this learning media to teach material about cooperatives that have been adapted to the achievements and objectives of social studies learning in phase C. The limitations of the Cooperative Flow Simulator learning media lie in its characteristic that is used as teaching material to replace books in the classroom, so that learning can only be done in the classroom by requiring the use of projectors and speakers.

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