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Development Of Flipped Classroom Learning Videos as a Source of Independent Knowledge Exploration

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Abstract

With technological advances in education, the flipped classroom model is a potential learning model in the use of digital technology that involves students exploring knowledge independently. The classroom environment becomes an interactive and quality environment as a place to strengthen the material. So, it is necessary to develop learning media in the form of flipped classroom learning videos to improve the quality of the learning process. This research aims to develop flipped classroom learning videos as a source of independent knowledge exploration. Development research using the ADDIE model is limited to the development stage. Validation tests are carried out by competent educational practitioners in learning and R&D, namely media experts. Data analysis is used in this research by calculating the weight for each aspect or group of aspects assessed. The results of this development research are in the form of flipped classroom learning video products declared very suitable for use. With this video, educators and educational practitioners can clearly understand the syntax of flipped classroom learning. This flipped classroom learning video has implications for teachers, lecturers, and educational practitioners in using the flipped classroom model in their learning process to achieve learning goals.

Keywords: Flipped classroom, Learning video, Independent knowledge

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1. Introduction

Education 4.0 is an era with rapid technological progress in various fields. Technology can function as a tool to support education in the learning process (Ponmozhi & Thenmozhi, 2017). The quality of education in Indonesia will be one of the parameters related to the quality of human resources. So, the role of teachers is significant in forming quality human resources. The quality of teachers in this era of technological progress is

assessed by intellectual intelligence, and the ability to use technology during the educational process is required (Isnaini et al., 2023), such as interactive learning media (Maulani et al., 2022).

Learning media is everything used in learning to make it easier for students to acquire psychomotor, cognitive, and affective abilities to achieve learning objectives (Syamsiani Syamsiani, 2022). The use of learning media in the education 4.0 era is used to improve the quality of teaching more effectively to motivate students to be more interested in the learning material presented so that students can easily understand the material (Siti et al., 2021; Suseno et al., 2020; Winarni et al., 2021). One type of learning media that can be used in learning activities is learning videos.

Learning videos are media in the form of resources and tools used during the learning process that display images and sounds that contain knowledge and can be used anywhere and anytime (Apriadi, 2021; Maharani, 2021; Octavyanti & Wulandari, 2021). This learning video is part of designing learning activities to transfer knowledge to students. This is because this learning video has the advantage of including media that can attract students' attention and focus on the material to be studied, making it easier for students to understand the material (Apriansyah, 2020). Apart from that, by using this learning video, students can explore independent knowledge in developing and deepening the material provided by the teacher.

However, as a source for students' independent exploration of knowledge during the learning process, learning videos as a medium must be supported by a learning model appropriate in the era of education 4.0, namely the flipped classroom model. The flipped classroom approach is a current educational technology trend that can integrate digital technology into the learning process (Ng, 2015). The flipped classroom model is a learning model that has charm in increasing students' activeness in the learning process (Gillette et al., 2018). The flipped classroom also called the inverted class, reverses the traditional learning model and is supported by digital devices so students can learn independently at home via video.

This student-independent learning is intended to be an effort by students to explore knowledge regarding the essential capital of material that will be discussed at the next meeting. This requires students to be more independent in seeking knowledge to build initial understanding in later learning activities. This aligns with previous research, which states that independent learning as a source of student knowledge exploration is used for discussion in future classroom meetings (Utami, 2017). This flipped classroom model can increase students' cognitive knowledge in studying the material that will be discussed by the teacher so that learning activities are more effective and active and increase interaction between teachers and students.

Based on previous research, it was found that the flipped classroom model is a potential learning method in the use of digital technology that involves students in exploring independent knowledge, and the classroom environment becomes an interactive and quality environment as a place to strengthen material (Bergmann & Sams, 2012; Forsey et al., 2013; Kong, 2014, 2015; Lai & Hwang, 2016; Maulidah et al., 2017; Sever, 2014). Therefore, it is necessary to develop learning videos related to the flipped classroom model, which can later be used as a guide for teachers and lecturers in implementing this model in the classroom. This flipped classroom model is a model that integrates digital technology into the learning process so that it can improve the quality of learning to achieve learning goals.

2. Method

This Research and Development (R&D) research uses the ADDIE development model to develop flipped classroom learning videos. The ADDIE model provides a structured approach to instructional design, ensuring that the learning materials are well-designed, effective, and meet the needs of the learners. The ADDIE development steps consist of five stages (Sriwahyuni et al.,2021; Moral et al., 2023):

- Analysis: This stage involves identifying the learning objectives, target audience, and available resources. It is crucial for understanding the needs and requirements of the learners and the context in which the learning will take place.
- Design: This stage focuses on creating a detailed plan for the instructional materials, including the content, structure, and format. It also involves determining the most appropriate instructional strategies and techniques to achieve the desired learning outcomes.
- Development: This stage involves creating the instructional materials, such as lesson plans, multimedia resources, and assessments. It requires a thorough understanding of the design plan and the use of appropriate tools and technologies to develop the materials.
- Implementation: This stage involves delivering the instructional materials to the learners and monitoring their progress. It may also involve providing feedback and support to the learners to ensure that they are achieving the desired learning outcomes.
- Evaluation: This stage involves assessing the effectiveness of the instructional materials and making any necessary revisions. It helps to ensure that the learning objectives are met and that the instructional materials are of high quality.

However, this research is limited to the development stage. This development stage includes validation tests. Competent educational practitioners carry out validation tests in the fields of learning and R&D, namely media experts. The media assessment aspect in the form of learning videos is based on several components to be assessed by the validator (table 1).

Table 1. Validation Aspects of Learning Videos

No	Aspect	Indicators
1	Material coverage	1. introduction 2. coverage and scope 3. learning video model 4. sitability of learning videos 5. learning video process 6. learning video assessment
2	Component indicator and objectives	1. basic competency mapping 2. clarity of indicators in the flipped classroom and each learning video session 3. availability of learning objectives in each learning video
3	Compenent of learning	1. ability to explain clearly

	activities	2. coherent learning 3. using language easily 4. connectedness of explaination of the meaning of material between chapters 5. with learning videos, students can be increase their knowledge 6. with learning videos, students can be increase literacy 7. with learning videos, students can be improve 6c skills 8. use of clear learning strategies
4	Component of learning media	1. learning video display clearly 2. high quality learning video 3. learning video audio clearly 4. user friendly 5. learning video can represent the learning process in the class

Data analysis is used in this research by calculating the weight for each aspect or group of factors that will be assessed using the following formula (1).

$$\text{Value} = \left\{\left(\frac{number\ of\ score\ obtained}{maximum\ number\ of\ scores}\right) x100\right\} \text{.....(1)}$$

3. Result and Discussion

A. Result

The development of flipped classroom learning videos as a source of independent knowledge exploration is produced as videos that are used as guidelines for lecturers, teachers, and teaching practitioners regarding the flipped classroom learning model. However, before being distributed to users, this flipped classroom learning video product must go through stages of validation testing to field trials.

The instrument was validated by asking for expert opinions, namely lecturers who taught the Geography Teaching Planning Course and lecturers who taught the Geography Learning Media Course. All instruments are assessed and reviewed from several aspects, namely syntax, social system, reaction principles, and instructional and accompanying impacts. Data from the validation of research instruments are clearly shown in Table 2.

Table 2. Validation results of flipped classroom learning videos

No	Aspect	Indicators	Validator I (Material Expert)	Validator II (Media Expert)
1	Material coverage	1. intorduction	5	4
		2. coverage and scope	5	5
		3. learning video model	4	5
		4. sitability of learning videos	5	5
		5. learning video process	5	4
		6. learning video assessment	5	5

2	Component indicator and objectives	1. basic competency mapping	5	5
		2. clarity of indicators in the flipped classroom and each learning video session	5	5
		3. availability of learning objectives in each learning video	5	4
3	Compenent of learning activities	1. ability to explain clearly	4	5
		2. coherent learning	5	5
		3. using language easily	5	5
		4. connectedness of explaination of the meaning of material between chapters	5	4
		5. with learning videos, students can be increase their knowledge	5	5
		6. with learning videos, students can be increase literacy	5	5
		7. with learning videos, students can be improve 6c skills	5	4
		8. use of clear learning strategies	5	5
4	Component of learning media	1. learning video display clearly	5	5
		2. high quality learning video	5	5
		3. learning video audio clearly	5	4
		4. user friendly	5	5
		5. learning video can represent the learning process in the class	4	5
		Total	107	104
		Percentage (%)	97	95

The validation results in Table 2 will be presented in Figure 1. It can be seen that the results from the assessment of material experts are 97%, and media experts are 95%, so the average validation results are 96%. This means that the flipped classroom learning video product is declared very feasible. However, there are still minor notes from media experts that the indicators in the flipped classroom and each learning video session are annotated to be easily understood. Minor revisions have also been corrected so that the flipped classroom learning videos can be tested at the next stage.

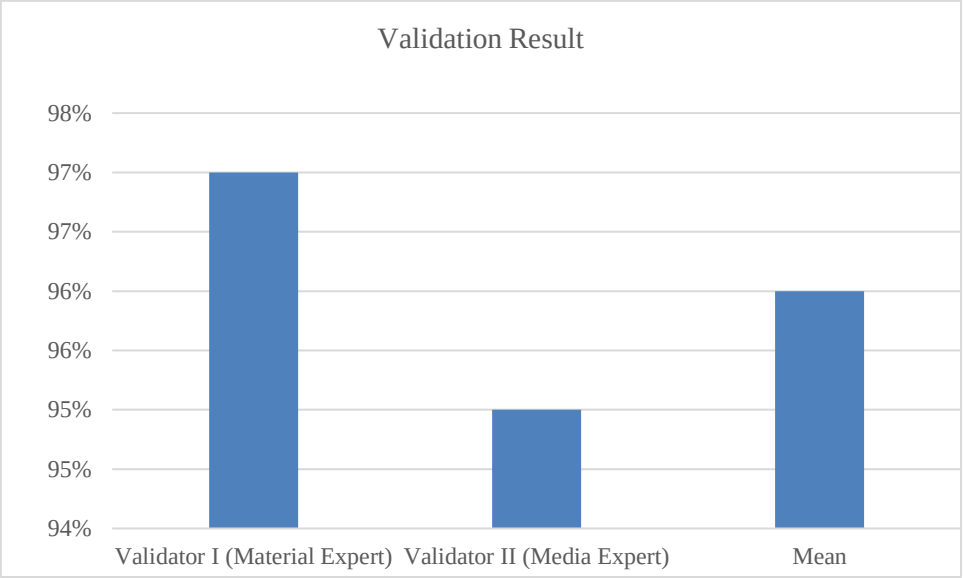

Figure 1. Percentage of validation result

B. Discussion

Obstacles to the learning process in the education 4.0 era are increasingly being encountered and felt by educators, thus affecting the achievement of learning goals. One of the obstacles faced is the mismatch between the material and the learning strategies and methods implemented. Another obstacle is the need for adequate learning facilities, such as learning resources, learning media, and so on (Juhji, 2016).

Learning media is a crucial factor in achieving learning goals (Siti et al., 2021) because media becomes a communication facility between educators and students, clarifies the material presented, makes it easier for students to understand the material, increases motivation, and improves students' cognitive aspects, attitudes, and skills (Azhari, 2015). Learning media refers to the various tools and resources used to facilitate the learning process. These can include textbooks, videos, online courses, simulations, and more. The effectiveness of learning media can vary depending on the individual learner's preferences, learning style, and the specific learning goals. Research has shown that the use of multimedia in learning can improve student engagement, motivation, and understanding of complex concepts. For example, videos can provide visual representations of abstract concepts, while interactive simulations can allow learners to explore and experiment with different scenarios.

However, the quality of learning media is also important. Low-quality resources may not provide accurate or up-to-date information, which can lead to misunderstandings or incorrect assumptions. Furthermore, if the media is not engaging or relevant to the learner, they may lose interest in the learning process. In conclusion, learning media plays a significant role in achieving learning goals. The choice of media should be carefully considered based on the learner's needs, preferences, and the specific learning objectives. High-quality, engaging, and relevant media can greatly enhance the learning experience and improve learning outcomes.

However, suitable learning media must be selected and adapted to the depth of the material, student characteristics, and student needs. Learning video media is one of the learning media supported by technological advances in the education 4.0 era. The search results provide examples of studies and research that have developed and implemented

video learning media in various educational contexts, such as mathematics, speaking courses, and animation-based learning for elementary school students. These studies have shown that video learning media can be effective and engaging, contributing to the overall quality of education in the digital age

Learning videos are one of the learning innovations that can be carried out in the learning process to make it more effective and efficient (Equanti & Bayuardi, 2023). The learning video resulting from this development research can be seen at https://drive.google.com/drive/folders/1-ZPCt3HPMwLxZEVSjBmJb_aPAgZuW4DE. The product of this development research is a flipped classroom learning video, which can later be used as a guide for educators (teachers and lecturers) to implement the flipped classroom model in learning. This is because the flipped classroom model is one of the potential models for use. After all, it is integrated with the digital technology (Ozyurt, 2023) in the education 4.0 era to support teachers, lecturers, and teaching practitioners in implementing this model in learning.

The resulting flipped classroom learning video presents the flipped classroom model's learning stages or syntax. The flipped classroom learning model consists of several stages or phases. These stages are often referred to as the "flipped classroom learning strategy" or "flipped classroom learning activities." The specific stages can vary depending on the study, but they generally involve a needs analysis phase, a design and development phase, and an evaluation phase. In some cases, these stages are further broken down into sub-phases or activities. For example, the needs analysis phase might involve a preliminary survey, while the design and development phase might involve creating learning activities both inside and outside the classroom. The evaluation phase typically involves assessing the effectiveness of the flipped classroom learning strategy in enhancing students' higher-order thinking skills (Abrar et al, 2021; Nadarajan et al., 2023). The flipped classroom model is a source of optimal exploration of students' independent knowledge in the learning process so that they have more freedom to understand and explore the material in depth at home. Time in class is used to discuss or work in groups regarding the results of exploring knowledge obtained. This aligns with previous research, which states that students study the material the teacher provides in at-home activities. In contrast, in class, students' reasoning activities go through group discussions, and the discussion results are presented in the field (Savitri & Meilana, 2022). The flipped classroom learning model provides more time for students to prepare, explore, and understand the material discussed.

So, developing flipped classroom learning videos is very important because the flipped classroom model has many benefits, including students having the opportunity to understand the teacher's explanations independently or collaboratively, and students can increase their capacity to explore knowledge independently. By deepening the exploration of independent knowledge by students, it is hoped that it will be able to form competitive students with cognitive abilities (Pratiwi et al., 2017), increase learning outcomes (Khumairah et al., 2020; Nuraini & Sudibyo, 2022; Putri et al., 2021), independence (Listianti & Rahim, 2022), and qualified skills as demanded in facing education 4.0. So, flipped classroom learning videos can be used by teaching staff and educational practitioners to implement efficient learning to achieve learning objectives.

4. Conclusion

The development of flipped classroom learning videos as a source of independent knowledge exploration is stated to be very suitable for use by educators and educational

practitioners. This is to support efforts to improve the quality of learning. The flipped classroom model is a potential learning model in digital technology that involves students exploring independent knowledge. The classroom environment becomes an interactive and quality environment as a place to strengthen the material. In the flipped classroom learning video, there are learning steps that can be used as a guide in implementing the learning process to achieve learning goals in the era of education 4.0. So, this flipped classroom learning video can have implications for teaching staff and educational practitioners to guide implementation in the learning process.

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