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Development of Flipped Classroom Based Learning Devices Assisted by the Nearpod Application in Integrated Thematic Learning in Third Class of Elementary Schools

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Abstract: The educational era influenced by the industrial revolution 4.0 is called Education 4.0, which is characterized by the use of computerized innovation in every educational cycle. The problem that researchers encountered at SDN 8 Lawang Kidul and SDN 16 Lawang Kidul was the lack of use of varied learning media and the use of technology. This research aims to develop a Nearpod application-assisted learning tool based on Flipped Classroom for integrated thematic learning in class III elementary schools that is valid, practical and effective. This research is included in Research and Development research which uses the ADDIE development model. Data collection uses observation, questionnaire interviews and written tests. The research subjects were class III students at SDN 8 Lawang Kidul and SDN 16 Lawang Kidul. Data analysis uses a Likert scale by looking at validation analysis, practicality and effectiveness of the Nearpod Application-Assisted Learning Tool based on Flipped Classroom. This research produced a flipped classroom-based learning tool assisted by the nearpod application in integrated thematic learning in class III of this elementary school, namely for material expert validators who got a score of 92%, media expert validators got a score of 96% and language expert validators got a score of 92%. For the practicality questionnaire, teacher responses scored 95.5% and for the practicality questionnaire, student responses scored 90.04%, which is categorized as very practical. The effectiveness test shows an increase in learning outcomes from an average of 54.002 to 87.46. Based on these results, it can be concluded that the flipped classroom-based learning device assisted by the nearpod application in integrated thematic learning in class III elementary schools meets the valid, practical and effective categories so that it can improve student learning outcomes.

Keywords: Flipped classroom; Learning devices; Nearpod application; Thematic learning

Introduction

Along with the development of advances in science, technology and responding to challenges in the era of industrial revolution 4.0, it is necessary to develop human resources (HR) with 21st century skills which include creative thinking skills, critical thinking, collaboration and communication by integrating technology. A developed nation is a nation that is well educated. Education is an effort to improve the quality of human life, in essence it aims to humanize humans, mature them, change behavior and improve quality for the better (Syahlita & Ramadhani, 2023). Education cannot be separated from the teaching and learning

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process, where in its implementation teachers must be able to carry out their main duties and functions well when interacting with students.

Learning is essentially a combination that includes human elements, materials, facilities, equipment and procedures that influence each other to achieve learning goals. In order for this learning process to take place, teachers must be able to create various components in learning, such as creating learning tools consisting of learning implementation plans, teaching materials, student worksheets, assessments, and learning media. To be able to carry out their duties professionally, a teacher is also required to be able to understand and have adequate skills in developing effective, creative and enjoyable learning media.

Learning tools are a collection of tools to support the success of learning that have been previously planned for use in the learning process consisting of lesson plans, teaching materials and assessment instruments (Suskie, 2018). Learning tools are tools that can make it easier for teachers to carry out learning practices in the classroom. Apart from that, the learning tools contain strategies for learning and teaching (Utami & Mustadi, 2017). So a learning device is a medium or means that is designed in such a way as to achieve meaningful learning goals, as well as make it easier for educators to carry out learning and give an impression of meaningfulness to students. A good learning tool is one that is planned carefully.

The use of media is an important element in achieving the goals of the learning process (Azrianti & Sukma, 2020). Media development is used as a learning resource for students. The learning resource that is always used in the learning process is textbooks. Textbooks are teaching materials for teachers as well as learning resources for students and have been used for quite a long time. The selection and packaging of media should be made attractive to please students in teaching and learning activities. Yeni et al. (2020) said that in thematic learning activities, teachers do not allow excessive action and treat their students passively. When implementing this curriculum, the teacher acts as a facilitator who facilitates students' learning activities, such as providing opportunities for students to ask questions, providing full space for students to express themselves according to learning, students are facilitated in learning such as being given learning media so that they understand learning more easily.

Professional teachers are teachers who have the ability to master learning material widely and in depth and are able to integrate learning content with the use of information and communication technology (ICT) and guide students to meet competency standards set by national education standards. Apart from the need for professional teachers, the learning process must create a learning atmosphere that is joyful and meaningful. The learning process requires technology and teaching delivery media so that learning becomes effective and efficient. However, in reality in the field, there are still many teachers who still use traditional methods of transferring knowledge related to cognitive aspects in the form of concrete concepts to students, namely using the lecture method so that students have difficulty understanding the concepts of the learning material. There are still many teachers who have not utilized learning media with the latest innovations and technology, especially at the elementary school level. Apart from that, the author has also considered the use of media for teachers over 40 years of age. Because this nearpod-based learning media is very easy to use without having to adapt for a long time.

It is hoped that the use of learning tools in learning can optimize learning, be more interesting, interactive and allow for a two-way learning process so that listeners don't just pay attention. Through animated videos, students are able to learn the circumstances of a process, phenomenon or event. Students can understand learning material from the videos displayed. Videos can also help teachers present material that is difficult for students to understand so that it is easier to understand so that learning achieves its objectives and is in accordance with the 2013 curriculum.

Based on these problems, it is necessary to develop media as teaching materials which aim to develop thematic media that are valid for use in learning activities and are effective in achieving the specified competencies. The reasons behind the development of teaching materials in the form of media whose use can be sustainable are not limited to research, even up to the turn of the year, the media created can still continue to be used. With media development, students can learn independently by understanding the material and practicing solving a problem, not completely relying on the material presented by the teacher during class learning. So that in the end students understand the learning material better.

Based on the background of this problem, the researcher is interested in conducting media development research with the title "Development of Flipped Classroom Based Learning Devices Assisted by the Nearpod Application in Integrated Thematic Learning in Class III Elementary Schools".

Method

The type of research used in this research is development research. According to Sugiyono (2018) development research is a research method used to produce certain products and test the effectiveness of these products." The media developed will be subject to

validity analysis by expert validators and practicality analysis looking at students' responses to the presentation of learning media and analysis of learning effectiveness as seen from students' learning outcomes.

The development model used is ADDIE which consists of 5 main stages, namely, Analyze, Design, Develop, Implement and Evaluation (Zhang et al., 2024).

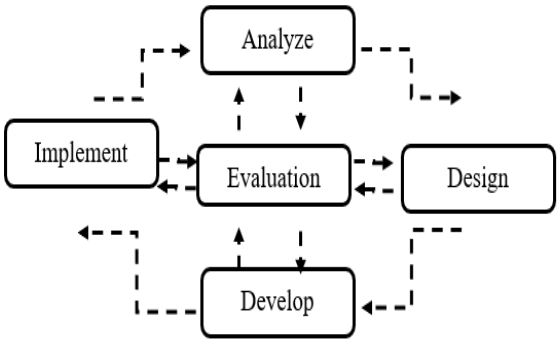

Figure 1. Model stage ADDIE

Analysis

In the initial stage of learning media, namely the analysis stage which includes activities namely curriculum analysis, the stage where the author carries out an analysis of the basic competencies, that students will achieve after using development products in learning, both attitudes, knowledge and skills (Desyandri & Vernanda, 2017).

Design

Designing is the initial part of this stage. Designing a product to create superior learning media that is attractive to students must be adapted to the model used and the application that supports the design activity. Design products with appropriate applications. The applications that can be used by the author in making learning video products are PowerPoint and the flipped classroom-based Nearpod application.

Design and design material content for products being developed. The material that the author chose is theme 6 subthemes 1. Making exercises/quizzes on the product being developed with the aim of evaluating students after receiving material from the product that the author is developing. Designing the presentation format. In presenting this flipped classroom-based learning video, the author uses the Comic Sans MS computer type. Then use images downloaded from the internet.

Development

The third stage is development activities which include: creating designs, both drawings and typing by researchers on learning videos; consult and discuss products with experts. Collection of expert assessments is carried out using a validation sheet. Validation is carried out by material experts, media experts and language experts (After all products have been revised and implemented, they continue to the next stage, namely implementation).

Implementation

After the learning media has been prepared and revised according to suggestions for improvements from the validator, the next step is to carry out a trial. Trials were carried out one to one, small group, and field tests.

Evaluation

There are 2 stages in this evaluation stage, namely: practicality test to see the implementation of the learning media. Practicality is carried out on teachers and students, and carrying out effectiveness tests seen from student learning outcomes (tests), if there are more students who reach the KKM than those below the KKM, then learning using this learning media is considered successful.

Validity Analysis

Validity (feasibility) results are obtained from validation sheets that have been assessed by expert validators. Both from expert validators in media, language, materials, the measurement scale uses a 5 (five) scale. Next, the scores obtained for each aspect of the assessment will be added up and the average calculated. The average score from the validation results will be obtained from the total score from the validation results divided by the number of aspects assessed, using the criteria in Table 1.

Table 1. Guidelines for Categorizing Validation Test Results (Akbar, 2017)

Percentage (%)	Categories	Information
81-100	Very Valid	Very valid no need for revision
61-80	Valid	Valid needs minor revision
41-60	Fairly Valid	Valid can be used with moderate revision
21-40	Invalid	Needs major revision
1-20	Very Invalid	Can not be used

Table 2. Product Practicality Categorization Guidelines (Akbar, 2017)

Percentage (%)	Categories	Information
81-100	Very Practical	Practically no need for revision
61-80	Practical	Practically needs minor revision
41-60	Quite Practical	Practically usable with moderate revision
21-40	Impractical	Needs major revision
1-20	Very Impractical	Can not be used

Practicality Analysis

Obtained by analyzing data obtained from teacher and student response questionnaires. In this study, a measurement scale on a scale of 5 (five) was used. Practicality test data from the products developed were analyzed by percentage (%) according to the criteria in Table 2.

Effectiveness Analysis

The effectiveness of the product that the author developed was found from analysis of test results given to students. The test is carried out after testing the product on students. To determine the effectiveness of the test scoring results, the author uses the formula according to Purwanto (2012).

$$NP = \frac{R}{SM} \quad x\ 100\% \qquad (1)$$

Note
NP : Percentage of acquisition value
R : score obtained
SM : score maximum

If the student's completeness is greater than or equal to the KKM, then the student is declared to have passed. And conversely, if a student's completeness is lower than the KKM then the student is declared incomplete. If the ratio of the number of students who get scores above the KKM is greater than the number of students who get scores below the KKM, then the flipped classroom-based learning video developed can be declared effective. However, if the ratio of the number of students who get scores above the KKM is smaller than the number of students who get scores below the KKM, then the flipped classroom-based learning videos on nearpod that are being developed cannot be declared effective in improving student learning outcomes.

Apart from that, to measure effectiveness, the Normalized gain or N-gain score is also used to determine the effectiveness of using a particular method or treatment in research. The N-gain score test is carried out by calculating the difference between the pretest score (test before applying a certain method (treatment)) and the posttest score (test after applying a certain method (treatment). By calculating the difference between the pretest and posttest scores or the gain score, we will be able to find out whether the use or application of a particular method can be said to be effective or not.

Table 3. Gain Score Distribution

Value N-Gain	Category
$g > 0.7$	High
$0.3 \leq g \leq 0.7$	Medium
$g < 0.3$	Low

The N-gain score category can be determined based on the N-gain value or from the N-gain value in the form of a percentage (%). We can see the distribution of N-gain value categories in the Table 3.

Meanwhile, the division of N-gain acquisition categories in the form of percentages (%) can refer to the Table 4.

Table 4. N-Gain Effectiveness Interpretation Category

Percentage (%)	Interpretation
<40	Ineffective
40-55	Less Effective
56-75	Quite Effective
> 76	Effective

Result and Discussion

The development of flipped classroom-based learning tools assisted by the nearpod application in class III elementary schools adopting the ADDIE development model has been successfully implemented. This learning device has been tested in class III at SDN 16 Lawang Kidul in class IIIa with 3 people for one to one trials, 12 people for small group trials, and large group trials carried out at SDN 16 Lawang Kidul in class IIIb as many as 26 person. And distribution was carried out to other schools, namely SD Negeri 8 Lawang Kidul with a total of 27 students. This product can be used as a learning medium in the form of a flipped classroom-based learning device assisted by the nearpod application in class III elementary school learning which can cover all students' learning styles and is able to make students active in learning.

Design Process for Flipped Classroom-Based Learning Tools Assisted by the Nearpod Application in Class III Elementary School

The researcher used the ADDIE development model with 5 stages to work on the flipped classroom-based learning device assisted by the nearpod application. The stages used during the flipped classroom-based learning device process assisted by the nearpod application are:

Analysis Stage

At this stage the researcher carries out several analyzes that are needed in the school that will be used as a research site. Where researchers do this by collecting information. This analysis includes: curriculum analysis, student analysis. Analysis functions as a means for researchers to search for initial data in developing a product (Meliana, 2020). A similar thing was also stated Ningsih et al. (2018) who said that analysis is related to analyzing work situations and the surrounding environment so that we can find out what products need

to be developed in the future. It can be concluded that analysis is an activity carried out by researchers by collecting information and identification to create a product that will be developed according to students' needs.

Based on curriculum analysis in KD and material indicators in theme 6 subtheme 1, it can be taught using the flipped classroom model assisted by the nearrpod application. This model and application is very suitable for use during a pandemic like now, where students are given learning videos and quizzes to reduce interactions at school. Through the nearpod application, educators can monitor students who have accessed learning videos even though students are already at home.

Another analysis is the readiness of students in using video-based learning media which uses cellphones, laptops and others. It is necessary to analyze students' readiness so that the learning process using learning videos assisted by the Nearpod application can be carried out as expected. The subjects of the student needs analysis were class III students at SD Negeri 8 Lawang Kidul and SD Negeri 16 Lawang Kidul. The analysis carried out was to see the suitability of the age characteristics of class III elementary school with the learning media currently used.

Students in this class are quite active, but this activity is not yet well directed to things related to learning. Students get bored quickly and find it difficult to stay focused for a long time. It can be seen that when educators explain learning, only a small portion of students really pay attention, the rest are busy with their own activities, some are talking with friends, busy playing with pens, flipping book pages, looking out the window, this could be due to the teaching materials or the learning media used by educators is less attractive to students. Apart from that, students in class three, as observed, liked to learn while playing, students liked to compete, they liked to compete, and students in general liked to be given appreciation, as did the students in class III that the researchers observed.

Based on this, interesting and innovative learning media is needed, so that students play an active role in every lesson so as to foster students' creativity and motivation in the learning process.

Design

At this stage the researcher designs a product development project. The activities that researchers carry out at this design stage start from designing products with appropriate applications, designing and designing content, creating exercises/quizzes, designing presentation formats.

The next stage is that the researcher designs or designs interactive multimedia starting from compiling themes/sub themes, compiling basic competencies, indicators, learning materials and learning objectives, compiling daily learning implementation plans (RPPH), researchers also looking for image assets and icons, selecting media (application software) and selecting the media format to be developed. Next, the researcher prepares a plan for implementing children's daily learning. The material that will be loaded on the interactive multimedia display is to combine learning videos as a means of informing students of the material. In line with the opinion of van Alten et al. (2020) that videos are an important source in providing information or knowledge that children do not yet understand and are able to provide information that children can observe directly. As also stated by Brame (2017) videos provide a significant means to improve student learning and increase student involvement in learning.

Then the researchers also created product validity instruments, practicality instruments and effectiveness instruments. The product feasibility measurement tool that will be developed is an assessment instrument. The product feasibility measurement tool that will be developed is an assessment instrument. These stages were carried out in research to assess the level of validity. According to Sumarni et al. (2022), instrument validation activities on initial products are validated by experts to obtain valid instruments. Then, after carrying out the validity assessment, the next step is the practicality assessment stage. Doğan et al. (2023) stated that practicality can be seen from assessing the responses of the research subjects studied, in this case teachers. Furthermore, for assessing effectiveness, according to Sugiyono (2014), it is used to observe the ability to manage the initial activities of the product, observe the aspects being developed, the effectiveness referred to in this research is the assessment of student test results.

Development

At this stage the researcher carried out a feasibility test of the product being created, by validating the product being developed with validators who were media, material and language experts. After that, the researcher made revisions according to comments and suggestions from validator experts.

To produce a product that is suitable for use for learning, a series of assessments and revisions are carried out by experts related to interactive multimedia with material expert validators, media experts and language experts. The activity carried out was to test content validity with experts, then the instrument was revised according to suggestions/input from experts, the instrument was declared content valid depending on the expert (Zain & Sailin, 2020). If the media developed is not yet valid, revisions will be carried out, however, if the media is valid then a limited trial will be carried out to see the practicality and effectiveness of the media.

Implementation

At this stage the researcher tested the product developed at the school. Trials were carried out one to one, small groups, and field tests. It is hoped that the use of media can help educators improve aspects of children's development by implementing innovative teaching methods for students in learning, delivering learning material, creating an active, interesting and enjoyable learning atmosphere for students. This is supported by Pitriyani (2023) who said that the benefits that can be obtained by using media in learning are that messages or information can be conveyed more clearly, interestingly and concretely, overcoming limitations of space and time, and increasing children's active attitudes in learning.

Evaluation

At this stage there is an evaluation that students must carry out. The evaluation stage is the final stage carried out by researchers to assess the development of learning media. At this stage the researcher assesses the quality of the product being developed and evaluates the product's effectiveness.

The hypothesis of this researcher's research is that there is a relationship between analysis, design, validity, practicality and effectiveness with the development of learning media in the form of videos. It can be concluded that learning media products in the form of videos are very valid, practical and effective, so they are suitable for use as learning media for class III elementary school on theme 6.

Validity of the Development of A Flipped Classroom-Based Learning Tool Assisted by the Nearpod Application in Class III Elementary Schools

This research is development research that develops a product. The product produced in this research is a flipped classroom-based learning device assisted by the nearpod application for integrated thematic learning for class III elementary school. This flipped classroom-based learning device assisted by the nearpod application can be used as a learning medium that can cover all students' learning styles and is able to make students active in learning. This product is used as a tool to make it easier for teachers and students in the integrated thematic learning process in class III elementary school semester II so that it can improve the quality of learning and not be boring for students.

The results of the assessment (validation) by expert validators, both material experts, media experts, and language experts, show that the learning media design in the form of a flipped classroom-based learning device assisted by the nearpod application in integrated thematic learning for class III elementary school has met the validity criteria (very valid). However, there are still several improvements (revisions) based on input or suggestions from expert validators. The learning media in the form of a flipped classroom-based learning device assisted by the nearpod application has been improved according to input and suggestions from expert validators.

Media Aspect

The flipped classroom-based learning tool assisted by the nearpod application is very valid. The validation (assessment) results for the flipped classroom-based learning device assisted by the nearpod application carried out by media expert validators obtained an average total score of 86.15% or met the validity criteria (very valid). This relates to the appearance of the media in the form of a flipped classroom-based learning device assisted by the nearpod application which is good, the type and size of the letters are easy to read, the layout, images and supporting videos are appropriate to the material being studied. This is in accordance with opinion Morel et al. (2022) an educator can design teaching materials, use the best strategies and methods which must involve educational technology. Without a touch of educational technology, the hope of creating a pleasant learning atmosphere in the learning process will not be achieved properly. Then obey Mardhatillah et al. (2018) that learning that is packaged in such a way by displaying colors, pictures, music and supported by clear and attractive buttons can be declared suitable and effective for use by students. In line with the research of Habibi et al. (2019), the design of the display of teaching materials is made differently so that it does not appear to be eye-catching, the use of bright colors makes the teaching materials more lively.

Aspects of Suitability of Content or Material

The flipped classroom-based learning tool assisted by the nearpod application is very valid. The validation (assessment) results for the flipped classroom-based learning device assisted by the nearpod application were very valid, carried out by content or material expert validators in the lesson plan validation aspect, with an average total score of 92% or had met the validity criteria (very valid), in the aspect The material obtained on average was 89% in the very valid category, because students very quickly understood the material contained in the flipped classroom-based learning video assisted by the Nearpod application. In line with research Wahyudi et al. (2021), it becomes easier for students to fully understand the material. This means that this teaching material meets the KI, KD, instructions and learning objectives that are in accordance with the characteristics of students, the level of students' abilities, and can increase students' understanding. This is in accordance with Ratih et al. (2019) stated that good and

ideal teaching materials are teaching materials that are in accordance with applicable competencies and in accordance with students' needs and characteristics to achieve effective learning outcomes as seen from the students' feelings. interested and motivated towards the material from the teaching materials displayed (Awidi & Paynter, 2019). This is in accordance with what was expressed Darmansyah (2020) an educator can design teaching materials, use the best strategies and methods, which must involve educational technology. Without a touch of educational technology, the hope of creating a pleasant learning atmosphere in the learning process will not be achieved properly. In accordance with the opinion of Cheng et al. (2019) that one of the aspects that must be considered in choosing and determining the type of learning media is that the media used has a reason to advise, encourage, or be informative in accordance with the learning objectives.

Linguistic Aspects

The flipped classroom-based learning tool assisted by the nearpod application is very valid. The validation (assessment) results for the flipped classroom-based learning device assisted by the nearpod application carried out by language expert validators obtained an average total score of 92.5% or met the validity criteria (very valid). The validity of teaching materials is characterized by word structures that are in accordance with good and correct Indonesian language rules, clear data and directions, and the ease with which students understand the language used. The use of language in products uses simple, short and clear sentences, making it easier for students to understand the learning material (Ilahi & Desyandri, 2020). This is in accordance with the assertion Ulfah et al. (2018) which states that the use of appropriate language will help users of teaching materials, especially students, to understand the information or instructions given well. This is also in line with Mustari (2023) which states that in good learning it is important to focus on using language well and correctly and which is effectively perceived by students.

Practicality of Developing Flipped Classroom-Based Learning Tools Assisted by the Nearpod Application in Class III Elementary Schools

Practicality analysis was carried out to determine the quality of the learning tools developed based on the results of teacher and student response questionnaires after using the flipped classroom-based learning tools assisted by the nearpod application. Based on practicality tests carried out by teachers and students, it shows that the learning videos developed are very practical. Based on the results of a questionnaire from 27 class III students at SDN 8 Lawang Kidul and 26 students at SDN 16 Lawang Kidul, they showed a very practical response to the flipped classroom-based learning device assisted by the nearpod application which was being tested. The classical percentage gets 90.04% with very practical criteria. It has been proven that the use of flipped classroom-based learning tools assisted by the nearpod application helps students learn the material in a coherent and systematic manner.

Next, indicators of the practicality of flipped classroom-based learning devices assisted by the nearpod application are seen based on data from educators' responses during trial use. Based on the questionnaire, teacher responses showed very practical responses to the flipped classroom-based learning device assisted by the nearpod application that was being tested. This is shown by a percentage of 95.5% with very practical criteria.

This practicality is seen from the perspective of comfort and effectiveness of learning time. This shows that the flipped classroom-based learning tool assisted by the nearpod application is simple and does not require extraordinary abilities to use it. The video is also equipped with usage guidelines so that teachers and students know the methods that must be taken in learning. This is in accordance with the assessment Plomp (2013) which emphasizes that a learning media is said to be practical if the learning media can be used effectively by educators and students in the learning system.

Based on the efficiency aspect of learning time, learning videos are considered very practical by teachers and students. This is for the reason that the use of flipped classroom-based learning devices assisted by the nearpod application in the learning system gives students more freedom to take part in the learning process (understudy focus learning). The learning videos developed help students learn according to their respective capacities. Regarding this matter Zainuddin (2018) states that the motivation behind learning with videos is to open up opportunities for students to learn at their own pace. Meanwhile, according to Sadiman (2011), in general, multimedia learning has a positive effect on the usefulness of space, time and sensory abilities.

Effectiveness of Developing Flipped Classroom-Based Learning Tools Assisted by the Nearpod Application in Class III of Elementary Schools

Based on effectiveness tests on student learning outcomes, the use of flipped classroom-based learning devices assisted by the nearpod application has been proven to improve student learning outcomes. This is because the use of flipped classroom-based learning devices assisted by the nearpod application is able to create enjoyable learning (Sukma et al., 2024). Technological developments have had a big influence on

the development of learning media in schools, as educators we strive to be able to utilize technology as a tool in carrying out so that the learning process becomes interesting and students can understand the learning provided. According to Mukhtar (2022) Learning media is an important aspect in improving the quality of learning. In the world of education, the development of science and technology encourages efforts to renew and utilize technological results in the teaching and learning process through the use of learning media. In line with Hala et al. (2023) also stated that the combination of various learning media as conveyors of messages or information needs to be considered for a teacher in teaching and learning activities. So the activity will be fun and more memorable and can attract the attention of students. This is because a learning space climate is created that is conducive and enjoyable and students are directly involved in the learning process. With high enthusiasm for learning, students will be consistent in completing their obligations, including trying to overcome the learning problems they experience and showing a high learning motivation mentality, because they feel happy participating in the learning process. In this way, it is proven that the flipped classroom-based learning device assisted by the nearpod application has an effect on students' learning motivation.

Apart from being able to increase students' learning motivation, the use of flipped classroom-based learning tools assisted by the developed nearpod application also has an effect on improving students' learning outcomes. This can be seen from the results of the findings carried out by means of pretest and posttest. In the pretest results, students' learning outcomes received a fairly good rating, then there was an increase after the posttest, student learning outcomes received a very good rating. This is because the learning videos developed present problems related to the subject matter that will be mastered concretely and thoroughly. This is reinforced by the research conducted. Another thing that researchers use is using the nearpod application, research conducted by Susanto (2021) the nearpod application has several interactive features that can be added and material can be broadcast to students' devices via the internet, based on his opinion nearpod was introduced as a teaching and learning method, especially in large classes to encourage interaction and independent learning in students.

The effectiveness test that the author carried out was based on learning outcomes with a pre-test and post-test design. Through design, it provides a basis for making comparisons of the achievements of the same subject before and after treatment (Siswati et al., 2023). Based on effectiveness tests on student learning outcomes by comparing pre-test and post-test. According to Asmelia et al. (2023) Learning motivation is an urge that arises from a person to gain knowledge and change behavior as a result of their own experience in interacting with their environment.

Based on the results of the effectiveness test at the development stage, the average learning outcomes after the pre-test and post-test were carried out showed very good results. This can be seen from the average pre-test score of 54.002 and then after the post-test was carried out it increased with an average score of 87.46. Then, these values were analyzed using the N-Gain test. The results of the N-Gain test show the N-Gain score is 0.73 in the high category and the N-Gain Score Percent is 72.89 in the quite effective category.

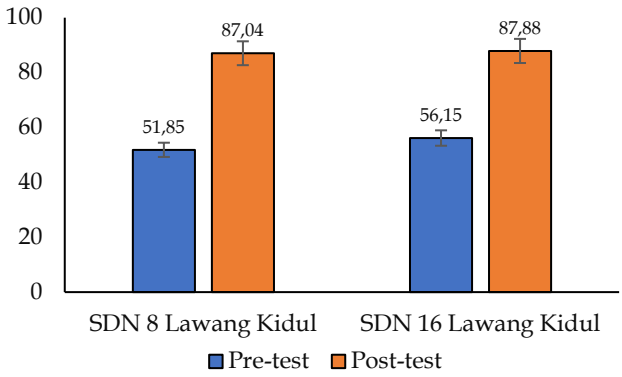

Figure 2. Pre test and post test results

Based on the data information above, it can be concluded that the flipped classroom-based learning device assisted by the nearpod application that the researchers developed can improve student learning outcomes. This is in line with the statement of Husein et al. (2019) which states that the use of interactive multimedia in the learning process can make it easier for students to learn, and is effective in increasing students' motivation, activeness and learning outcomes. This is in line with Mayer (2017) statement which states that the use of multimedia during the learning process can create a comfortable and enjoyable learning atmosphere for students. When interactive multimedia is used in the classroom, excessive verbal delivery of material will also be reduced, because the delivery of material is assisted by static visualization and dynamic visualization/animation. This can mean that this interactive multimedia really helps teachers in teaching when delivering material. Then, teachers no longer need to bother expending excessive energy and this can also make the learning process more effective. Providing interesting learning material to students and making it easier for students to understand the material will increase students' motivation to learn to follow the learning process which will lead to increased student learning outcomes.

Conclusion

The design process for flipped classroom-based learning tools assisted by the nearpod application in integrated thematic learning for class III elementary school that is valid and suitable for use in the learning process. This can be seen based on the questionnaire results of validation by education experts and practitioners which have been carried out on the learning videos developed. The flipped classroom-based learning device assisted by the nearpod application developed has presented an attractive design and is in line with research targets and the material presented is in accordance with basic competencies and learning objectives, making it easier for students to understand the material presented. Validity of the development of a flipped classroom-based learning device assisted by the nearpod application shows that this learning media has very valid criteria for use. This is assessed from the results of questionnaire analysis. Validity by experts, the flipped classroom-based learning device assisted by the nearpod application developed has been validated by one media expert, one expert Language, and 3 material experts. The practicality of developing a flipped classroom-based learning device assisted by the nearpod application shows that this learning media has criteria that are very practical to use. This is assessed from the results of the practicality questionnaire analysis by educators and students. The flipped classroom-based learning device assisted by the nearpod application developed can easily operate it independently. The effectiveness of flipped classroom-based learning tools assisted by the nearpod application which is effective in increasing student motivation and learning outcomes. This is because the learning videos contain pictures and quiz questions which make students interested and enthusiastic about learning. It can be seen when students work on questions during the learning process at school.

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The authors declare no conflict of interest.

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