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Implementation and Evaluation of Infographic Media Interactive Nearpod Assisted Collaborative Learning on Plant Parts

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Abstract: This research aims to develop interactive infographic media, assisted by the Nearpod website, to enhance participation, motivation, and academic achievement among fourth-grade students in learning the material on plant parts. The development model used in this study is ADDIE, which consists of five stages: analysis, design, development, implementation, and evaluation. The research was conducted at SDN 25 Indralaya, involving 31 fourth-grade students. The development process of the interactive media began with an analysis of teachers' and students' needs to assess the learning conditions and media requirements. The media was designed by combining text, images, and videos to create an engaging and informative display. After the design phase, implementation was carried out through trials with students and teachers to evaluate the practicality of using the media. The results of the study show that the developed interactive infographic media effectively increased students' understanding. The N-Gain scores from the students' pretest and posttest reached 0.875, indicating a significant improvement and categorizing the result as high. Additionally, the responses from the questionnaire showed positive feedback from both teachers and students, with satisfaction scores of 100% and 95.6%, respectively. Based on these findings, this study concludes that interactive infographic media, with the assistance of the Nearpod website, can serve as an effective alternative to support the learning process in fourth grade, particularly in understanding plant parts, and demonstrates the potential of information and communication technology in improving the quality of education.

INTRODUCTION

Progress rapid in technology information and communication (ICT) provides impact significant in various sectors, including in the world of education (Ngongo, et al., 2019). This

development requires existence adjustment and implementation technology in learning use adapting to the changing demands of the era developing. With the development increasingly advanced technology rapid, world of education must adapt themselves and utilize ICT as tool Supporter in create environment comfortable and efficient learning. The main goal from This development is build skills that are relevant to current and future needs. Skills the known as 4C which includes ability think critical thinking, communication, creativity and innovation, and cooperation or collaboration (*Collaboration*) (Anggreni & Yohandri, 2022). Therefore, the rapid development Technology Information and Communication Technology (ICT) encourages the world of education to adapt self and integrate technology in learning so that it is more interactive and innovative in accordance with the demands of the modern era.

Interactive media is combination various types of media, such as animations, audio, infographics, images, and text, which are stored in digital format. The purpose of This packaging is for conveying information and messages to audience, so that can support the learning process teaching in an effective way (Safitri et al., 2022). Interactive media allow user to control channel learning through election available options, which encourage involvement active in the process of obtaining knowledge. Therefore, interactive media is very much needed to convey information in a way efficient and supportive learning by improving participation active participant educate.

One of interactive media form is infographics web- based or information platform that can accessed in a way interactive via the internet. Infographics is visual representation that presents information, data, or knowledge in form images, graphics, and text to make it easier understanding. This media helps convey message in a short and interesting way, so that complex information become easier understood by the audience. With the progress digital technology, infographics now can served in a more dynamic and interactive form.

Nearpod is a digital learning media that can accessed via the web and works as room Study for teachers and students in both online and offline modes.

According to (Minalti, 2021) Nearpod is application facilitating learning interaction between students and teachers both straight away or indirectly, through diverse feature interesting that creates experience innovative, interactive and effective learning. Meetings in virtual space, Where the teacher can make A presentation containing images, text, videos, even quiz to play together (Baalwi et al., 2022). In addition, the use of the Nearpod platform has proven can increase participation student in the learning process.

Collaborative learning is a learning model that prioritizes involvement active participant educate in the learning process as well as help them develop skills cognitive and social according to stage development, especially in children age school basic. This model applies approach Work The same in group small, where participants educate discuss and resolve problem together use reach objective learning (Parwati & Mulyati, 2021).

At the stage beginning media development, needs analysis becomes base main in designing learning media that is in line with the good expectations of student and teachers. The results of the analysis to the needs of students, teachers, learning media, and design instructional show that there is attention big on aspects pedagogical (50%), technical (53%), cognitive (50%), social culture (100%), aesthetics (53%), and evaluation (50%). These findings indicate the high demand for learning media that is interactive, easy accessed, as well as interesting from visual aspect (Putri et al., 2024).

Stages furthermore in media development is perform validation process to the media that has designed. This validation aims to find out to what extent the suitability or validity of the media. Validation stage beginning carried out by media experts in their entirety score obtained from three aspect namely 80 of smor maximum 80 with a percentage of 100% and categorized as "Very Valid". In line with research conducted by (Mansur et al., 2020) which developed learning media based on infographics with the aim of improving interest learning. The validation results by media experts show level validity by 81.67%, while validation from expert material to obtain percentage 79.69%. Second

results the included in valid category, so that the media developed stated worthy to use in the learning process. Stage validation furthermore done by experts material to know extent of depth and accuracy Contents the material presented in learning media. Validation expert material by obtaining score obtained from third aspect namely 77 of score maximum 80 with a percentage obtained of 96.12% and categorized as "Very Valid" In line with research (Suratmi et al., 2020) with title Development Of Assessment Instruments Based On Higher Order Thinking Skills (HOTS) For Elementary School Students, results validation to obtain score of 93.57 with very worthy category.

However, in implementation, learning in class Still often depend on method conventional like lectures and use book text that sometimes not enough capable to awaken interest Study students. This condition was also found in learning Knowledge Natural and Social Sciences (IPAS) in grade IV, especially on the topic about parts plants. Based on results observation and interview, it is known that student experience difficulty in understand draft part plant along with its function Because lack of available learning media visualize material well. In addition, the limited source under - learning interesting also influences low participation active student during the learning process ongoing.

Efforts in overcome existing problems, this research aims to develop infographic media interactive assisted by the Nearpod website which can utilized as source Study alternative for student class IV. This media arranged to be able to serve material about parts plant with more view interesting, through fusion between text, images and videos for use help increase understanding students. With the existence of learning media This, it is hoped that the IPAS learning process will be more fun, easy understood, and able support improvement results Study student.

METHOD

This research was conducted at SDN 25 Indralaya with subjects as many as 31 students Class IV. Research Methods Used is research and development (R&D). Research development is A studies science used to create or design a particular product

as well as test eligibility its use (Fatirul et al., 2022). Research taking place in the 2024/2025 academic year. Data collection techniques used in This research is observation, interview, documentation, sheet validation, questionnaire response and test. Procedure This research follows the ADDIE model which consists of of five stages namely Analysis, Design, Development, Implementation and Evaluation (Cahyadi, 2019). From the stages the researcher do infographic media design and development interactive assisted by the Nearpod website which was initiated from stages analysis, design, development, implementation and evaluation.

Table 1Teacher Response Questionnaire Grid

No	Aspeet	Indicator	No. Question
1	Content Eligibility	Compliance material to competence basis and indicators	1
		Compliance the material presented in the media with need participant educate	2
		Compliance the material presented in the media with characteristics participant educate	3
2	Collaborative Learning Model	Compliance material with need collaborative learning	4
		Media's ability to help find draft learning	5
		Media capabilities can practice participant educate forcommunicate, collaborate, and deliver opinion they in group	6
		Media's ability to help pasticipant educate hone ability thinkcritical	7
		Media capabilities can practice participant educate develop soul leadership they in group	8
3	Linguistics	Clarity information in the media	9
		Implementation of communicative and EBI compliant language	10
4	Material	Convenience in understand draft	11
		Clarity coverage the material presented in the media	12
5	Media	Clarity and readability of writing in the media	13
		The accuracy of the layout on the media	14
		The presence of interesting images, graphics,	15

		illustrations and photos	
		Attractiveness media visualization	16
		Convenience use of medi in safe and comfortable	17
		Media's ability to increase interest and motivation study participant educate	18
		Praticality media usage	19
		Media durbility for use in a way continously	20

Table 2 Student Response Questionnaire Grid

No	Aspeet	Indicator	No. Question
1	Media View	Convenience understand images and illustrations	1
		Clarity of writing in the media	2
		Compliance color with material	3
		Level of boredom moment using media	4
		Interest to media view	5
		Consistent design between page	6
		Layout media elements (text, images, graphics)	7
		Quality images and graphics used	8
2	Interest Student in Media	Attractiveness	9
		Motivation study moment using media	10
		Desire for keep going using media	11
		The visual appeal of media to participanteducate	12
		Media suitability with interest participant educate to technology	13
		Media's ability to help focus study	14
3	Contents	Understand material parts-parts plant from the media	15
		Media contribution to development study	16
		Compliance level difficulty material with abilty participantedcate	17
		Completeness material in the media fpr support learning	18
		Clarity delivery information or material in the media	19
		Compliance material with objective learning	20

Table 3 Indicator Grid Test

Learning Objectives	Question Indicator	Cognitive Level	Question Number
Understand function parts plant	Student can identify parts plants that function absort water and minerals	C1	1
Understanding the process of photosynthesis in plants	Student capable determine results from the process of photosynthesis	C2	2
Identifying characteristic features part plant	Student can determine part plant based on shape and color	C2	3
Understand function part plant in breeding	Student capable determine part plants protected by fruit	C2	4
Analyze function	Student can conclude	C3	5

root for plant	function root for plant		
Analyze impact damage part plant	Student can explain impact damage leaves n plants	C3	6
Understand connection between part plant	Student can explain work the same between roots and stems support life plant	C2	7
Understand role flowers and fruits in breeding	Student can explain connection between function flowers and fruit in support breeding	C2	8
Developing innovative ideas based on part plant	Student can propose the idea of utilization leaf in life daily	C4	9
Devoloping creative ideas based on part plants	Student can propose method utilise bii plant in a way creative	C4	10

Stage the first thing to do that is analysis, this stage is carried out by analyzing the *needs* of teachers and students through activity observation and interviews to see and understand the learning process being carried out, methods learning applied by teachers as well as to obtain information in a way deep about various obstacles or problems faced in the learning process, especially in subjects science lessons. Next, it is carried out stages design (*design*) namely to design a product that will used. This stage is carried out by selecting a media platform, design material, flowchart design, design framework media display, and results data collection. Designed product based on results analysis of teacher and student needs that have been done previously. Stages furthermore that is development (*devolopment)* by developing media design that has been designed previously become a learning medium physique in the form of infographic media interactive assisted by the Nearpod website. Media that has developed done stages validation with media and material experts .

Learning media products that have been designed furthermore tested try on stage Implementation (*Implementation*). Media trials were conducted with teachers and students class IV to find out practicality in media usage. Trial student done by trial individual and trial group small. After the media has been tested, then done filling questionnaire response with teachers and students with the aim know teacher and student responses towards the media. Stages furthermore is evaluation

(*Evaluation*) by conducting trials field use measure effectiveness of the media developed. Trial This field involves 20 students class IV which is not included in trial individual and group small. To assess effectiveness, students given question *pretest* and *posttest* of 10 questions related to science material about parts plants. The results of the *pretest* and *posttest* were analyzed using calculation N-Gain score.

RESULT & DISCUSSION

In section results and Discussion from this article, researchers presenting the data obtained from infographic media test interactive assisted by Nearpod and analysis the effectiveness of the media in increase understanding student

Results

Stage implementation implemented after researcher do evaluation to products that have been developed and carried out repair based on input as well as bait come back from media and materials expert. At stage This is a learning media product tested try as results the end that has been fixed in accordance with criticism and suggestions from validators at the stage previously. Learning media products that have been revised Then stated as product the end that can accessed through link https://bit.ly/bagian-bagiantumbuhan

Figure 1 Infographic Media

Stages next test done with provide media to teachers and conduct trials on students through trial individual (3 students) and trial group small (8 students). Trial on students implemented with simulation guided

learning directly by researchers use media The process in simulation learning customized with module learning that has been compiled by researchers. After the media trial was conducted, teachers and students will fill in questionnaire For know view they related use of the media. The results of the filling questionnaire teacher response can seen in table 4.

Table 4 Recapitulation of Teacher and Student Response Questionnaire

No	Aspect Evaluation	Score Acquisition	Score Max	Presentation (%)	Category
1	Teacher Response	20	20	100%	Verry Good
2	Response Individual Trial Phase Students	59	60	98%	Verry Good
3	Respons Small Group Trial Phase Students	153	160	95,6%	Verry Good
Amount		232	240	96,6%	Verry Good

Assessment obtained from questionnaire teacher and student responses reach score 232 of the total score maximum 240, with percentage of 96.6% which includes in "very good" category. The score was show that the media developed considered very feasible and effective For used in the learning process.

Next At the stage This evaluation has purpose of assessing extent of learning media assisted by the Nearpod website which has made capable support the needs in activity learning. Stage This evaluation was carried out through field trials to assess level effectiveness from the media that has developed. Trial activities involving 20 participants educate class IV who previously did not participate in trial individual or group test small use avoid influence knowledge previously related to media use. Effectiveness test done by giving question *protest* and *posttest* consisting of out of 10 questions choice double on the IPAS topic regarding parts plants. Giving pretest questions before the learning process to identify knowledge beginning students, while giving posttest questions were conducted after learning with the help of media has been completed.

Table 5 Pretest and Posttest Results with N-Gain Scores

No	Name Learners	Mark		Posttest-Pretest	Score Max Pretest	N-Gain Score	Category
		Pretest	Posttest				
1	JS	60	90	30	40	0,75	Currently
2	RA	40	90	50	60	0,83	Tall
3	PILL	50	90	40	50	0,8	Tall
4	FA	60	100	40	40	1	Tall
5	SA	50	90	40	50	0,8	Tall
6	RBN	50	100	50	50	1	Tall
7	RNH	60	90	30	40	0,75	Currently
8	MR	50	90	40	50	0,8	Tall
9	YD	50	80	30	50	0,6	Currently
10	RMK	80	90	10	20	0,5	Currently
11	ASY	40	70	30	60	0,5	Currently
12	JS	60	80	20	40	0,75	Currently
13	ME	60	90	30	40	0,75	Currently
14	DH	60	90	30	40	0,75	Currently
15	DF	60	100	40	40	1	Tall
16	MFP	40	90	50	60	0,83	Tall
17	MDP	50	90	40	50	0,8	Tall
18	RAP	60	100	40	40	1	Tall
19	RAN	40	100	60	60	1	Tall
20	MCI	50	100	50	50	1	Tall
Avarage		**53,5**	**91**	**39**	**46,5**	**0,838**	**Tall**

Learning outcomes student before and after using media analyzed using N-Gain formul, and obtained the average score was 0,838 which is included in category high. This is show that infographic media interactive Nearpod- assisted effective in help student understand material parts plants. These findings are in line with research conducted by (Ningsih et al., 2023) that the learning media developed effective used in learning by acquiring score 81.13% in class experiment.

Discussion

At this stage, the researcher carry out a trial implementation by involving one teacher, namely guardian class IV, and eleven student class IV at SD Negeri 25 Indralaya. The main objective from This stage is to measure level practicality of infographic media interactive developed using the Nearpod platform. Trial implemented in two stages. The results of the evaluation show that the teacher gave a perfect assessment with a score of 100%, which is classified as in "Very Good" category. Meanwhile, the response students on trial individual showed an average value of 98%, and the trial group small reaching 95.6%, both are also in the "Very Good" category. In general, Overall, the average assessment from teachers and students

is 96.6%, which indicates level very high practicality. This finding is consistent with the results research (Afriani et al., 2022) in his study " Development of Learning Media" Infographics Based on Android in Social Studies Content for Grade IV Elementary Schools," which shows level practicality high with percentage teacher response 94% and students 93.8%. Results obtained the in line with research (Sulistyawati et al., 2022). Based on results said, can concluded that infographic media interactive assisted by Nearpod website get response positive and in accordance with learning needs, so that worthy used in the learning process teach.

Next for the stage end in media development is evaluation, which is carried out since beginning together media and materials expert For evaluate validity of learning media. Evaluation to be continued with implementation through a trial on one teacher and 11 students class IV at State Elementary School 25 Indralaya, consisting of from the trial individual and group small. Teachers and students No provide suggestions for improvement, so that revision only carried out on aspects technical. Media then tested in scale more big with 20 students For measure effectiveness use N-gain method. The results show The N-gain score is 0.838 (very effective category), in line with with study previously (Patriot et al., 2023). The media stated effective in increase understanding students, especially on the material on Parts Plant in Science lesson. Products end from study This is an infographic media interactive based on valid, practical and feasible *collaborative learning* used in grade IV of elementary school.

CONCLUSION

Study This is type study development (R&D) using the ADDIE model, which consists of of five stages, namely Analysis, Design, Development, Implementation, and Evaluation. The product developed in the form of infographic media interactive assisted by the Nearpod website for material parts plants in students Class IV. Stages the beginning of what was done researcher is analysis need towards teachers and students, which aims For know condition learning and the need for supporting media. Furthermore, researchers enter to stage design, which includes platform selection, learning media design, compilation materials,

flowchart creation, and design framework media display and results data collection.

Stage implementation implemented with do a trial use of media and distribution questionnaire For measure response users. The results of questionnaire show that teacher response to learning media reached 100%, which is classified as in very good category. In addition, the test results in a way individual to obtain percentage 98%, and trial in group small yielding 95.6%, both are also in very good category.

Next, it is done stage evaluation through trial field involving 20 participants educate Class IV. Learning outcomes student before and after using media analyzed with use N-Gain formula, and obtained the average score was 0,838 which is included in category high. Findings This indicates that infographic media interactive assisted by Nearpod website effectively in increase understanding student to the material studied.

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