

Interactive Media Based on Articulate Storyline to Improve IPAS Learning Outcomes

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Abstract: This study aims to develop, test the feasibility, and effectiveness of articulate storyline-based interactive media. Type of research and development (R&D) development research with ADDIE development model, namely analysis, design, development, implementation, and evaluation. Research subjects were grade IV students totaling 31 children. Data collection techniques with observation, interviews, questionnaires, and documentation data. The results of media expert validation show a percentage value of 86.6% very feasible category, material experts with a percentage value of 95% very feasible category. The results of the average value of pretests and posttests of students show an increase of 20.8 with an N-Gain value of 0.6 in the moderate category. Conclusion of the research results is the implementation of the use of interactive media based on articulate storyline with ADDIE development model is feasible and effective to improve IPAS learning outcomes of fourth grade students of SD Negeri Klepu 01.

Keywords: Articulate Storyline; Interactive; Learning Media; Learning Outcomes.

Introduction

The role of technology in education can be utilized to improve and enhance the quality of education (Salsabila et al., 2021). Improving and enhancing the quality of education can be done by improving the level of learning that involves teachers and students in the learning process (Fadil et al., 2023).

Learning is a process of interaction that occurs between students and teachers with the aim of achieving learning goals. Based on the Decree of the Ministry of Education, Culture, Research and Technology Number 56 of 2022 as a process of restoring learning after Covid-19, which initially used the 2013 curriculum to change to the Merdeka curriculum. In the Merdeka Curriculum, science and social studies learning are combined into IPAS. The merger of these subjects is based on the consideration that students who are still in elementary school generally see it as a whole and integrated (Wati, 2023). The merging of science and social studies subjects with the aim that students can learn to understand themselves, manage the natural and social environment in an integrated unit and can apply it in daily life

(Pentianasari et al., 2023). The understanding of some teachers about the concept of IPAS also varies, including the first opinion of IPAS as a combination of science and social studies so that there is science and social studies material, secondly IPAS is the adoption of k13 learning which combines science and social studies material in one lesson because it has a material connection with human life. Third IPAS is the learning content of science and social studies in one learning subject which is delivered separately (Andreani & Gunansyah, 2023).

In the learning process, there are several components that must be considered, one of which is learning media. Teachers use media as a tool to distribute learning materials to students in order to foster students' interest and attention so that learning is more effective (Rianto, 2020; Savitri & Manuaba, 2022). In choosing the right learning media, educators use creativity and innovation by considering the needs, abilities, and characteristics of students and available resources (Julia et al., 2023). However, the reality is that there are still many teachers who do not pay attention to the selection of innovative media and the use of technology-based media that is less than optimal because teachers prefer

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media that are already available, easy to use such as images provided in package books and simple learning media so that it can cause students to become easily bored (Nissa et al., 2021; Sirjon et al., 2023). Therefore the importance of developing learning media that can create an interesting, fun and not boring learning process (Saputra et al., 2021). Teachers can develop learning media by designing or making their own media needed and modifying existing media (Fitriyani et al., 2021). As an educator, of course, you know the important role of using media in learning activities. If you don't use media, students will have difficulty understanding the material because students learn abstractly without any learning support tools. (Nabilah et al., 2020). Learning media is used to strengthen students' understanding so that it makes it easier for students to master the material delivered by teachers (Utomo, 2023). There are many types of media that can be used by teachers. However, the development of the times the types of media that can be used are increasingly diverse from image media, graphics, and concrete objects to audio, visual, audio-visual media. In addition, there are interactive media that can display text, images, videos, animations in one unit (Aulia & Masniladevi, 2021; Rohmah & Bukhori, 2020). One of them is interactive media made using the articulate storyline software application which has an appearance almost similar to Power Point, has many features that support and are easy to use for cellphone, laptop, or pc users (Abdullah et al., 2024; Nabilah et al., 2020; Rianto, 2020; Sunaryati et al., 2023). However, articulate storyline media also has several disadvantages, including requiring computer specifications to be able to design this learning media.

Based on observations and interviews with the principal and grade 4 teacher, the school facilities are adequate in terms of facilities and infrastructure. However, when the learning process takes place at SD Negeri Klepu 01, teachers tend to teach using the lecture, discussion, and question and answer methods. The choice of learning methods used when teaching in class tends to be monotonous and easily makes students feel bored. The number of learning media available is also restricted, causing teachers to often use media in the form of pictures in student packbooks and utilize media in the surrounding environment. The teaching aids available at school are also few especially for IPAS subjects. The props shown by the class teacher are the human skeleton, globe, and props for the rotation and revolution of the earth. The props are used for several classes in turn. Utilization of technology for learning media that is often used by teachers, namely PPT media and learning videos. Teachers have not maximally utilized existing technological advances by using other diverse technology-based media. So that learning is not

effective which has an impact on student learning outcomes (Minarta & Pamungkas, 2022). In IPAS subjects, the learning outcomes of students whose scores have not reached the KKTP is 68%, which shows that learning outcomes are still low.

Previous research conducted by (Khairini & Yogica, 2021) developed interactive media in the form of android packaging (APK) suitable for use and can support teachers and students in understanding learning materials. Other research by (Halimah & Indriani, 2021) with articulate storyline media design that is interesting and easy for students to understand. Other research conducted by (Sinta et al., 2021) shows that articulate storyline media succeeded in improve students' motivation and learning outcomes. Based on several studies that have been conducted by previous researchers, it shows that interactive media can help the learning process for teachers and students and can increase student interest and learning outcomes. Previous research that has been conducted has not studied the development of articulate storyline-based interactive media on the material of human needs and desires. The difference between previous research and researchers can also be seen from the research subject, namely fourth grade students of Klepu 01 State Elementary School.

Therefore, researchers want to produce products with research objectives to develop, test the feasibility and effectiveness of interactive media based on articulate storyline material on human needs and desires to improve student learning outcomes.

Method

The ADDIE development model is used for development research, which consists of 5 stages, namely analysis, design, development, implementation and evaluation (Ranuharja et al., 2021). This research was conducted to produce interactive media based on articulate storyline to improve the learning outcomes of IPAS class IV students of SD Negeri Klepu 01.

The analysis stage is the first stage carried out by researchers by conducting curriculum analysis, learning media analysis, and material analysis through interviews, observations, and questionnaires of the needs of teachers and students so that problems will be found and solutions to overcome problems.

The second stage is design. Designing the product design framework to be developed. The next stage is development. At this stage the product will be validated by experts to assess the feasibility of the product.

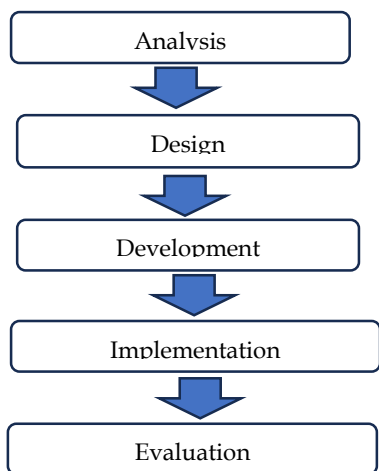


Figure 1. Model ADDIE

The implementation stage will be carried out a small-scale test totaling 6 students using purposive sampling technique based on high, medium, and low abilities. Students will be distributed pretest questions before learning to use learning media to determine the initial ability of students. After working on students will learn to use interactive media based on articulate storyline. Posttest questions are distributed after the learning activities are completed. After working on the posttest questions, students and teachers fill out a response questionnaire on the media that has been used during learning. Based on the results of the teacher and student responses questionnaire used as improvements to the media to be used in large-scale trials. The implementation of large-scale trials on 25 fourth grade students. The large-scale trial begins by distributing pretest questions followed by learning activities using the media.

The evaluation stage is the last stage to improve the media based on the experts' suggestions and input.

Result and Discussion

Analysis

Analysis of the problems that occur by conducting curriculum analysis, learning media analysis, and material analysis. Curriculum analysis to find out the curriculum used. Media analysis to find out the use of media that has been used by educators. Material analysis to find out what material can be used as research material. Gather information by interviewing, observing, and distributing needs questionnaires to teachers and students. From the results of the interview obtained information on the curriculum used in class IV has used an independent curriculum, the available learning media is still restricted, especially in IPAS subjects, the media provided by the school include a globe, human skeleton, props for the rotation and revolution of the earth. Technology-based media used by teachers are learning

videos and Power Point. So based on the problems found, researchers will develop technology-based learning media. After that, the researcher consulted with the teacher to determine the subject matter that would be used as material for the media to be developed by the researcher. The IPAS material to be used is the material in Chapter 7 topic A. In addition, the needs questionnaire was distributed to teachers and students with the aim of knowing the media needs needed and the design to be used (Cantika Dinda Karisma et al., 2023).

Product Design

Design the media according to the needs, characteristics, and learning goals to be achieved. Media design is made first in the form of a flowchart. The next display goes to the main menu which consists of several menus including introduction, information, material and evaluation. The introduction menu contains learning outcomes and objectives. The information menu contains media developers, instructions for use, and reference sources. Apperception, material, and summary are all in the material menu. The evaluation menu contains practice questions with an attractive question display so that students are eager to do the questions (Jamalludin et al., 2023). After making the framework design, then collect materials for human needs and desires from various sources such as teacher and student books for IPAS semester 2 subjects and other sources from the internet. After completing the framework design and material materials, researchers can start creating interactive media using the articulate storyline application.



Figure 2. Cover



Figure 3. Main Menu



Figure 4. Menu Introduction



Figure 5. Menu Information



Figure 6. Menu Materi



Figure 7. Menu Evaluation

Feasibility of Articulate Storyline-based Interactive Media Products

Interactive media that has been completed by researchers will be validated by material experts and media experts to determine the feasibility of media

(Pratama et al., 2024). The validation questionnaire uses a Likert scale interval of 1-4 with the assessment criteria score 4 strongly agree, score 3 agree, score 2 disagree, score 1 strongly disagree. From the results of the assessment of the experts, the assessment score will be calculated as well as suggestions and input on the learning media that have been made by researchers. The score results obtained will be categorized in several categories, namely very less feasible <20%, less feasible 21%-40%, quite feasible 41%-60%, feasible 61%-80%, very feasible 81%-100%. The media will be validated by lecturers from the Department of Elementary School Teacher Education, Faculty of Education and Psychology, Universitas Negeri Semarang. The media developed by researchers will be tested by media experts to determine the feasibility of the media. The media expert instrument includes 3 aspects, namely media aspects, display aspects, function aspects, and aspects of usefulness. While the test by the material expert to specify the eligibility of the media from the suitability of the material applied in the media. The material expert questionnaire instrument includes 3 aspects, namely aspects of suitability, linguistic aspects and aspects of presentation feasibility.

Table 1. Results of Validator Expert Assessment

Expert Validation	Index Validation	Criteria
Media expert	86.6	very decent
Material expert	95	very decent
Average	90.8	very decent

Based on table 1 of the media expert assessment with a percentage value from media experts of 86.6% very feasible category. While the material expert shows a percentage of 95% very feasible category. Research that is in line with this research (Selsabila & Pramudiani, 2022) with the results of media expert validation 73% feasible category, material expert validation 87% very feasible category. Other research conducted by (Adam & Mulyani, 2023) shows that the results of material expert validation are 92% media experts 89% with a very feasible category.

Product Design Revision

The researcher revised the product based on input and suggestions from media and material validators. The media expert gave advice to add the name of the supervisor in the media developer section in the introduction menu. Meanwhile, the material expert gave suggestions to improve the summary display and add local potential in the material section. After the media has been revised, the media can be used for trials on research subjects (Jumanto et al., 2024).



Figure 8. Media Developer Before Revision



Figure 9. Media Developer After Revision



Figure 10. Summary Before Revision



Figure 11. Summary After Revision



Figure 12. Material Before Revision

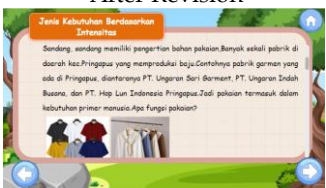


Figure 13. Material After Revision

The implementation stage of the small-scale trial on grade IV students totaling 6 children was selected based on the development of students with high, medium and low abilities selected by the teacher. The implementation of the small group trial begins by distributing multiple choice pretest questions totaling 25 questions aimed at knowing the ability of students before using the media, then continued learning using interactive media based on articulate storyline. After that, the researcher will distribute posttest questions to find out the ability of students after learning to use the learning media. The small scale test or small group test shows that if the average pretest value is 60 out of 6 students, only 2 students have met the KKTP. After participating in learning activities using learning media shows improved in the average posttest score of 82%, all students have met the KKTP. Students and teachers were also asked to fill out a response questionnaire to determine feasibility of the media use. The questionnaire of students' responses to the development of interactive media based on articulate storyline using a Guttman scale in the form of a checklist with alternative answers "Yes" or "No". The answer "Yes" will get a score of 1 while "No" will get a score of 0. The questionnaire instrument includes 3 aspects, namely aspects of technical quality and media presentation, aspects of presentation of content, and aspects of media use.

Table 2. Small Scale Teacher and Learner Response Results

Respondent	Presentage (%)	Criteria
Teacher	100	very decent
Students	100	very decent

Based on Table 2, the questionnaire responses of students and teachers showed a percentage value of 100%, indicating that the media was very feasible. The input and suggestions from the teacher in the apperception section remind the material that has been learned and relate the material to be learned in outline.

Effectiveness of Articulate Storyline-based Interactive Media Products

Furthermore, the media that has been declared valid and improved can be used in the large group test of class IV students of SD Negeri Klepu 01 totaling 25 students. Before the learning activities, students work on pretest questions first to find out the ability of students before learning to use the media. After working on pretest questions, students will take part in learning activities using interactive learning media based on articulate storyline material on human needs and desires. After learning activities, researchers will distribute posttest questions to find out the ability of students after learning to use the learning media. Learners and teachers also fill out a response questionnaire to determine the feasibility of the media.

Table 3. Large Scale Teacher and Learner Response Results

Respondent	Presentage (%)	Criteria
Teacher	100	very decent
Students	100	very decent

Based on table 3, the questionnaire responses of students and teachers showed a percentage value of 100% very decent with input and suggestions from teachers to add pictures to the material. Another study that is in line with this research (Gymnastiar et al., 2022) obtained the results of positive teacher and learner responses as evidenced by the results of teacher and student responses of 87.5% and 90% in the very decent. Another study that is in line with this research (Masrifah & Setyasto, 2024) obtained a presentation value of positive responses to the use of articulate storyline interactive media of 100% with a very decent.

Table 4. Large Group Pretest Posttest Average

Test type	Average	Difference in mean scores
Pretest	63.6	20.8
Posttest	84.4	

Based on table 4, the implementation of large group trials obtained an average student pretest score of 63.6 and an average posttest score of 84.4. The learning outcomes of the pretest and posttest questions will then be tested for normality using SPSS to test the distribution of student learning outcomes.

Tabel 5. Normality Test Large Groups

Test type	Sig.	Criteria
Pretest	0.76	data are normally distributed
Posttest	0.33	data are normally distributed

Based on table 5, the normality test for pretest and posttest with a value of Sig. 0.76 and Sig. 0.33 more than 0.05 proves the data is normally distributed.

Tabel 6. Large Group T-Test

Difference in mean scores	Sig. (2 tailed)	Criteria
20.8	0.00	There is a difference

Based on table 6, the T test using SPSS with a Sig value. (2 tailed) 0.00 less than 0.05 proves there is a difference in pretest and posttest learning outcomes so that interactive media based on articulate storyline is effectively used to improve the learning outcomes of grade IV students on the material of human needs and desires.

Tabel 7. N-Gain Result

Difference in mean scores	N-Gain Value	Criteria
20.8	0.6	medium

Based on Table 7, the difference in average scores is 20.8. After the N-Gain test using SPSS, the result was an N-Gain value of 0.6 in the medium category indicate that the use of interactive media based on articulate storyline effectively improves student learning outcomes.

Another research conducted by (Faradillah & Tyas, 2024) shows if the pretest and posttest scores are different with an increase in the average score of 31 with an N-Gain value of 0.0683. Another study (Ananda et al., 2023; Auvisena & Faturrahman, 2024) showed an increase in student learning outcomes with a moderate category N-Gain value so that it is effective for improving student learning outcomes.

The evaluation stage is carried out as a stage of media improvement by considering suggestions and feedback from media experts, content experts, teachers, and students.

Articulate storyline-based media used with an attractive display design in accordance with the needs of students by using bright colors, font types and appropriate font sizes, equipped with clear learning videos and images and evaluation questions in the form of quizzes can make it easier for students to understand the material (Daryanes et al., 2023; Istyadji et al., 2022). So that when using the media students become more active and focused in participating in learning which has a

positive impact on student learning outcomes that increase (Fatchuroji et al., 2023; Heliawati et al., 2022; Suratno et al., 2023).

Conclusion

The conclusion of the research on the development of Articulate Storyline-based media on the material of grade IV human needs and desires material developed using the ADDIE model stages proves that the media is very feasible to use in learning activities as evidenced by the acquisition of values from media experts with a percentage value of 86.6% very feasible category, material experts with a percentage value of 95% very feasible category, teacher responses and large-scale trial students with a percentage value of 100% very feasible category. In addition, the media is effectively used in improving the learning outcomes of students as evidenced by the increase in the average pretest and posttest scores of 20.8 with the N-Gain test of 0.6 including in the moderate category.

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Author Contributions

Maylani Mustikawati contributed in conducting research, developing products, analyzing data, and writing articles. Barokah Isdaryanti as a supervisor has guided during research activities and writing articles.

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Conflicts of Interest

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