International Journal of Multidisciplinary and Current Educational Research (IJMCER)
ISSN: 2581-7027 ||Volume|| 7 ||Issue|| 2 ||Pages 32-43||2025||

Development of Interactive Web Media Based On Differentiated Learning to Improve Mastery of Respiratory System Material and Learning Independence of Elementary School Students

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ABSTRACT : In elementary school, science learning is important in honing students' critical thinking skills. Low interest and understanding of science materials in elementary school will result in the next level. The independent curriculum that is being used focuses on thinking skills and strengthening independent character in students. Learning independence affects student learning outcomes. This research aims to develop interactive web media based on differentiated learning to improve mastery of respiratory system material and student learning independence. The development model used refers to the ADDIE model. Data in the study were obtained through observation, interviews, questionnaires, tests, and documentation. Data analysis was done through normality test, N-Gain, and t-test test. The results of the feasibility assessment by experts stated that interactive web media based on differentiated learning is very feasible to use in learning. User responses in the small and large group trials showed an average percentage that stated the developed media was excellent to use in learning. The effectiveness of the media is evidenced by the N-Gain and t-test on the pretest and posttest of student learning outcomes, which show a significant increase. Assessment of student learning independence has increased compared to using interactive web media based on differentiated learning.

KEYWORDS : Differentiated learning, Elementary school, Learning independence, Learning media.

I. INTRODUCTION

A person's intellect, thinking power, and spirituality are formed through education [1], [2]. Education is a provision for each individual to realize the nation's progress and form humans who can think critically, constructively, and innovatively to be implemented in everyday life [3]. The Minister of Education, Culture, Research, and Technology implements an independent curriculum in decree number 56 of 2022 concerning guidelines for curriculum implementation in the context of learning recovery. One of the changes set focuses on strengthening character and fundamental competencies expected to provide learning recovery. Learning recovery is oriented towards improving students' literacy, numeracy, and character-strengthening abilities, indicators of Indonesia's declining achievements.

The results of the 2018 PISA study released by the Organization for Economic Cooperation and Development (OECD) show that the average score of Indonesian students' science skills is 389 from the OECD average score of 489. The data shows that students' science skills are below average international scores [4]. At the elementary school level, natural science content is one subject given to hone students' science skills. Natural science subject content contains material that explains how to find out about nature [5]. The concept of natural science learning in elementary schools provides a series of interaction processes for student learning [6]. Natural science is systematic knowledge of natural phenomena and living things [7]. Natural science learning in elementary school has an important role in furthering natural science learning. If students' interest in learning natural science in elementary school is low, the next level will likely occur again [7]. Natural science learning is related to finding out about nature through facts, concepts, and principles in the form of a discovery process.

Generators of ideas and innovations in global competition are influenced by thinking skills and learning independence [8]. Learning independence is the ability of students to organize themselves to plan, monitor, and evaluate their learning independently. The current era of technological advances demands the importance of mastering technology in students, especially in elementary schools. Students are currently faced with various learning resources that can be accessed using technological sophistication. In line with this, the current independent curriculum emphasizes aspects of student learning independence to be more active in exploring knowledge both individually and in groups [9]. Learning independence is important in improving the quality of learning and student learning outcomes [10]. Student learning independence needs to be encouraged to optimize

independent learning in an independent curriculum, which needs to be trained to build students' sense of responsibility for themselves [11].

Mastery of learning independence influences learning outcomes. Students with good learning motivation can improve their learning outcomes [12]. The higher the ability of students to learn independence, the higher the learning outcomes and vice versa [13]. Thinking skills and learning independence are also needed to solve complex life problems [8]. One of the ways to support learning activities is by using engaging learning media [14]. Learning media can make something complex more straightforward [15]. The development of the current digital era can be applied to optimize learning. Digital media can be an enjoyable and flexible variation of learning. According to Sakti [16], digital media provides flexibility in accessing needed material. The stimulus generated from digital media can support learning, making students more interactive and easy to understand the material and learning fun [17]. One digital media platform that can be developed for learning is interactive web media [18]. Rober Heinich et al., in Awang [19], state that web-based learning allows students to learn individually by interacting through a programmed computer system. The interactive web allows students to operate the learning menu independently. The interactive web can accommodate user responses so that students can have feedback between students and the material being studied. The learning model is one of the important aspects of the teaching and learning process. Differentiated learning provides opportunities to support student learning independence [20]. Differentiated learning provides an opportunity to fulfill differences in individual needs. In practice, when learning in the field, most teachers feel that student differences are a problem. Teachers are accustomed to one-way learning by only emphasizing intellectual intelligence. Each individual's learning interests and needs are less considered [21]. This results in underdeveloped student potential and learning independence. One form of differentiated learning is process differentiation. Process differentiation prioritizes selecting different learning strategies and methods relevant to diverse learning styles and student interests. Variations can be in teaching, resources, or learning tasks and activities. Process differentiation provides opportunities for students to learn in ways that suit them [22].

Pre-research data conducted through observations and interviews at one of the elementary schools in Central Java shows that students still have difficulty understanding natural science material. Data on student learning outcomes on respiratory system material shows a low percentage of completeness. As many as 50% of 32 students have not reached the completion criteria. The lack of supporting learning media is one of the problems in learning. Supporting facilities for digital learning media exist but have not been utilized optimally. Digital learning media used only PowerPoint and YouTube videos. In addition, students do not have learning independence, so the entire learning process is carried out in one direction. Based on questionnaire data on teacher assessment of student learning independence, the average percentage of student learning independence is 57.81%. These results show that students have not been able to carry out individual assignments excellently and have not been able to carry out discussions effectively. Students' curiosity is still lacking, so they tend to be passive in learning. Students tend to hesitate when giving orders and quickly despair when facing difficulties. This will undoubtedly result in monotonous and less interactive learning. Students are only passive recipients of information in teaching and learning activities. The use of conventional learning models further exacerbates the situation and results in student boredom in learning. Based on the background description, researchers are interested in researching the development of interactive web learning media based on differentiated learning to improve mastery of respiratory system material and student learning independence.

II. METHOD

This type of research is development research using the ADDIE model. Development research is a method to produce new products or develop and improve existing products to test the effectiveness of these products so that these products can be accounted for [23]. The ADDIE development model was chosen because its stages are systematic and easy to understand. The development stages are carried out, namely 1) analysis, 2) design, 3) development, 4) implementation, and 5) evaluation. The first step in developing interactive web media based on differentiated learning is a comprehensive needs analysis. Researchers meticulously examined various aspects of education, including curriculum, learning process, learning media, and learning outcomes. Moreover, researchers conducted a needs analysis using a questionnaire, a thorough process that involved providing a needs questionnaire for teachers and students. The results of this meticulous needs analysis serve as a solid foundation for the development of interactive web media based on differentiated learning. The next step is the adaptable design stage of interactive web media based on differentiated learning. This stage takes into account the material aspects and the appearance of the media, which are developed based on the needs of teachers and students.

The media is designed with flexibility in mind, presenting three variations that cater to different student learning styles: visual, auditory, and kinesthetic. This adaptability ensures that the media is inclusive and effective for all students. The next stage is development. Researchers created an interactive web-based on differentiated learning by compiling background elements and animations using Canva. Each element was arranged as engagingly as possible using Articulate Storyline 360 to produce the final product as a web. This stage involved close collaboration with material and media experts, who provided valuable suggestions and input to ensure that the media is developed according to the needs and characteristics of student development. Their expertise and guidance were instrumental in the development process. The implementation stage is to determine the effectiveness of interactive web media based on differentiated learning on mastery of respiratory system material and learning independence. At the implementation stage, pretests and posttests were carried out, which were used to determine the increase in students' mastery of the material. Increased learning independence is measured through a self-assessment questionnaire conducted before and after using interactive web media based on differentiated learning. Researchers at each stage of development carry out the evaluation step using the ADDIE development steps. Researchers evaluated the results of suggestions by experts to improve the media developed. Researchers also evaluated by analyzing the results of student learning improvement to measure the effectiveness of interactive web media based on differentiated learning developed. Teacher and student responses in the trial stage were analyzed to evaluate the feasibility of interactive web media based on the differentiated learning that had been developed.

This research was conducted in one of the elementary schools in Central Java, Indonesia. The subjects of this study were students, teachers, and expert validators. This research uses a double paradigm with two dependent variables. The independent variable in this study is interactive web-based differentiated learning. The dependent variables used in this study are mastery of material on respiratory system material and student learning independence. Data collection techniques in this study are: 1) Observation, 2) Interview, 3) Questionnaire, 4) Test, and 5) Documentation. This research uses descriptive analysis techniques by intervening data from opinions and answers obtained from experts and respondents. The data from filling out the questionnaire is qualitative and has been converted into quantitative data using a Likert scale, a commonly used rating scale that measures attitudes or opinions. Initial data analysis was conducted using normality and homogeneity tests on pretest and posttest data. Final data analysis was conducted by conducting a t-test and N-Gain test to determine the effectiveness of interactive web media based on differentiated learning on mastery of respiratory system material and learning independence.

III. RESULTS

The results of the research on interactive web media development based on differentiated learning include: 1) Development of interactive web learning media based on differentiated learning, 2) The feasibility of interactive web media based on differentiated learning, 3) The effectiveness of interactive web media based on differentiated learning in improving mastery of respiratory system material and student learning independence.

Interactive Web Media Development Results Based on Differentiated Learning : The final result of the developed media is an interactive web that can be accessed through a computer or smartphone device. This media displays text, images, and animations that are attractive to students, with material packaged with the concept of differentiation according to student needs.

The following are the results of the development of interactive web media based on differentiated learning:

Differentiated learning-based interactive web media design: media design is designed according to the theme of the material, namely the respiratory system, and is equipped with supporting images that are attractive to students. Interactive web media based on differentiated learning is equipped with learning outcomes and learning objectives. There is also an instruction page to make it easier for users to understand how to use each button provided.

Material Content: Interactive web media based on differentiated learning contains human respiratory system material, including human respiratory organs and their functions, the human respiratory process, and how to maintain healthy human respiratory organs. The material is presented with three variations according to students' learning styles; namely, there are materials with visual learning styles in the form of images and text,

auditory learning styles in the form of videos, and kinesthetic learning styles in the form of images, animations, and steps of respiratory system experiments.

Quiz: The evaluation is presented in the form of a quiz using a Wordwall that students can directly access through the link provided.

For more details, the following is presented the design of media products developed by researchers.

Figure 1 Interactive web cover based on differentiated learning

Figure 2 Main menu page

Figure 3 Instructions page

Figure 4 Learning outcomes page

Figure 5 Learning objectives page

Figure 6 Materials on visual learning style

Figure 7 Materials on auditory learning style

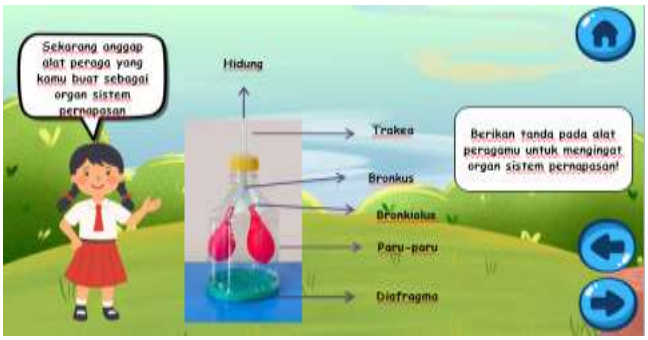

Figure 8 Material on kinesthetic learning style

Figure 9 Quiz

Expert Validator Assessment of Interactive Web Media Based on Differentiated Learning : The feasibility of media products developed is assessed by assessing media experts and material experts. Material assessment is carried out to assess the quality of aspects of material content and technical and linguistic aspects. Media experts assess media function, technical quality of media use, and media design. Experts provide an assessment of the media with a questionnaire as an assessment instrument. Researchers used a questionnaire in the form of a Likert scale, and experts were asked to give a checklist mark on each aspect they assessed and provide comments and suggestions as a reference for improvement. Researchers used three material experts, including one lecturer in the field of natural science and two elementary school teachers who taught in grade 5. For media experts, researchers also used three experts, namely one lecturer in the media field and two elementary school teachers with expertise in learning design and media.

The results of the expert assessment are outlined in Table 1.

Table 1 *Expert Assessment Results*

Expert	Maximum Score	Score obtained	Percentage	Criteria
Material Expert				
Expert lecturer	76	66	86%	Very feasible
Teacher 1	76	69	90%	Very feasible
Teacher 2	76	65	85%	Very feasible
Average percentage			87%	Very feasible
Media expert				
Expert lecturer	60	57	95%	Very feasible
Teacher 1	60	55	91%	Very feasible
Teacher 2	60	52	86%	Very feasible
Average percentage			90.67%	Very feasible

The table shows that the material expert assessment obtained an average feasibility of 87%, so the media was declared very feasible. As for the media expert assessment, it obtained an average feasibility of 90.67%, so the media was declared very feasible.

Differentiated Learning-Based Interactive Web Media Feasibility Results : Researchers conducted product trials to determine the response of teachers and students as media users. The small-scale product trial was conducted in grade 6 with 15 students as the test subjects. The sample selection was carried out using a purposive sampling technique. Students who became samples of small-scale product trials were students with high, medium, and low abilities. To find out the responses of students and teachers, researchers used a response questionnaire to assess the feasibility of interactive web media based on differentiated learning in learning. The user response questionnaire assesses the media developed from the design, appearance, and usefulness of the media. The results of the teacher and student responses were analyzed with four criteria, namely 82%-100% very feasible criteria, 63%-81% feasible criteria, 44%-62% sufficient criteria, and 25%-43% unfeasible criteria.

Table 2 Results of User Response in the Small Group Trial

No.	Response Questionnaire	Percentage	Criteria
1.	Teacher	100%	Very feasible
2.	Students	98.6%	Very feasible
Average percentage		99.3%	Very feasible

Based on Table 2, interactive web media based on differentiated learning on respiratory system material obtained a percentage of feasibility from students of 98.6% and teachers of 100% with very feasible criteria. This interactive web media based on differentiated learning on respiratory system material for grade V elementary school does not need to be revised. After conducting a small-scale trial, interactive web media based on differentiated learning was carried out on a large-scale trial by conducting learning to 32 students in grade V elementary school. The following are the results of user responses in the large-scale product trial.

Table 3 Results of User Response in the Large Group Trial

No.	Response Questionnaire	Percentage	Criteria
1.	Teacher	100%	Very good
2.	Students	92.36%	Very good
Average percentage		96.18%	Very good

Based on this Table 3, the results of student responses to the use of interactive web media based on differentiated learning obtained a percentage of 92.36%, which was in the excellent category. Meanwhile, from the class teacher, the interactive web media based on differentiated learning obtained a percentage of 100%. It can be concluded that interactive web media based on differentiated learning on large-scale trials is in an excellent category.

Results of the Effectiveness of Interactive Web Media Based on Differentiated Learning on Student Mastery of Material : The effectiveness test uses a one-group pretest-postest design to determine the average increase in student learning outcomes. The effectiveness of using interactive web-based differentiated learning can be seen from the significant average difference between pretest and posttest scores on learning outcomes of respiratory system material. Researchers conducted a normality test before analyzing the pretest and posttest data to determine whether the data obtained were normally distributed. The normality test was carried out with the help of SPSS software using the Shapiro-Wilk formula.

Table 4 Normality Test of Pretest and Posttest

	Shapiro-Wilk			
	Statistic	Statistic	df	Sig.
Pretest	.096	.956	32	.217
Posttest	.183	.935	32	.053

The normality test results show that the data on the pretest and posttest are normally distributed because they have a significance value of more than 0.05. The pretest data obtained a significance of 0.217, and the posttest data was 0.053. So that researchers can continue to analyze the effectiveness of the media with the N-Gain test and t-test.

Researchers conducted the N-Gain test to determine the description of the average increase in student learning outcomes after using interactive web media based on differentiated learning.

Table 5 N-Gain Test Results Pretest and Posttest

Indicator	Pretest average	Posttest average	Average lysis	N-Gain	Criteria
C1	48,43	85,93	37,5	0,72	High
C2	49,21	85,93	36,72	0,72	High
C3	54,68	82,81	28,13	0,65	Medium

C4	48,43	89,06	40,69	0,80	Medium
C5	28,90	85,93	57,03	0,79	High
C6	46,87	84,37	40,5	0,70	Medium
Average				0,73	High

Based on the table, it is known that there is an increase in the average N-Gain result of 0.73. The average increase in student learning outcomes is in the high category. The acquisition of the N-Gain score shows that using interactive web media based on differentiated learning is moderately effective.

Then, the data was tested to determine the significance of the difference in learning outcomes on the pretest and posttest. Researchers used the help of SPSS software with the following data:

Table 6 Pretest and Posttest t-test

Action	Number of Students	Average	t count	t table
pretest	32	43.87	-11.441	2.042
posttest	32	85.46		

Based on the results of Table 6 on the pretest and posttest values of the use of interactive web media based on differentiated learning, the t_{count} is 11.441 > t_{table} with a value of 2.042. It can be concluded that H_0 is rejected and that there is a significant difference between the results of the pretest and posttest of the large-scale product trial. So the results of the t-test regarding the learning outcomes of grade V elementary school students before and after using differentiated learning-based interactive web that researchers have done and developed showed there is a difference in the average pretest and posttest scores where the average value of student learning outcomes increased to 85.46 from the previous value of 43.87 the increase was 41.59%.

Results of the Effectiveness of Interactive Web Media Based on Differentiated Learning on Student Learning Independence : Differentiated learning-based interactive web emphasizes that students should be able to learn independently according to their learning style. Students can learn and understand the material provided more efficiently by providing materials that suit their learning style. Aspects of independence include initiative, confidence, motivation, discipline, and responsibility. Students' learning independence was measured through questionnaires at the pre-research stage and after the interactive web-based differentiated learning application. Researchers conducted the N-Gain test to determine the average increase in student learning independence after using interactive web-based differentiated learning.

Table 7 N-Gain Test of Student Learning Independence Assessment

Indicator	Pretest average	Posttest average	Average lysis	N-Gain	Criteria
Responsibility	61,39	83,98	22,59	0,56	Medium
Initiative	61,76	87,89	26,22	0,73	High
Discipline	60,29	86,55	26,26	0,54	Medium
Self-confidence	53,67	77,60	23,93	0,64	Medium
Motivation	61.94	92,77	30,83	0,75	High
Average				0,64	Medium

The acquisition of the average N-Gain score on each indicator is 0.64, indicating an increase in learning independence in the moderate category. Interactive web media based on differentiated learning effectively increases student learning independence. The next step is for researchers to conduct a t-test to determine the significance of increased student learning independence. The following data are the results of the t-test on learning independence.

Table 8 Student Learning Independence Assessment t-test

Action	Number of Students	Average	t count	t table
pretest	32	43.87	-13.507	2.042
posttest	32	85.37		

The t-test results on the student learning independence assessment test showed the value of t_{count} of 13.507 > t_{table} with a value of 2.042. The results are then interpreted against the hypothesis. It can be concluded that H_0 is rejected and H_a admitted. It can be seen that there is a significant difference in student learning independence after using interactive web media based on differentiated learning.

IV. DISCUSSION

Interactive web media based on differentiated learning has gone through several stages of development, namely, 1) Problem analysis, 2) Design preparation, 3) Development, 4) Application/testing on students, and 5) Evaluation. The interactive web media based on differentiated learning presented has innovative development characteristics that are displayed in certain sections with the following details:

1. The development of interactive web media uses a differentiated learning base in its presentation. The differentiation used is process differentiation.
2. Provide learning stimuli to spark students' curiosity and encourage them to learn independently.
3. Provide a variety of materials that suit the type of learning style of the students.
4. Use animations and conversational sentences to create an interactive learning environment.

The feasibility of interactive web media is determined based on differentiated learning, which is determined based on the assessment of media experts, material experts, and user responses. A validation assessment from experts is needed for reference to support the process of making interactive web-based differentiated learning. Assessment by media experts has several aspects, namely aspects of learning media functions, technical aspects of use, and aspects of design and appearance. The material expert assessment includes aspects of content aspects, technical aspects of presentation, and language. Based on the results of the feasibility assessment by material experts, the average feasibility score is 87%, which is a very feasible category. The average score from media experts is 90.67%, with a very feasible category. Based on the expert assessment results, interactive web media based on differentiated learning is very feasible to use in learning respiratory system material in elementary schools. The media design has been adapted to students' learning objectives and characteristics. The media design provides ease of use and supports efforts to introduce technology to students. Feasibility is also considered based on user responses to interactive web media based on differentiated learning. The percentage of assessment obtained in the small-scale trial was 99.3%, and in the large-scale trial, 96.18%. Interactive web media based on differentiated learning obtained excellent responses from teachers and students.

The learning media developed can increase student enthusiasm for learning. Students get new experiences regarding the use of learning media, and the learning process using learning media goes well. The developed media can assist teachers in delivering respiratory system material that is considered difficult for students and encourage students learning independence. The effectiveness of interactive web media based on differentiated learning in learning is obtained from the results of product trial data analysis. In the product trial, researchers conducted pretests and posttests to obtain student learning outcomes before and after using interactive web media based on differentiated learning and then analyzed.

The pretest and posttest results were carried out using a t-test and an N-Gain test to determine the effectiveness of interactive web media based on differentiated learning in increasing student mastery of material assessed from cognitive learning outcomes. Based on the trial results, the t-test and N-Gain test were quite significant. According to the results of the t-test, it obtained a value of t_{count} 11.441 > t_{table} with a value of 2.042. It can be concluded that there is a significant difference in pretest and posttest learning outcomes after using interactive web media based on differentiated learning. The use of interactive web-based differentiated learning emphasizes students' learning independence. Students are encouraged to explore their knowledge independently, and the teacher is a learning facilitator. Students learn the material individually, and then the teacher reinforces the material that they learn.

The teacher helps guide students who are struggling. Students are given time allocations and learning sequences that suit their learning styles to form their discipline well. Students' learning motivation increases when material

that suits their learning style is presented. The application of interactive web-based differentiated learning impacts the formation of student learning independence. The following is a description of the development of student learning independence based on predetermined indicators:

1) Responsibility: This aspect has increased from a score of 61.39% to 83.98%. By utilizing interactive web media based on differentiated learning in which there is a description of the material that is accessed independently the teacher provides a benchmark time for students to study it, making students more trained to make good use of time. This media is also equipped with quizzes that immediately bring up student assessment results, encouraging students to complete tasks well. The learning process carried out in pairs allows students to discuss with friends.

2) Initiative: The initiative aspect of students has increased from the average score of the initiative indicator before the study of 61.76% to 87.89%. The increase in the initiative aspect of students shows that students have high curiosity when using interactive web media based on differentiated learning. This is because interactive web-based differentiated learning presents a stimulus to spark students' curiosity before learning. The increase in initiative indicators also shows that students can think smoothly with interactive web media based on differentiated learning. The interactive web presents a description of the material packaged with easy language in natural science and equipped with supporting images to facilitate students in thinking about the concepts learned.

3) Discipline: This aspect has increased from the initial score of 60.29% to 86.55%. Student discipline is shown when the allocation of learning time and doing assignments is done appropriately. The time displayed in the evaluation questions also makes students more disciplined in completing individual assignments through quizzes contained in the media. The instructions in the material description train students to obey the instructions or orders.

4) Self-confidence: The self-confidence aspect has increased from the original score of 53.67% to 77.60%. Students become more comfortable and confident when learning according to their learning style. Differentiated learning-based interactive web presents materials tailored to students' learning styles. The worksheets prepared are also tailored to each learning style. This makes students more confident when learning and doing assignments because it matches their interests. Stimulus in the form of sparking questions for students encourages them to answer questions and think critically. Learning becomes more interactive with students who have reasonable confidence to participate in class.

5) Motivation: the motivation aspect has increased from the original score of 61.94% to 92.77%. Interactive web media based on differentiated learning increases students' learning motivation. Digital media that feels new to students improves students' curiosity and enthusiasm for learning. Differentiated learning-based interactive web media equipped with quizzes that display learning results directly encourage students to improve their learning outcomes. When taking quizzes with their friends, students who score lower will try to study better to retake the quiz given and get better results.

V. CONCLUSION

The interactive web media based on differentiated learning has fulfilled the development stages according to the ADDIE model. Material experts and media experts have tested the developed media. The feasibility assessment by media experts obtained an average of 90.67% and by material experts of 87%. Therefore, interactive web media based on differentiated learning developed by the company is declared feasible to use as learning support. The developed media has been tested and received positive responses from teachers and students. The average user response assessment in the small-scale trial was 99.3%, and in the large-scale trial 96.18%. So, the interactive web media developed has been declared very good and feasible to facilitate teachers in carrying out the teaching and learning process. Differentiated learning-based interactive web media effectively improves students' mastery of respiratory system material. The t-test results on students' pretests and posttests obtained amounted to 11.441 while they amounted to 2.042. So, there is a significant increase in student learning outcomes after using the interactive web. The N-Gain test obtained a value of 0.73. So, it can be concluded that the increase in student learning outcomes is in the high category.

Differentiated learning-based interactive web media is effective in increasing students' learning independence.

The results of the independence assessment questionnaire before and after using the media showed a significant increase. The analysis results obtained an increase in the percentage of learning independence before and after using interactive web-based differentiated learning by 26%. The acquisition of the N-Gain value of 0.64 indicates an increase in independence with a moderate category. The interactive web-based on differentiated learning has been declared quite effective in increasing student learning independence. The research results of the development of interactive web media based on differentiated learning show results that positively impact learning. The developed media is designed with the concept of learning style differentiation and emphasizes aspects of student independence. This media supports the process of introducing technology to students. Thus, interactive web media based on differentiated learning can be an alternative media to support the learning process. This media can attract students' interest in learning. Complex material is easier for students to understand with the help of interactive web media. Furthermore, interactive web media based on differentiated learning can be further developed for other subjects or materials.

ACKNOWLEDGEMENTS

The researcher would like to thank the parents who always provide support. Principal of Elementary School who has assisted and provided a place and information to conduct research. Expert validators for providing assessment and guidance on developing interactive web media based on differentiated learning. Universitas Negeri Semarang which has become a place to process for researchers to be able to complete this research.

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