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Development of Physics Websites Based on STEM Assisted of Google Sites on Momentum and Impulse Materials to Improve Creative Thinking Skills

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Abstract: Goals of this study to determine effect of applying physics websites based on STEM assisted of Google Sites to advance student's creative thinking skills for momentum and impulse materials. Method in this research is R&D by using ADDIE Models, and for experimental using one group research design pretest-posttest design. Collecting data technique are questionnaire and instrument test (pretest and posttest). The Data was obtained in SMA Negeri 1 Berau, with the respondent in this study 32 students from X MIPA 1, data analyzed by Software IBM SPSS Statistics 25 for Descriptive statistics, Sign Test and Reliability test. The research results showed that the instrument which have been developed was reliable. the results obtained that the website developed is practical for learning. The treatment given is able to advance students' creative thinking skills, which showed from the high average post-test score compared to the pre-test. The Profile Student's creative thinking skills each indicator showing that for indicator originality, flexibility, and elaboration has increase, but there is no difference value for indicator fluency

Keywords: Creative thinking skills; Google sites; Physics websites; STEM

Introduction

Creative thinking skills are one of the skills needed by students in facing 21st century education. In Law of The Republic of Indonesia Number 20 of 2003 concerning the national education system in article 03, it is explained that one of the goals of national education is the creation of creative students. Creative thinking skills are one of the necessary cognitive aspects needed to utilize students' knowledge for problem solving and decision making in various disciplines (Retnawati et al., 2018). This skill is able to train students to develop many ideas, arguments, acknowledge the truth of arguments, ask questions, trigger students to provide answers to science problems, and improve the quality of student learning (Adawiyah et al., 2019; Arifin, 2017; Sumarni et al., 2020; Tendrita et al., 2016). According to Syaibani et al. (2017) indicators of creative thinking in research are fluency, flexibility, originality, and elaboration. In addition to having creative thinking skills in facing 21st century education, at the same time we must also master the abilities of science, technology, engineering and mathematics (Liliawati et al., 2018; Nakano et al., 2018).

In line with 21st century education, mastery of science, especially in the fields of science, technology, engineering and mathematics has an important role in the world of education. These four fields are known as STEM, namely: science, technology, engineering, dan mathematics. STEM is an approach that combines science, mathematics as a data processor, and technology which is expected to produce meaningful learning by integrating knowledge, concepts, and skills. which is able to improve students' problem-solving abilities and form innovative, logical, and technologically mastered personalities (Afriana et al., 2016). STEM learning is able to provide an interesting

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learning experience for students and in the learning, process is able to help students to collect, analyse, and be able to understand the relationship between two different problems (Aldemir et al., 2017; Nessa et al., 2017). The addition of STEM knowledge that supports creativity for activities can improve students' creative thinking skills as well as their skills to solve everyday problems related to STEM (Mayasari et al., 2016).

The 21st century is marked by the rapidly changing development of information and communication technology (ICT) (Pratama et al., 2022). The development of technology and information inevitably touches all fields, including education. To achieve the fulfilment of students' creative thinking skills, of course, STEM integrated learning media is needed, along with the rapid development of technology, the world of education must also follow technological advances. Technology-based learning can be a means for teachers to improve students' understanding by instilling values related to physics subjects that are integrated with the values of mathematics, science, technology, disaster, and character (MSTB) through harmonic motion, momentum, and impulse materials (Fitri et al., 2015). The development of technology-based learning media has been widely carried out such as e-modules, interactive videos, e-books, etc.

As Nuryati et al. (2022) states that Interactive learning media is interesting for students. One of them is website teaching media that can contain writing, video, sound or simulation. Website development for learning is able to increase more active communication between educators and students both independently and in groups (Saehana et al., 2018). The development of a STEM-based website is needed considering that there is no implementation of web-based learning or applications that apply 4C capabilities to STEM learning (Salsabila et al., 2021). This website was developed with the help of Google Sites in its creation. Google Sites is a website creation platform that can combine various features to support the learning process. The advantage of this learning media is that it can be used to help the learning process because it is easy to make without using a programming language and is easily accessible by users anytime and anywhere (Sevtia et al., 2022). The use of Google sites learning media is very interesting to use because it is easily accessible, attracts student learning interest, makes it easier to understand the material, and the use of language is easy to understand according to the students' thinking level (N. K. Putri et al., 2021). Research conducted by Putri et al. (2022) on High School Islam AL-Hidayah showed that E-learning based on Google sites was able to increase the post-test average of 10.5 compared to the pre-test scores.

Various learning media and learning models are widely applied in the process of improving students' creative thinking skills on momentum and impulse materials, The use of Edmodo-based e-learning was able to improve students' creative thinking skills on momentum and impulse materials by 51.57% (Hadjarati et al., 2020). Furthermore, according to research conducted by Hasibuan et al. (2018) showed that implementation of inquiry-based physics teaching materials on momentum, impulses and simple harmonic vibrations had a significant effect on increasing students' creative thinking skills. Beside that Implementation of LKPD based on PhET Interactive Simulations through the Research Based Learning model in learning was able to increase the competence of students and at the same time could be used as an effort to improve Creative Thinking Skills (Chotimah et al., 2020). Students' creative thinking skills improved rapidly through PBL learning using computer simulations (Simanjuntak et al., 2021). Some of these studies show that e-learning-based learning media can improve students' creative thinking skills. So, in this paper, researchers will focus on developing learning media websites assisted by google sites that are integrated with STEM to improve students' creative thinking skills on momentum and impulse materials.

Method

This research was conducted in SMAN 1 Berau, with the respondent 32 students of class X MIPA 1. Method in this research is R&D by using ADDIE. In this study, the physics material used as research material is momentum and impulse which in basic competencies (KD) are found in KD 3.10 and 4.10. The variables measured in this study were students' creative thinking skills and the effectiveness of the learning media made in increasing these variables. In the process of developing learning media, the ADDIE model is used which includes: (A) Assessment/Analysis, (D) Design, (D) Development, (I) Implementation, (E) Evaluation. This model has a structure arranged systematically as illustrated on the Figure 1.

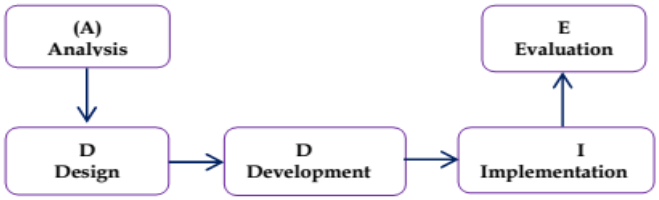


Figure 1. The model stage ADDIE

Analysis

The first stage in the implementation of this research is analysis. At the analysis stage, there are

several things that need to be done, namely: first, conduct a survey on the needs and problems of students in physics at school. This survey was conducted in the form of classroom observations by observing physics learning in class and in the form of general observations of the whole school; Second, determine the scope of research and the materials used in classroom learning, namely momentum and impulse materials; Third, then design the composition of the material on the subject of momentum and impulse as material to develop a learning website; and Fourth, study of literature as a reference in compiling a learning website with the subject of momentum and impulse.

Design

At this stage it is related to preparing the structure and content of the learning website with momentum and impulse materials that will be distributed to students as learning media. This stage consists of several steps including perform concept and task analysis, such as analyzing the concept of assessment for students and analyzing the learning process that will be carried out. After that, create a STEM-based physics learning website development program structure assisted by google sites by compiling media designs. Then, develop a framework of thinking from the subject matter of the learning website. Last Step, arrange the arrangement of the learning website that will be made by making a layout list of websites.

Development

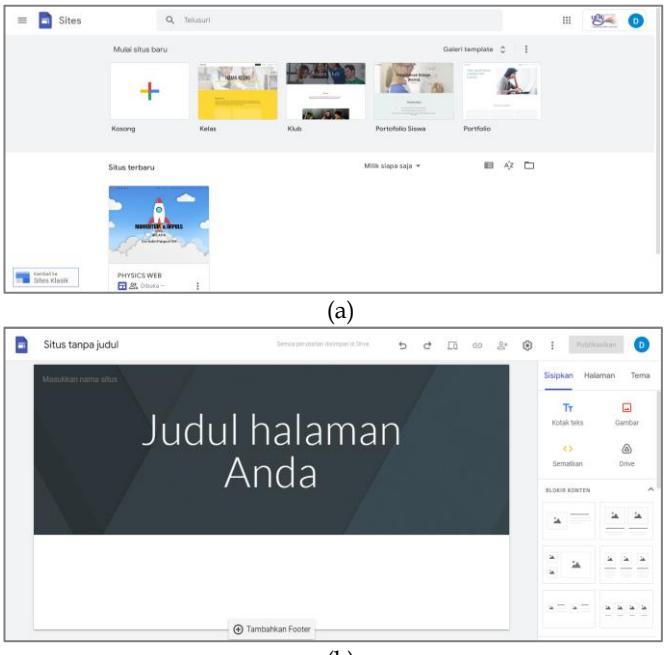


Figure 2. Google Sites Platform View. (a) Initial view of google sites, contains a gallery of templates to create a website. (b) Display of features on the google sites template

At the development stage, there are several steps taken, first, namely the creation of an online web as a forum for distributing teaching materials made. After having a web, there are several roles that will be developed in e-learning, namely as teacher (teacher) and user (student). Second, is to collect references to structure the content of the learning website. The Learning Website developed is adapted to the STEM learning model base. The third is the process of compiling the collected resources into a learning website content as well as preparing other supporting materials. Fourth, develop instruments in the form of questionnaire response sheets and pretest-posttest assessments. Websites that use blank templates on the Google Sites platform which are then varied with various available features according to their needs. The display of the google sites platform and the template used can be seen in Figure 2.

Implementation

The trial stage is the stage where the media products that have been developed are applied directly to students. In this stage, data is collected about responses after students learn with a STEM-based learning website in physics subjects through a questionnaire sheet, assessing the results of students' creative thinking skills through giving pretest and post-test questions and seeing the assessment of students' responses while using the media. At this trial stage, it includes a class scale trial using the website as a learning medium used to measure students' creative thinking skills before and after the media is used. The test of measuring students' creative thinking skills was carried out with a pretest and posttest in the form of a description test.

Evaluation

The evaluation stage is the stage where the results of the trial and data processing are used as material to evaluate the learning media website that has been developed and the delivery of learning. Evaluation is done by asking students to fill out response questionnaires and from these responses can be used as suggestions for improvement.

The research instruments used in this instrument are response questionnaire sheets and pretest and posttest instruments. For the the experimental research this study using the One Group research design pretest-posttest design. For analysis data was in the form of testing the validity and reliability of response questionnaire sheets, pretest- and post-test instruments using IBM SPSS Statistic 25 software.

The measurement of the practicality of the learning website is measured by obtaining response

questionnaire data containing indicators of material content, STEM content, Physical Appearance, Use of Teaching Materials and readability which are then analyzed descriptively using the following equation 1.

$$P = \frac{f}{N} \times 100\% \quad (1)$$

The interpretation of the criteria for the level of practicality of STEM-based physics teaching materials is given Table 1.

Table 1. Criteria Level of Practicality of STEM-based

Score Range (%)	Criteria
$85 < \text{Score} \leq 100$	High Practicality
$70 < \text{Score} \leq 85$	Practicality
$50 < \text{Score} \leq 70$	Sufficiet Practicality
$1 < \text{Score} \leq 50$	Not Practicality

The Score pretest and posttest data will be analyzed as a determination of profile creative thinking skills, Analysing data using the N gain test to analyze data from how much the creative skills of student improve after studied by the physics website. This data will also be analyzed descriptively to regulate the percentage of creative skills scores according to the indicators. Mathematically the formula for the normalized gain N score is written as follows equation 2.

$$< g >= \frac{\bar{X}_{posttest} - \bar{X}_{pretest}}{\bar{X}_{scoremax} - \bar{X}_{pretest}} \quad (2)$$

The interpretation of the criteria for the N gain value is given Table 2 below:

Tabel 2. Categories N Gain Value

< g > Values	Criteria
$(g) \geq 0.7$	High
$0.7 > (g) \geq 0.3$	Medium
$(g) < 0.3$	Low

Result and Discussion

Physics Website Based on STEM

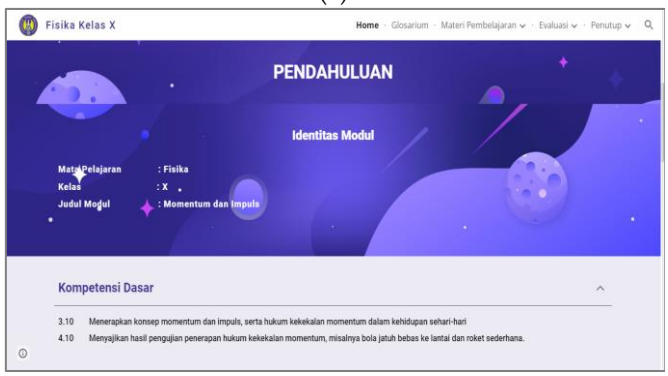
The learning website was developed with the google sites platform so that researchers did not develop a learning website from scratch but used the templates available on google sites. The learning website that has been developed can be accessed by students through the sitelink provided by the researcher. Students can access the website through Smartphones, Tabs, Laptops, Computers, or other electronic devices that are connected to the internet network and can open a browser. The display of the learning website that is accessed via Smartphones and Laptops is presented on Figure 3.

(a) (b)

Figure 3. Learning website display on electronic devices. (a) Handphone. (b) Laptop

On the learning website developed, there are five menu features that students can use, namely, Home Glossary, Learning Materials, Evaluation, and Closing. the menus can be accessed by students easily, because each menu has its own page. This website is also equipped with navigation menu and search menu features, thus helping students to access each menu without opening one page at a time. The menu display on the learning website is presented on Figure 4 until Figure 8.

(a)



(b)

Figure 4. Home menu display. (a) The cover on the home menu contains the title "Momentum & Impulse" for Class X, and there is the name of the researcher "Dwi Indah Pangesti CN" (b) Sub menu Introduction

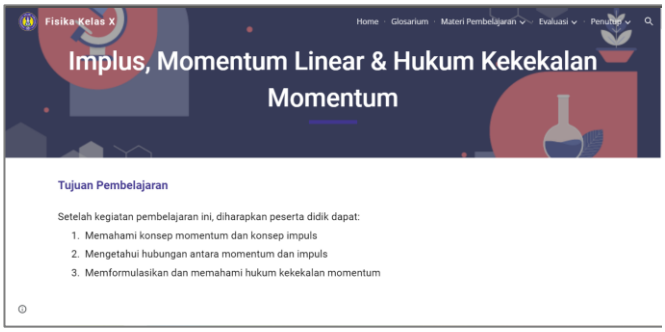
The initial appearance or cover of the learning website is as shown in Figure 4. This menu contains an introduction that explains the use of learning websites

and what materials are contained on this website. The introductory menu will help students understand the goals that students must achieve during the learning process contained in the Basic competencies. In detail, the home menu contains a cover, an introduction containing the identity of the module, basic competencies, a brief description of the material, instructions for using the website, and a concept map.

Figure 5. Glosarium menu display

The display of the Glossary Menu is shown in figure 5. Contains a glossary of terms related to momentum and impulse. This menu makes it easier for students to understand important terms before entering the menu of learning materials, so that students already have an overview of these terms before discussing them further.

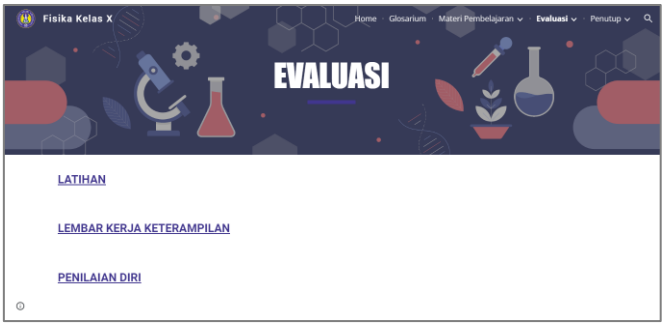
(a)



(b)

Figure 6. Learning material menu display (a) Sub menu technology brief (b) Sub menu learning activity

Figure 6 is the display of the learning material menu which is the main menu in this STEM-based website, by combining science, technology, engineering, and mathematics in compiling this website the learning provided will look interesting. This menu contains learning activities for topics I and II along with learning assignments and sample questions for each topic, then contains a technology brief, namely the application of momentum and impulse in daily life technology, and lastly is a summary of material which contains a summary of learning material. Each learning sub menu has its own page to make it easier for students to go to each desired sub menu.



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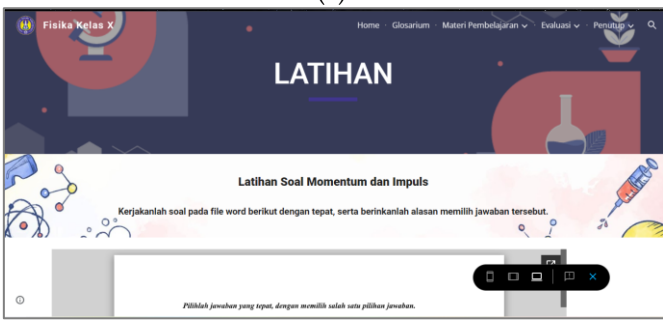

(b)

Figure 7. Evaluation menu display (a) Evaluation sub menu (b) Exercise sub menu display

The evaluation menu is as shown in Figure 7. Contains various evaluations for students, namely Practice Questions, Skills Worksheets, and Self-Assessment. Each of these evaluations can be accessed by students independently. The display of the Exercise sub menu is like Figure 7 (b) is an exercise about momentum and impulse that is loaded in word format, so students can download the exercise and work on it.

The closing menu is as shown in Figure 8. Contains the reference sub menu for learning videos and a bibliography. Providing learning video references to make it easier and help students understand the momentum and impulse material from different references. Because it is possible that the material on the learning website is not enough to meet the curiosity of students, so other references are needed.

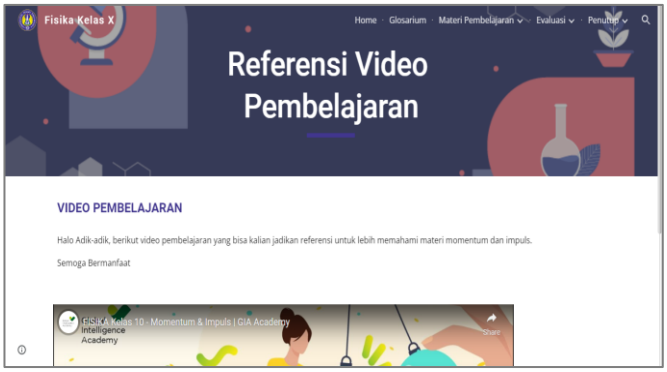

Figure 8. Closing menu display

Data Analysis

The instrument in this innovation practicum uses a cognitive test instrument for creative thinking skills in the form of a description test which is divided into two groups, namely pre-test and post-test. Each test consists of five questions with each question adjusting creative thinking skills. In addition, the instrument in this practicum is also in the form of a questionnaire to see the practicality of the learning website in the classroom.

Analysis of Student Response Questionnaire Sheets on Learning Websites

The response questionnaire developed by the practitioner is 20 items. Data analysis of the questionnaire sheet was carried out using SPSS Statistic 25 Software to test the validity and reliability. From the data analysis, 19 items were declared valid and 1 item was declared invalid, as shown in Table 3**.**

Table 3. Results of Item Validation of Questionnaire Instruments (N= 64, r_{table} = 0.2461)

Variable	r count	Decision
Item_1	0.680	VALID
Item_2	0.535	VALID
Item_3	0.647	VALID
Item_4	0.607	VALID
Item_5	0.494	VALID
Item_6	0.460	VALID
Item_7	0.714	VALID
Item_8	0.624	VALID
Item_9	0.642	VALID
Item_10	0.664	VALID
Item_11	0.291	VALID
Item_12	0.675	VALID
Item_13	0.495	VALID
Item_14	0.132	INVALID
Item_15	0.672	VALID
Item_16	0.709	VALID
Item_17	0.574	VALID
Item_18	0.560	VALID
Item_19	0.694	VALID
Item_20	0.641	VALID

Furthermore. to test the reliability of the response questionnaire instrument. it obtained a Cronbach's alpha value of 0.890 and was declared reliable. The item that shows invalid is the item on the questionnaire sheet number 14.

Practicality of Physics Learning Website

The practicality test was carried out on a STEM-based learning website to find out whether the learning website developed could be used easily by students or not. The practicality test is only carried out to students as the main users who access the learning website. In obtaining practicality test data. the response questionnaire was given to X MIPA 1 student at SMAN 1 Berau. Indicators of the practicality of learning websites consist of indicators of learning materials with a STEM approach. creative content. physical appearance of learning websites. use of learning website and readability. The outcome of the of the practicality test given in Table 4.

Table 4. Percentage practicality indicator Websites

Indicator	Percentage (%)	Criteria
Material Content	76.70	Practically
STEM Content	80.40	Practically
Physical Appreance	75.00	Practically
Procedure Website	74.00	Practically
Readability	74.60	Practically
Average	76.10	Practically

Based on the outcome. obtained an average practicality of 76.1%. so that this learning website is categorized as practical for students. This is because the learning media was developed by integrating with technology. namely the Google sites platform which was later called the learning website. This media can be accessed by students anywhere and anytime with the condition that they are connected to the internet (Prasetyo et al., 2020). This is in line with previous research conducted by Sari et al. (2017) that the use of Google Sites-based learning media is very effective and efficient because it improves student outcomes. Similar results were also obtained by Sevtia et al. (2022) found that the google sites learning media developed was included in the efficient criteria with an average value of 85.9 and was classified into the very efficient category and received a positive response from students.

This learning website is also in accordance with the current learning needs. namely 21st Century Education where all educators are able to integrate learning with renewable technology. so that learning becomes more effective and efficient. The learning website is presented with an attractive appearance and easy-to-understand language. The provision of menus on the website makes it accessible students to find out the material in a

structured manner. namely the home menu. glossary. learning materials. evaluation. and closing. The distribution of the menu on the learning website is in accordance with the structure of teaching materials in general. The glossary menu is displayed to help students understand unfamiliar physics words or terms so they don't experience misconceptions. The content of momentum and impulse material on the learning website is centered on the learning material page. here the subject is divided into two groups. the first is the momentum and impulse sub-material. and the second is the type of collision. The learning material menu also contains sample questions. Technology Briefs. Online Simulations and summaries.

Students' Creative Thinking Skill Level

Learning by modeling uses STEM-based learning website media by being reflected through a projector. Profile of students' creative thinking skills obtained from pretest and posttest questions. These thinking skills include indicators of fluent thinking. original thinking. flexible thinking and elaboration. then the outcome of the data analyzed descriptive shown in Table 5**.**

Table 5. Descriptive Statistics of Student;s Creative Thinking Skills

		Statistics	
		Pretest Score	Posttest Score
N	Valid	32	32
	Missing	0	0
Mean		8.91	15.53
Median		9.00	17.00
Std. Deviation		4.083	3.172
Minimum		1	5
Maximum		17	19

Based on the data from Table 5. the average pretest is 8.91 while the posttest is 15.53 and then score of students' creative thinking skills has increased later being given treatment. Descriptive statistical data shows that the students' score for the lowest pretest score is 1 and the posttest is the lowest 5. indicating that students' creative thinking skills have increased after the application of STEM-based learning websites. From the data also obtained an increase in students' creative thinking skills (N gain) of 0.60. including the medium criteria. So that the improvement of student skills is quite good. This result is similar to the research by Mahardika. Subiki and Putri who found that the average posttest score of students was higher than the pretest score of students after giving learning media based on google sites. This shows that the Google Site media is able to stimulate the creativity of students and in the end the teaching materials brought by educators are more easily conceptualized for students. STEM activities in the learning process can improve students' scientific creativity (Uğraş, 2018).

The students' pretest and posttest scores were also analyzed to determine the level of creative thinking skills of each student. It aims to determine the distribution of thinking skills of each student. The percentage categories of students' creative thinking skills represented by Figure 9 and Figure 10.

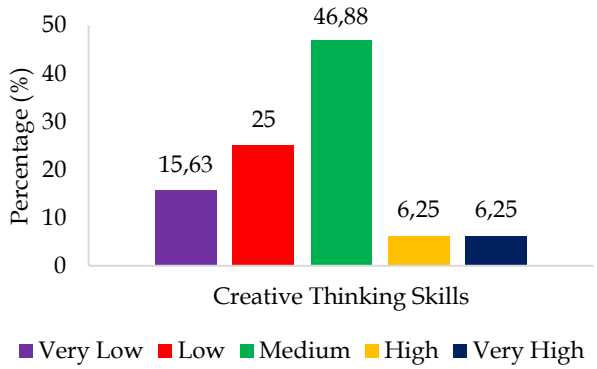

Figure 9. Percentage distribution creative thinking skills for class X MIPA1 students based on pre-test scores

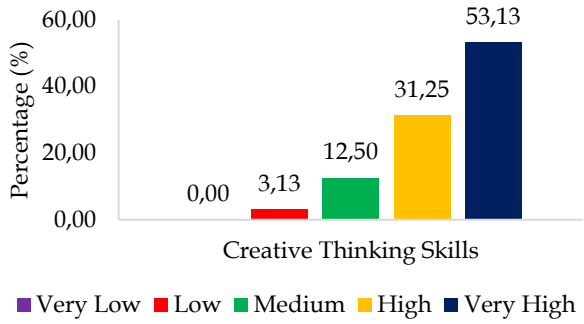

Figure 10. Percentage distribution of creative thinking skills for class X MIPA1 students based on post-test scores

The Figure 9 and Figure 10 shows the percentage of pretest and posttest is much different. This supports descriptive statistics which show there is a difference in the average score with the highest average in the posttest results, to ensure again how many students experienced an increase in scores in the post test, then the data was analyzed with the IBM SPSS 25 Sign Test. the results of data analysis showed in Table 6.

Based on data in there are 31 students with post-test scores higher than pretest scores, and there is 1 student whose post-test scores are the same as pretest scores. We can conclude that the overall scores of students had increased. So that it proves that learning using STEM-based learning websites can increase creative skill student. The Creative thinking skill profile of each indicator it showed in Table 7.

Table 6. Analysis Data Sign Test

Frequencies		
		N
Posttest Score – Pretest Score	Negative Differencesa	
	Positive Differencesb	31
	Tiesc	
	Total	32

a. Posttest score < pretest score
b. Posttest score > pretest score
c. Posttest score = pretest score

Table 7. Percentage Indicator Creative Thinking

Indicator	Pretest		Posttest	
	Percentage (%)	Criteria	Percentage (%)	Criteria
Fluency	61.71	High	61.71	High
Originality	39.06	Low	83.98	Very High
Flexibility	61.71	High	93.75	Very High
Elaboration	21.09	Low	60.93	High

The analysis score creative skill pretest was used to measure the level of thinking before applying STEM-based learning websites in the learning process. while to measure the impact of using STEM-based learning websites on students' creative thinking levels. a post-test was used. Shows that the indicators of original thinking. flexible thinking. and elaboration thinking have increased. while the indicators of Fluency thinking have not changed in value.

The aspect of fluency is the ability to produce many ideas (Al-Oweidi, 2013). Through this indicator. it is shown the ability of students to provide many possible answers. ideas. and solutions to a given problem. Students' fluent thinking skills were measured through pre-test and post-test assessment instruments. namely the ability of students to express their opinions regarding the definition of momentum based on daily events given to students. The results of the pretest showed that most students were able to decipher the meaning of momentum in their own language. but based on the results of the posttest, the provision of learning media in the form of a learning website did not increase the percentage of students' fluent thinking skills.

The aspect of thinking originality or authenticity is related to the ability of students to provide innovative and unique ideas or ideas. Innovative means that the idea expressed is an idea that is completely new or has not existed before. while Unique has the meaning of an idea that is different from most people but is still acceptable and conceptually correct (Trianggono et al., 2018). Based on the results of the pretest. the students' original thinking ability is classified as low. This indicates that students still have difficulty in thinking original. in this pretest in the form of describing the factors of momentum and impulse and their application in everyday life. However. after giving a learning website as a medium for teaching momentum and impulse material. the percentage of students' original thinking increased significantly to 83.93%. Students are able to understand the meaning of momentum and impulse and can provide innovative ideas related to the application of momentum and impulses in everyday life. According to Gregoire (2016) One way to develop students' original thinking is by confronting students with various problems that can improve their creative thinking skills.

The aspect of flexibility is related to a person's ability to provide answers. solutions. and alternatives outside of answers in general. Students who have a high flexibility aspect are able to provide variations of out of the box answers but are still correct according to the concept. The use of different ways is done. how the student views a problem from a different point of view so that they can look for many alternatives or different directions so that students are able to change their approach and way of thinking. The percentage of flexibility aspect in the pretest assessment is 61.71% and has increased in the posttest assessment to 93.75%. This shows that some students are able to think flexibly before being given learning through the learning website. and have increased after the STEM-based learning website is implemented. The aspect of flexibility in this study was measured through students' ability to answer questions related to events in everyday life that were associated with the concept of impulse. The indicator of flexibility is reflected in the ability of students to build systematic relationships and inductive reasoning to make conclusions.

The elaboration aspect is related to a person's ability to transform ideas or ideas in a form of detailed detail. In this aspect students need the ability to detail and make details from these details. In the pretest assessment. the elaboration aspect obtained the lowest percentage of 21.09% compared to other aspects. This shows that students' thinking skills in elaboration are still lacking. especially in transforming the application of momentum and impulse ideas in the form of mathematical equations and physical concepts. Similar results were found by Simanjuntak (2021). the average pretest score of students in the aspect of elaboration thinking is the lowest. namely 8.7. Giving treatment in the form of a STEM-based learning website can improve students' elaboration abilities as in Table 6**.** The percentage increased to 60.93%. Elaboration skills are grown when students conduct experiments. collect and analyze data for example. it presents data in the form of tables. graphs. and mathematical equations (Hakim et al., 2017).

The creative thinking process allows students to apply their imagination to generate and evaluate their ideas. questions. and hypotheses (Kampylis et al., 2014). The results of data analysis showed that students' creative thinking skills during the pre-test were still lacking. This indicates that students still have difficulty in applying their imagination to analyse physics problems on the topic of momentum and impulse. especially in the aspect of elaboration thinking. The difficulties faced by students can be caused by several factors. one of which students do not have experience in working on problems that must require high-level thinking. especially creative thinking and learning in classes that students receive does not hone their creative thinking skills. Lack of creative thinking skills students creative thinking process students do not learn while studying and do not study well (Eldy et al., 2013). Therefore. appropriate learning innovations are needed. such as through the application of approaches or the use of learning support. Based on the results of the survey. learning in the classroom only focuses on the teacher with the lecture method. the learning media used is limited to power points and explanations on the blackboard. Learning by teachers should not only teach factual knowledge but also improve students' creative thinking skills (Mustofa et al., 2020). The low creative thinking skills of students are also influenced by students who are accustomed to solving physics problems that emphasize the use of formulas rather than connecting scientific concepts (Mariati et al., 2017).

Conclusion

The Result show that Physics Website bases on STEM assisted of Google sites for momentum and impulse materials is very practically to improve creative thinking skills students. The value of N gain on the results of the pre-test and post-test shows an increase in students' creative thinking skills. Based on data results percentage creative thinking skills each indicator, both pretest and posttest for indicators originality. flexibility. and elaboration has increased. this shows the influence of learning websites on students' abilities. Th need for website development for certain learning methods and different physics topics. so that it can be seen whether the website is practical for use on different topics and other thinking skills.

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Author Contributions
Dwi Indah Pangesti. Conceptualized the research ide. Designed of methodology, analyzed data, management and coordination responsibility. Jumadi J. Literatur review and provided critical feedback the manuscript.

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Conflicts of Interest
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