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Development of stop motion-based macromedia flash to strengthen nautical character

by

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Abstract
The massive development of digital technology has changed aspects of human life, including education. Thus, in the face of the digital era, technology is paramount to increasing learning effectiveness. One of the integrated technologies is stop motion-based Macromedia Flash, a learning media that offers interactive learning experiences through moving animations. This research aims to develop student-centered aspects of feasibility, practicality, and effectiveness based on constructivism theory. The research uses the ADDIE model development method in which the results of media and material validation on the stop motion-based Macromedia Flash show that this media is declared "feasible" with an overall score of 83%. Regarding practicality and efficiency, the stop motion-based Macromedia Flash achieved a score of 104% (very feasible) and 60.4% (high), respectively. In addition, the use of this media supports constructivism theory by demonstrating its activeness in social studies learning. This not only improves learners' understanding of the material but also has the potential to enrich their nautical character development.

Introduction

The rapid development of technology has not only changed human life but also has created a duality of life, which is the real and virtual world. In the real world, communications are built through direct physical interactions with the surrounding environment, whereas the presence of virtual relationships (Online) in the virtual world is something that cannot be avoided due to technological developments (Mashlahah & Arifin, 2023) The saying of 'the world of communication and information is within our grasp' generally describes today's technological developments where information can easily be accessed through finger-tapping. Nevertheless, these conveniences are largely prompted by the massive development of communication technology (Hasanah et al., 2022).

The technological developments must be applicable and utilized for educational and learning purposes. In the current digital world, the presence of technology must be able to address educational and learning challenges. Digitalization of education is one of the main innovative components that can be implemented by teachers in carrying out learning activities (Zebua, 2023). The lack of creative thinking skills experienced by prospective teachers in developing learning pedagogy hurts the practice of developing creativity in schools (Maulidah et al., 2023). The limitations of teachers and prospective teachers in building students' understanding need to be supported by the existing information technology. Rapid developments in information and communication technology can be one of the catalysts for changes in the current educational paradigm (Norpin et al., 2024). Since its application is imperative in this digital era, technology plays a central role in supporting successful learning through the various applications, platforms, and media. The advantages of accessibility and advanced features continue to be utilized to simplify various aspects of communication, initial learning, delivery of material, and assessment of learning context in this digital era (Mustika et al., 2024).

There is a strong connection between the significant use of project-based learning technology and students' learning achievements. Students who are actively involved in the learning process through technology tend to achieve better learning outcomes. Student's involvement in technology use not only increases their learning motivation but also their understanding of learning concepts (Nathaniela & Esfandiari, 2023). The development of Macromedia Flash learning media has positive impacts on improving the quality of learning. Studies show that the results produced in developing Macromedia Flash have an average validation percentage of 94.46%. The practicality of this interactive multimedia is categorized as very practical as confirmed through teachers' and students' responses, which reached 96.58% and 86.30%, respectively. This shows that this interactive multimedia can be practically and effectively used as a learning tool on the topic of addition and subtraction of ordinary fractions with different denominators for grade V of elementary school (Azlina & Zainil, 2021). Moreover, the use of Macromedia Flash as a mathematics learning tool has the potential to provide an interesting and interactive learning experience for students. Consequently, students can be actively involved in learning mathematics gain a better understanding of concepts, and increase their learning effectiveness (Safitri et al., 2023).

However, the observation made at SMP Negeri 31 Surabaya demonstrates that advanced learning technology used at the school has not effectively boosted students' learning motivation. It is evident in students' lack of interest in social studies learning. Thus, this condition encourages researchers to develop gadget-based innovative learning media. Since it plays a critical role as a learning platform, the application of technology can increase the accessibility, flexibility, and effectiveness of learning. Furthermore, technology can also strengthen interactivity and student's involvement in learning activities, as well as encourage the implementation of project-based learning (Said, 2023).

The education that leads to the cultivation of nautical character is important to be implemented. The primary reason is that socialization and introduction of historical and maritime cultural values throughout school activities are of paramount imperative to build a maritime culture and a great country. As a maritime country, maritime education plays a critical role in Indonesia to achieve its national development and interest in prosperity (Susanti et al., 2023). Interestingly, the nautical-based educational development is also implemented in Vietnam. According to the Vietnamese, nautical-based education is used to maintain diplomacy in their territorial waters, thus, it is significant to provide efforts in maintaining resources and managing the surrounding maritime potentials (Putra, 2023).

This research needs to be conducted, thus, social studies learning media can be developed following the existing digital literacy towards society 5.0, which encourages students' skills in conducting research, constructing, and communicating information, as well as responsibility in implementing digital literacy. These abilities enable students to be responsible whilst providing information, understanding ethical values, and maintaining integrity (Septianingsih et al., 2023). Digital transformation and new technologies also create a complex environment that demands the development of digital skills and advanced technology to improve the learning process (Gatyan et al., 2023). The development of students who grow up in the era of Industrial Revolution 4.0 must also be supported by advanced technology and information. Teachers need to be adaptive to technological developments, especially in social studies learning, where teachers need to continuously develop their skills, including utilizing learning videos, using slide-based presentations, and images, and integrating television news programs. Furthermore, game-based learning materials and other platforms can also be used by teachers to enrich

students' learning experiences. By adopting this approach, teachers can create a dynamic and relevant learning environment to current developments, therefore, students can make optimal use of technology in their learning process (Kastina, 2022).

This research aims to develop and analyze the feasibility, practicality, and effectiveness of the stop motion-based Macromedia Flash learning media on natural resources and maritime material as a strategy to strengthen students' nautical character. The research is important to be conducted as it helps students comprehensively comprehend social studies learning material, including natural resources and maritime material, to strengthen students' nautical character.

Method

This research uses the ADDIE (Analysis, Design, Develop, Integration, and Evaluate) method. It was conducted at SMP Negeri 31 Surabaya which is located on Jl. Dukuh Bulak Banteng for 6 months. The assessment of the feasibility, practicality, and effectiveness of the stop motion-based Macromedia Flash on natural resources and maritime material as a strategy to strengthen students' nautical character is done by research correspondents ranging from media experts, material experts, teachers, and students. The one-shoot group approach is implemented towards the research subjects consisting of 35 people of grade VII students of SMP Negeri 31 Surabaya. The research steps are as follows:

First, Analysis, the purpose of this stage is to determine and define learning conditions. The analysis stage involves three main aspects (Martatiyana et al., 2023), first, the needs analysis, an analysis made as a basis for identifying learning resources and the condition of supporting infrastructures at SMP Negeri 31 Surabaya in determining the stop motion-based Macromedia Flash is needed by students. The next aspect is the curriculum analysis that aims at analyzing the curriculum used at SMP Negeri 31 Surabaya and used as a reference (KD) and indicator of student learning outcomes in natural resources and maritime material. The last aspect is the analysis process in which conducted to analyze the students' character. This analysis is important to examine the teaching materials in developing the student's character, especially the nautical character regarding the potential of natural resources and maritime affairs.

Second, design, this stage includes the determining process of learning implementation. The learning media system process will focus heavily on selecting learning media formats, determining, collecting, and learning media materials, as well as carrying out the initial design of learning media. Such an initial design includes a general communication system and specific process sequences to ease related parties in understanding the operating system and assessing its suitability and potential for further development (Azyani et al., 2023).

Third, Development, this development stage aims at measuring the results of learning media products that have fulfilled the standards. Validation of the feasibility, practicality, and effectiveness of the stop motion-based Macromedia Flash on natural and maritime resources potential refers to several assessment criteria made by two validators, which are the knowledgeable validator of the learning material and the validator whose expertise is in learning media. The process that involves the application of learning media and evaluation by teachers and students is carried out after careful assessment and meeting the standards, (Suroiya & Perdana Prasetya, 2021). At this stage, the researcher also tabulated and calculated the total score according to the following formula:

$$\bar{X} = \frac{\sum X}{n}$$

Note:

$\bar{X}$: Average score

ΣX : Total score obtained

n : Total items

Fourth, Implementation, at this stage, the stop motion-based Macromedia Flash will be tested directly on students in their class. The aim of such a test is to utilize the media that has been developed through trial and limited teaching and learning activities on Social Sciences (IPS) materials. This stage is set to collect the research subjects' responses regarding the development of the stop motion-based Macromedia Flash learning media. The implementation of this media also targets the improvement of the

media-based users' point of view. The distribution of the product was limited to the SMP Negeri 31 Surabaya.

Fifth, Evaluation, this stage aims to be a means of completing a media product that has been utilized. Responses from validators, educators, and students are important. All letters of the ADDIE acronym are interconnected and interact with each other. Research subjects received treatment in the form of the application of learning media. Furthermore, research subjects consisting of teachers and students were given instruments to measure responses related to the learning media developed.

Result

Research on the development of stop motion-based Macromedia Flash learning media, which was conducted at SMP Negeri 31 Surabaya focuses on natural resources and maritime material. The development of this learning media aims at improving the quality of the learning process, including being knowledgeable in natural resources and maritime material. This learning media not only provides an interactive learning experience but is also able to strengthen students' nautical character. Moreover, the media also contains moving animations as a means of conveying information. Through the stop motion-based Macromedia Flash technology, students can be involved in an interesting and dynamic learning experience. This strategy is integrated with natural resources and maritime material to create a student-centered connection between theory and practice.

Student-centered learning media is an effort to develop interactive learning. Such a learning platform involves active student participation, a deeper understanding of learning materials, the development of critical thinking skills, the improvement of communication skills, and the development of social skills following the 4C concept in 21st-century learning. Furthermore, this method also contributes to the formation of self-confidence, social interaction skills, critical thinking, and innovation toward children (Mustofa & Hindun, 2023). Through the ADDIE analysis, this research resulted in several stages of developing the stop motion-based Macromedia Flash. They are as follows:

First, Analysis, this research is conducted based on three analyses, which are needs, curriculum, and students' characteristics analyses. The results of the researchers' analysis are: The needs analysis that we carried out includes an analysis of learning

facilities at SMP Negeri 31 Surabaya focusing on the availability of learning media in the school, including classrooms, computer rooms, and libraries. According to our team's observation, educational facilities, including classrooms and infrastructures are sufficient to support the interactive learning process. However, observation shows that social studies learning at SMP Negeri 31 Surabaya, which generally uses lecture, assignment, book literacy, and discussion methods, and the results of team interviews with several teachers, are monotonous because it is considered a rote learning subject. Therefore, the development of the stop motion-based Macromedia Flash learning media is an important development to deepen the nautical character of students by utilizing coastal natural resources wisely and supporting the economic growth that prioritizes ecosystem balance (primary data, 15 June 2023).

Based on the research results, the updates regarding social studies learning media in junior high schools are imperative. The use of digital learning media allows students to access ubiquitous learning materials, which in turn creates a comfortable and effective interaction. When facing learning difficulties, they can leave messages in the collaborative space to get responses from fellow participants (Amalina et al., 2024). The stop motion-based Macromedia Flash is developed to support interactive and student-centered learning. Consequently, with the use of such advanced technology, social studies learning will be more interesting and ubiquitous.

Then we carried out an analysis of the curriculum, which is used as the basis for the implementation of learning at SMP Negeri 31 Surabaya. The results of our learning documents analysis are that "The 2013 curriculum is a based curriculum for learning implementation, which focuses on natural resource materials and maritime affairs in the city of Surabaya. "The basic competency that students must have after studying this learning material is the ability to describe the potential of natural and maritime resources in the city of Surabaya, especially in developing students' nautical characters, which will have an impact on their learning outcomes." (primary data, 28 June 2023).

Considering the data obtained, the required curriculum used at SMP Negeri 31 Surabaya is the Curriculum 2013, which is considered to have the ability to develop various competencies in children, including stimulating children's development. The aspects that are covered include thinking abilities, creativity, social skills, and independence. For example, critical thinking abilities, which continue to develop over time, involve logical analysis and evaluation processes and help children understand the world around them and overcome various challenges. Creativity abilities enable children

to generate new ideas and think innovatively in optimizing an extraordinary imagination at an early age. Furthermore, children's independence can be developed through consistent support and patience as it plays an important role in teaching responsibility and forming a solid foundation for children's independence in the future. The implementation of these skills can be done through learning projects (Azizah et al., 2024). In this research, the indicators that need to be achieved are done through identifying and explaining the potential of natural and maritime resources in the city of Surabaya, as well as understanding the usefulness of those resources to develop students' nautical character.

The final analysis carried out by the researchers was an analysis of students' characteristics. The results of such an analysis at SMP Negeri 31 Surabaya are students from the school who appear to be individuals whose enthusiasm for developing nautical character is very striking. They tend to have a high sense of concern for their surroundings with a sensitive attitude towards issues of sustainability and nature conservation. Activities, including waste management, tree planting, or participation in school environmental projects are part of their efforts to understand and support the concept of nautical character. Moreover, the development of nautical character is also carried out through active participation in extracurricular activities related to maritime affairs, such as nature lover groups, sea exploration, and marine research activities. With a sense of concern for the environment and strong collaboration, they have become pioneers in forming a generation that is responsive to environmental issues, especially in the context of nautical character (primary data, 5 July 2023).

The process of developing students' nautical character is indeed enthusiastic. It is evident by their interests in environmental activities and developing the potential of their nautical character, especially in utilizing natural resources such as coastal and maritime tourism. Such tourism can be developed through a marine conservation approach. The development of nautical tourism activities is based on natural and environmental characteristics, the ecosystem's features, and the uniqueness of art and culture (Salim et al., 2024). Furthermore, various elements of sustainability must also be implemented by students to reduce negative impacts on the environment, such as pollution, ecosystem damage, and loss of biodiversity to achieve sustainable tourism. These principles encourage wise management of natural resources, including efforts to preserve flora and fauna as well as steps to reduce carbon footprints, thus, requiring principles that are developed in a nautical character (Saputra, 2024).

Second, Design. At this stage, the researcher designs an interactive social study learning by using the stop motion-based Macromedia Flash, which is based on the principles of constructivist learning theory. The focus of this learning theory is to create a learning environment that allows students to actively engage and build their knowledge. The stop motion-based Macromedia Flash is used as a tool to present learning material dynamically and interactively, allowing students to construct their understanding through exploration, experimentation, and direct interaction with the content. This design aims at stimulating critical thinking, creativity, and problem-solving conforming to the constructivist principles of emphasizing students' active role in the learning process.

This design stage begins with the selection of a media format. The stop motion-based Macromedia Flash media is an application designed to integrate potential natural and maritime resources around the city of Surabaya. This application is also intended to shape students' nautical character. After the materials determination process, the researchers developed the material by aligning it with local natural resources and maritime potential along with sub-districts in the city of Surabaya.

At this stage, we design a constructivist-based theory learning system. This theory has a learning method that involves an in-class learning process for students, thus, they do not only receive information from educators and become passive but also expect to be active throughout learning activities. This activeness instigates students in building their knowledge by which the meaning of learning not only focuses on remembering information but also a process where knowledge is built through the experience and capabilities of individuals. Nonetheless, knowledge is produced through a creation process carried out by individuals, not just the result of knowledge transfer by other people (Lathifah et al., 2024).

Third, development. The development stage focuses on the development of media and learning materials. This validation process is carried out to assess the feasibility, practicality, and effectiveness of the stop motion-based Macromedia Flash media. At this stage, the main purpose is to ensure that the media used, whether in the form of digital technology, printing, or other learning aids, is qualified and relevant to the needs of students and the designated learning objectives. This validation stage is also used to carry out a thorough examination of media and materials by the development team and educational experts to ensure the suitability of learning objectives and targeted audiences.

The results of this research prompted by assessments of two validators, which are Muhammad Ilyas Marzuqi, M.Pd., and Hendrik Pandu Paksi, S.Pd., M.Pd. - lecturers at undergraduate study program of the Department of Social Sciences Education, State University of Surabaya. Some of the validation results are as follows:

Table 1
Learning Material Validation of Stop Motion-Based Macromedia Flash

Assessment Indicator	Result	
	Total Score	Percentage
Outcome compatibility	7	8%
Concept relevance	8	9%
Material accuracy	7	8%
Systematic material delivery	8	9%
Ability to develop students' competence	7	8%
The proper and relevant language used	7	8%
Relevant terms used	8	9%
Systematic and logical material presentation	7	8%
Active students' involvement	8	9%
Benefits and usefulness consideration	8	9%
Total	75	83%

Source: primary data of research, 25 Juli 2023

According to the research, the material validation results can be analyzed through the following formula:

Feasibility percentage = $\frac{Total\ score}{Maximum\ total\ score}$ X 100%

Feasibility percentage of *Macromedia Flash* = $\frac{75}{90}$ X 100% = 83%

Based on the above analysis, it shows that the material used in the stop motion-based Macromedia Flash has reached the qualification of "Appropriate". Thus, the use of this learning method can be continued as the social studies learning media to instill students' nautical character.

a) Learning Media Validation

Table 2
Validation of Stop Motion-Based Macromedia Flash Learning Media

Assessment Indicator	Result	
	Total Score	Percentage
Cover compatibility	6	7%
Image resolution	7	8%
Format compatibility	7	8%
Line, shape, space, and letter equilibrium	6	7%
Image display	7	8%
Typography (art of print and letter arrangement)	7	8%
Learning objective, phase, and outcome relevance	7	8%
Learning motivation	7	8%
Interactivity	7	8%
Creative and innovative learning media	7	8%
Learning applicability	7	8%
Total	75	83%

Source: primary data of research, 27 Juli 2023

According to the research, the material validation results can be analyzed through the following formula:

$$\text{Feasibility percentage} = \frac{Total\ score}{Maximum\ total\ score} \text{ X } 100\%$$

$$\text{Feasibility percentage of } \textit{Macromedia Flash} = \frac{75}{90} \text{ X } 100\% = 83\%$$

Based on the above analysis, it shows that the material used in the stop motion-based Macromedia Flash has reached the qualification of "Appropriate". Thus, the use of this learning method can be continued as the social studies learning media to instill students' nautical character. The stop motion-based Macromedia Flash learning media has reached the "decent" qualification. This media offers a combination of advanced animation technology from Macromedia Flash with the advantages of the stop motion concept, which can create an interesting and interactive learning experience.

The stop motion allows students to observe the specific location and potential of natural and maritime resources in the city of Surabaya. Several driving factors are used to validate such a learning media. First, the suitability of the primary material is related to the suitability of the media provided and the targeted learning objectives. Second, all relevant information is collected through the extra knowledge that students possess. Third, it is the affective considerations, which evaluate the

effectiveness of media in triggering students learning motivation. Fourth, the interface addresses the display of media, including text, images, and other visual elements. Fifth, the navigation that includes ease and clarity in media use. Sixth, the pedagogy, assesses students' cognitive activities related to the learning material. The final aspect is the sustainability of robustness, which emphasizes the resilience and durability of the product and media used in the learning process (Masruriyah & Istiningsih, 2022).

Furthermore, the stop motion-based Macromedia Flash is considered "practical" because it was developed using the Macromedia Flash animation technology. By utilizing such technology, students can easily explore the potential of natural and maritime resources through interesting animations and in-depth visuals. This practicality is further strengthened using the stop motion concept, which allows students to discover the various potential natural and maritime resources in the city of Surabaya. The flexibility of Macromedia Flash allows the development of dynamic and interactive learning content. Moreover, this Web-based learning media is accessible to all students since it can be accessed through Android and IOS systems.

However, the Macromedia Flash also provides the flexibility and accessibility that supports the positive character development of its users. The assessment of the practicality of the learning media consists of several indicators, including ease of reading, clarity, and attractiveness of the images displayed, suitability of the material to the title, and the media's ability to increase understanding of the material and create a pleasant learning atmosphere. Thus, the use of Macromedia Flash learning media is not only effective in conveying information but also able to create interest and excitement in the learning process, especially in the field of social studies (Mahardani et al., 2023).

The efficiency of stop motion-based Macromedia Flash is considered effective because learning can be delivered in a more dynamic and interesting method. This advantage highly supports the students with the knowledge development regarding the potential of natural resources and maritime affairs as a means of growing their character. In addition, the stop motion concept adds a realistic dimension, allowing students to observe the site of natural resources. The efficiency of this media is also reflected in its ability to convey complex information, cultivating the learning process more efficiently and effectively. According to (Sakti et al., 2024), it is revealed that to create a successful learning system, the use of media is an inseparable element. The reason is that during the teaching and learning process, the media has an important role in supporting the smooth, effective, and efficient achievement of learning objectives. Furthermore, media is not just a compliment but also a tool that can enrich and support students' learning experiences and atmosphere through visual, audio, and interactive information. The success of a learning system also depends on how efficiently learning media is used to provide an in-depth understanding to students.

Indicators of learning media efficiency include ease of access, readability of information, attractive visual quality, and the media's ability to increase time efficiency in the learning process. By utilizing media effectively, learning becomes more dynamic and responsive to students' needs, leading to a positive impact on the learning outcomes achieved.

In the implementation process, the researchers conducted a limited test on the implementation process by using the one-shoot group technique on the stop motion-based Macromedia Flash learning media at SMP Negeri 31 Surabaya. This limited testing begins with the preparation stage, where students of SMP Negeri 31 Surabaya are involved in the concepts and objectives of the learning media introduction session. Subsequently, the implementation stage is carried out in classrooms with adequate internet facilities, thus, students can access the material through the Macromedia Flash media. During the test, various aspects are evaluated, including ease of use, understanding of the material, and student responses to the media.

In the following stage, a feasibility test was done involving a group of teachers. They provide an in-depth review of the suitability of the material, clarity of display, and the impact of learning media on the teaching and learning process. Feedback that is provided by students and the teaching team is of paramount importance in the process of evaluating and improving the learning media. The opportunity to listen to the opinions and experiences of students and teachers is considered a productive and effective collaboration and encourages continuous improvement.

The results at the implementation stage were prompted by the tests given to teachers and students at SMP Negeri 31 Surabaya. The following are the results of teachers and students' assessments regarding the stop motion-based Macromedia Flash:

Table 3
Teacher's Assessment of Stop Motion-Based Macromedia Flash Learning Media

Aspect	Total Items	Gr 1	Gr 2	Result Average	Percentage
Material	6	18	20	19	19%
Language	3	19	18	18,5	19%
Presentation	3	18	19	18,5	19%
Visual Display	5	19	18	18,5	19%
Learning Design	5	20	18	19	19%
Total	22	94	93	94	94%

Source: primary data of research, 2 Agustus 2023

The assessment made by two teachers resulted in the score of 94 and 93, respectively. Meanwhile, the maximum score obtained was 90. The result can be analyzed by using the following formula:

$$\text{Average} = \frac{Total\ score\ obtained}{Teacher's\ data} = \frac{187}{2} = 94$$

$$\text{Practical Percentage} = \frac{Average\ score}{Maximum\ total\ score} \text{ X } 100 = \frac{94}{90} \text{ X } 100 = 104\ \%$$

Based on the above analysis, it shows that the stop motion-based Macromedia Flash learning media qualifies as "Very Practical", thus, the continuous use of this platform for social studies learning is imperative to instill students' nautical character. The assessment Student's Assessment of Stop Motion Based Macromedia Flash Learning Media made by the 35 students has resulted in a total score of 1945. The result can be analyzed by using the following formula:

$$\text{Average} = \frac{\sum Questionaire\ data\ score}{Total\ data} = \frac{1945}{35} = 55, 57$$

$$\text{Percentage} = \frac{Average\ score}{Maximum\ total\ score} \text{ X } 100\%$$

$$\text{Percentage} = \frac{55,57}{92} \text{ X } 100\% = 60, 4\%$$

The assessment Student's Assessment of Stop Motion Based Macromedia Flash Learning Media made by the 35 students has resulted in the total score of 1945 seen in Table 4.

Table 4
Student's Assessment of Stop Motion-Based Macromedia Flash Learning *Media*

Question	Score
The material contained in the stop motion-based Macromedia Flash is understandable	95
The material contained in the stop motion-based Macromedia Flash is presented following students' thinking abilities	95
The stop motion-based Macromedia Flash learning media is presented systematically	89
The stop motion-based Macromedia Flash learning media could develop student's knowledge	95
The stop motion-based Macromedia Flash learning media could strengthen students' nautical character	95
Spelling of the stop motion-based Macromedia Flash learning media is understandable	89
The presented material uses simple and communicative language	90
The language used is derived from daily language	89

Font used in the stop motion-based Macromedia Flash learning media is clear	89
The stop motion-based Macromedia Flash learning media facilitates students to independently access information	95
The stop motion-based Macromedia Flash learning media helps students with the storytelling-based learning method	95
Cover of the stop motion-based Macromedia Flash learning media illustrates the material content	92
Images of the stop motion-based Macromedia Flash learning media are displayed	89
Images display and text written on the stop motion-based Macromedia Flash learning media are well-arranged	92
The distance between balloon panels on the stop motion-based Macromedia flash media is equal	89
The stop motion-based Macromedia Flash learning media has attractive color combinations	92
Material presented on the stop motion-based Macromedia Flash learning media is an outcome-based learning with an interesting storyline	92
The stop motion-based Macromedia Flash learning media could instill student's learning motivation	95
Material of the stop motion-based Macromedia Flash learning media could develop student's literacy skills	95
The stop motion-based Macromedia Flash learning media could ease the learning process	95
The stop motion-based Macromedia Flash learning media is presented with appropriate and adjustable size	92
Total	1945

Source: primary data of research, 2 Agustus 2023

Based on the above analysis, it shows that the effectiveness, practicality, and feasibility of the stop motion-based Macromedia Flash media has a "High" qualification with a score of 60.4%, thus, it can be concluded that the development of social studies is as an instillation of students' nautical character.

In the last stage, evaluation plays a key role in developing learning media, especially in using the stop motion-based Macromedia Flash. This evaluation is not only the final step but also the foundation for further improvement and development. Through evaluation, developers can assess whether the Macromedia Flash media meets the designated learning objectives. Furthermore, the evaluation also provides insights into the effectiveness of media in conveying information, measuring students' level of understanding, and building their learning motivation. In this research, several evaluations were also given by the validator's team, teachers, and students. They are as follows:

Table 5
Evaluation of Stop Motion-Based Macromedia Flash Learning Media

Evaluator	Description
Material Expert	The Macromedia Flash-based learning media is implemented in several schools, which shows its effective result of practicality throughout urban and rural-based junior high schools. Furthermore, the Macromedia Flash-based learning media can also be in both social studies and other learning processes.

Media Expert	The media is considered effective since the material is comprehensively presented. However, the design and smoothness of the stop motion media need to be improved because the application still has bugs/stumbles.
Teacher 1	The material in the application follows the learning curriculum. Students become increasingly aware of the marine natural resources in Surabaya.
Teacher 2	In the application, maritime resource material has been explained, but the potential of each region needs to be explained specifically.
Students	The application has been sophisticated, yet it can be developed further through the App Store system, thus, it can be utilized by distinguished devices.

Source: primary data of research, 2 Agustus 2023

The suggestions and comments presented in Table 5 are used by our team as the evaluation material to better develop the Macromedia Flash learning media, which can be implemented in urban and rural-based junior high schools. The practicality of this media is visible throughout the social studies learning environment and other subjects. The use of this media also involves media experts to optimize all aspects of the media.

Conclusion

The use of stop motion-based Macromedia Flash in learning innovation allows students to be actively involved, strengthen their nautical character, and follow the Research & Development (R&D) approach with the ADDIE model, which involves Analysis, Design, Development, Implementation, and Evaluation. After going through various stages, the media and material validation shows that the stop motion-based Macromedia Flash has a "decent" qualification with a score of 83%. Moreover, in terms of practicality and efficiency, the learning media platform has reached scores of 104% (very feasible) and 60.4 % (high), respectively. Furthermore, the stop motion-based Macromedia Flash also strengthens the theory of constructivism by proving that the activeness in social studies learning increases, helping students develop the nautical character.

Gratitude

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