Received : 22 February 2023
Revised : 13 April 2023
Accepted : 15 April 2023
Online : 24 April 2023
Published: 30 June 2023

DOI: doi.org/10.21009/1.09113

Development of *Animaker*-Based Animated Video and Team Quiz Activities to Improve Mastery of Static Fluid Concepts

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Abstract

This study aims to discover the characteristics of Animaker-based animated video, explore opportunities, measure feasibility and effectiveness, and analyze students' responses to Animaker-based animated video and quiz team activities in improving the static fluid concept's mastery. The method used in this research is R&D with the ADDIE development model. The result of this research shows that Animaker-based animated video and quiz team activities have the opportunity to improve the mastery of static fluid concepts. The characteristics of Animaker-based animated video media are shown in each part of the video, such as a teacher's animation, process illustration, case study, practice questions, and simulation examples. The average validation score from three media experts is 87.1%, meaning the Animaker-based animated video is highly feasible. Animaker-based animated video media and team activities quizzes effectively improve the mastery of static fluid concepts. Student responses get a percentage of 82% in the very good category.

Keywords: learning media, animation, team quiz, static fluid

INTRODUCTION

The teaching and learning process Are activities carried out an activity carried out by the teacher to provide learning to students, In order to acquire knowledge, skills, and have good attitudes. To support the success of the learning process, learning media are needed to help easily convey Subjects messages from teachers to students. Maharani (2021) explains that learning media iessential to the learning process. The use of instructional media is expected to always provide good feedback from students. Creating an innovative learning media can organize an active, creative and fun learning atmosphere (Putri 2020). Apart from the media, Another important component in learning process is the learning methods. In the opinion of Fadilah (2019) the learning method can be defined as the method used by the teacher to be able to achieve learning objectives. Various learning methods can be used in the teaching and learning process. In choosing a learning method, the right strategy is needed So that it suits the character of the topic being taught. Appropriate learning methods applied in learning are

methods that can arouse enthusiasm and motivation for student learning so that students can actively participate in following the learning process.

The rapid development of the education system in Indonesia has led to greater challenges in the 21st-century educators face. According to Latif (2020) teachers as professional educators must be able to adapt to changing times. Teachers are expected to be able to facilitate 21st-century skills; 1) learning and innovation skills which include critical thinking skills and problem-solving, communication, and collaboration, as well as creativity and innovation. 2) digital literacy skills include information, media, and ICT literacy. 3) career and life skills which include initiative, social and culture, flexibility and adaptability, productivity and accountability, as well as leadership and responsibility (Trilling & Fadel 2009). Therefore, the learning media used in the learning process must also follow the skills of 21st-century technology-based learning media. Apart from the media, the method used must also facilitate 4C skills which is critical, creative, communicative, or collaborative thinking skills. These provisions apply to all subjects at school, including physics.

Static fluid is one of the topics studied in the odd semester of second-grade senior high school (SMA), namely static fluid. This topic talks about the main law of hydrostatics, hydrostatic pressure, Pascal's law, Archimedes' law, meniscus, capillary phenomena, viscosity and Stokes' law. (Yusrizal 2016) explains that static fluid material has the characteristics of conceptual analysis which allows students to associate physics concepts with natural phenomena so that students are expected to think and the reason so that they can apply them in everyday life.

Based on the results of an interview with one of the Physics teachers at Senior High School (SMAN) 1 Ajibarang, many students found it difficult to control their focus to be able to master physics concepts, especially on static fluid material He also added that this can happen because learning media that has visualization was not used, so students find it difficult to imagine the concept of static fluid when applied to problems related to everyday life. The conventional learning method, the lecture method, was still the main method used in the learning process. Based on preliminary studies of the static fluid concept test trials for grade XI students of Senior High School (SMAN) 1 Ajibarang, it is known that the average score of students who are still below the Minimum Completeness Criteria (KKM) is 54. This is in line with the results of research conducted by (Puspita, Sutopo & Yuliati 2019), which states only 40% of the student population that able to understand the concept of static fluids. The data above indicate that understanding the static fluid concept is not optimal, and the media and methods used do not facilitate 21st-century skills.

Based on these problems, it is necessary to have a learning media accompanied by learning methods to improve students' mastery of concepts. Animated video media is one form of interesting learning media with visualization abilities. Hapsari et al. (2021) state that animated videos can make students interested and motivated in learning because they combine moving audio-visual media. Animated videos can be developed through online platforms such as canva, powton, animaker, etc. Animaker is an online animation creation software with a variety of features provided such as dubbing, backgrounds, text, audio, characters and transitions (Mashuri et al. 2020). Research conducted by Ika (2021) has proven that Animaker-based animation media is appropriate for use in learning. The use of animation media has followed the development of the 21st century by using digital technology-based media.

One of the learning methods that can accompany the application of Animaker-based animated video media to increase students' mastery of concepts is the team quiz method. Ulfiati (2019) states that using the team quiz method can improve student learning outcomes. Team quiz learning is an active learning method developed by Silberman that divides students into three teams. Each student in the team is responsible for preparing quizzes and answers, and so are the other students on other Teams. Competition between teams encourages students to keep trying to learn with high motivation to get higher scores than other teams. It is hoped that the team quiz learning method can improve students' mastery of concepts in the static fluid subject in a more fun way. The team quiz method also has the potential to train collaboration between teams, which means it also supports 21st-century skills, namely collaboration. Research conducted by Putri (2020) has also proven that the team quiz method increases cooperation, discusses, asks questions, argues, and exchanges information, and the main thing is increases learning activity and achievement.

Based on the background above, the research to be conducted focuses on developing Animaker-based animation videos and team quiz activities to improve mastery of static fluid concepts. The advantage of this research is the development of an Animaker-based animated video implemented using the team quiz method. This study aims to discover the characteristics of animaker-based animated video, Explore opportunities, measure feasibility and effectiveness, and analyze students' responses to Animaker-based animated video and quiz team activities in improving static fluid concept mastery.

METHODS

This study uses the Research and development (R&D) method with the ADDIE development model consisting of Analysis, Design, Development, Implementation, and Evaluation. Some of the stages carried out in this research are as follows:

Analysis

The first stage of this research is analysis. At this stage, the researcher analyzed students' needs, conceptual mastery abilities on static fluid, and The curriculum used in schools. This preliminary research was performed by interviewing physics teachers, observing classroom learning, and testing static fluid material questions on students and literature studies. The results of the analysis are as follows:

Results of Student Needs Analysis

In analyzing the needs of these students, researchers conducted interviews and observed learning activities in second-grade Senior High School (SMAN) 1 Ajibarang. This stage is carried out to determine the problems faced by students in the classroom. Based on the results of observations and interviews that have been conducted, problems were found related to the lack of learning media used in class, and also, the learning methods used still use conventional methods (lectures). So that in learning it appears that students feel bored and less interested in learning. The lack of interesting methods and the absence of modern media help reduce student interest and motivation during the learning process. Therefore, the development of modern media that utilize technology to help implement more interesting learning methods can be a solution for students and teachers.

Results of Curriculum Analysis Used in Senior High School (SMAN) 1 Ajibarang

At this stage the researcher analyzed the curriculum used by Senior High School (SMAN) 1 Ajibarang. Based on the interview results, the curriculum applied at Senior High School (SMAN) 1 Ajibarang is the independent curriculum and the 2013 curriculum. Class X uses the independent curriculum while classes XI and XII use the 2013 curriculum.

Analysis of Students' Mastery of Concepts in Physics Subjects

Analysis of Physics' concept mastery was carried out through literature studies and test questions at the pre-research stage in second grade students for the 2021/2022 academic year. Test question on class XI Senior High School (SMAN) 1 Ajibarang (SMANA) static fluid material with 50 students in the form of multiple choice questions totaling 12 numbers and description questions totaling 4 numbers obtained the highest score of 81, the lowest score of 0, and the average value of 54. The Minimum Completeness Criteria (MCC) for physics subjects is 70, so in terms of the average student results it is still below the KKM.

Literature study based on previous research conducted by Indriana (2019), 33.2% of students have wrong concepts, 26.8% of students cannot be responsible for their choices, and 40% of students understand concepts. In line with the results of research conducted by Zulda (2020) it was difficult for students to master the concept of hydrostatic pressure, Pascal's law, and compressive forces in terms of applying the principle of static fluid in everyday life. Based on the results of this analysis, it is necessary to increase mastery of Static fluid concept.

Design

The second stage is designing. In the learning media design stage, things to do are the first thing to do is determine the title of the media, the indicators to be achieved, the parts of the media to be developed, the video template, prepare the audio, images, material needed, and compile the storyboard. In this study, the media development is Animaker-based video animation in the team quiz method of static fluid. The indicators to be achieved in the development of Animaker-based animated video include concept mastery, namely remembering, understanding, applying, analyzing, evaluating, and creating, referring to Bloom's taxonomy.

The design of the media parts to be developed include the opening, title, materials, case studies (examples of applying concepts in everyday life), examples of questions, examples of simulations (hydrostatic pressure), summaries, team quiz methods, and closing. All of these sections are described in the form of a storyboard so that the contents of each scene are clear. Then for the purposes of additional images, audio, and video in this study, other Applications such as Canva, Youcut, and PhET will be utilized.

Development

The third stage is the development of learning media based on the design that has been made. There are several stages carried out in developing Animaker-based animated video, namely making animated video products using the Animaker application, the next stage is reviewing the products that have been made by validating learning media by experts. In this study, there were three experts involved, namely two physics teachers and one physics lecturer at FMIPA UNNES, who would validate the feasibility of Animaker-based animated video. In addition, at this stage, a small-scale trial was carried out on students who had studied static fluid subjects. Expert validation instruments and small-scale student trials were made in the form of a Likert scale questionnaire. The final stage is to improve the learning media according to suggestions from experts as well as the results of small-scale trials. Media feasibility analysis by experts using the equation according to Aiken (1985) is as follows:

$$\mathrm{V} = \frac{\sum s}{n(c-1)} \tag{1}$$

Information:
$s = r - l_o$
l_o: The lowest validity rating score
c : The highest validity rating score
r : The score given by the assessor

The result of calculation can be interpreted based on the validity criteria Arikunto (2006) presented in TABLE 1.

TABLE 1. Expert Validity Criteria

Validity Results	Validity Result (%)	Validity Criteria
$\mathbf{0.80 < V \leq 1.00}$	$80 < V \leq 100$	Very high
$\mathbf{0.60 < V \leq 0.80}$	$60 < V \leq 80$	High
$\mathbf{0.40 < V \leq 0.60}$	$40 < V \leq 60$	Enough
$\mathbf{0.20 < V \leq 0.40}$	$20 < V \leq 40$	Low
$\mathbf{0.00 < V \leq 0.20}$	$00 < V \leq 20$	Very low

Implementation

The fourth stage is the implementation of an Animaker-based animated video in the static fluid learning process at Senior High School (SMAN) 1 Ajibarang. The implementation of animated video media was carried out in two XI MIPA classes with a total of 72 students. Animaker-based animated video media and team quiz activities were implemented at Senior High School (SMAN) 1 Ajibarang for four meetings. The first meeting was a pretest activity to find out students' initial abilities, the

second & third meetings were learning activities using Animaker-based animated video media and team quiz activities, the fourth meeting was a post-test activity to find out changes in students' mastery of concepts after learning using animated video media. The students' pretest and post-test results will be analyzed to determine whether there is an increase in the static fluid concept in terms of mastery of the cognitive domain concepts according to Bloom's Taxonomy using the N-Gain average test analysis. The analysis of increasing mastery of concepts using the N-Gain equation is as follows:

$$\langle g \rangle = \frac{SkorPostest - SkorPretest}{Skor\ maksimal - SkorPretest} \quad (2)$$

Information :
$\langle g \rangle$: Average score normalized gain

The results of N-Gain calculations can be interpreted based on the criteria Arifin et al. (2020) presented in TABLE 2.

TABLE 2. N-Gain Score Interpretation

Mark$\langle g \rangle$	Criteria
$\mathbf{-1.00 < \langle g \rangle < 0.00}$	Decrease
$\langle \boldsymbol{g} \rangle$ = 0.00	Stable
$\mathbf{0.00 < \langle g \rangle < 0.30}$	Low
$\mathbf{0.30 < \langle g \rangle < 0.70}$	Middle
$\mathbf{0.70 < \langle g \rangle < 1.00}$	High

In addition, at the end of the learning, students also fill in the student response questionnaire related to Animaker-based animated video media with the *team quiz* method applied during learning. The data analyzed on student responses to animated video learning media and quiz team activities were the results of a questionnaire to students. In this study, the results of student response questionnaires used a Likert scale with a scale of 1 to 4 and were then analyzed using the following equation:

$$P = \frac{f}{N} x100 \quad (3)$$

Information:
P : Number Percentage
f : The total score of data collection results
N : Maximum Score
Based on the results of these percentages, the eligibility of the media can be categorized based on the criteria for the results of the percentage of student responses according to Akbar (2013) presented in TABLE 3.

TABLE 3. Criteria Results Percentage of Student Response

Percentage (%)	Criteria
$\mathbf{76\% \leq P \leq 100}$	Very Good
$\mathbf{51\% \leq P \leq 75}$	Good
$\mathbf{26\% \leq P < 50}$	Enough
$\mathbf{0\% < P < 25}$	Low

Evaluation

The fifth stage is the evaluation stage. After the implementation stage, an Animaker-based animated video needs to be evaluated. At this evaluation stage, a final revision of the product was carried out based on the students' suggestions, input, and post-test results during the implementation stage.

RESULTS AND DISCUSSION

Opportunities of Animaker-Based Animation Video and Team Quiz Activities to Improve Mastery of Static Fluid Concepts.

The first stage of developing this animated video media product is to do the analysis. There are several analyzes carried out, such as curriculum analysis, analysis of students' ability to master static fluid concepts and analysis of students' needs. Based on curriculum analysis and analysis of static fluid concept mastery, a problem is obtained where the mastery of static fluid concepts average value of only 54 is still low. Several factors contributed are the learning media used are not based on modern technology, which is able to provide good visualization of physics concepts, and the method used is conventional methods such as lectures that have not been facilitating 21st-century skills are the 4C skills. So to overcome this problem, we need a learning media that has visualization capabilities and is based on modern technology. In addition, when learning media is used, it is necessary to develop strategies by choosing interesting methods so that students can play an active role during learning as well as a place to facilitate 4C skills. In physics materials such as static fluids, they have basic competence (BC) in the realm of knowledge, namely applying the laws of static fluids in everyday life. This static fluid material has a conceptual analysis that allows students to associate physics concepts with natural phenomena so students are expected to be able to think and reason in their applications in everyday life (Yusrizal 2016).

One of the learning media that has visualization abilities is learning media in the form of animated videos. Video media is a learning medium that contains learning messages displayed through video shows (Nurmalasari et al. 2016). And animation is one of the technological developments that can make it easier for teachers to convey material concepts more concisely and clearly (Rizqi, Parmin & Nurhayati 2013). According to Agustina et al. (2018)animated video is a tool to support the learning process in the form of life-like moving images. The advantage of animated video media compared to other media is that it has the ability to visualize material that students cannot see or imagine, animated video media can provide a detailed view of a process or event, and has the ability to make abstract objects or materials clearer (Sundayana 2016). So that the animated video media is one of the media that can combine audio and visual media to attract students' attention, show objects in detail, and help students more easily understand physics concepts, especially static fluids.

As long as the learning takes place in addition to the media, so that learning goes well and is fun, a fun learning method is also needed. There are several methods that can be used during learning according to Helmiati (2012) namely lectures, question and answer, discussions, demonstrations, experiments, simulations, field trips, and group quizzes (team quiz). The learning method that is still often used at Senior High School (SMAN) 1 Ajibarang is the lecture method. A method that has never been used during physics learning at Senior High School (SMAN) 1 Ajibarang is the team quiz method. Even though this method can facilitate critical thinking skills, creative, collaborative, and communicative. The team quiz method is a combination of the lecture method and the group quiz method which can improve learning. With the team quiz method, students will be actively involved in learning by asking and answering activities (Dalvi 2006) . So with some of these advantages with the team quiz method it is hoped that it can help students to improve their mastery of the static fluid concept with 4C skills.

It was concluded based on the explanation above that there are opportunities in the development of animaker-based animated video media and quiz team activities in an effort to increase mastery of the physics concept of static fluid material. In line with the research conducted by Arianti et al. (2020) that learning using video animation media fosters student learning activities quite well, obtaining student responses in good categories causes students' conceptual mastery of the material to increase and there is an increase in learning outcomes in the high category. Animated video media can improve the learning atmosphere and learning experience for children in a fun way because of the attractive video packaging. The attractiveness of videos can motivate students and have an impact on increasing students' conceptual mastery of a material (Dewi et al. 2021). With this opportunity, an animaker-based animated video media was developed which was implemented using the quiz team activity on static fluid material.

Feature of Animaker-Based Animated Video Media

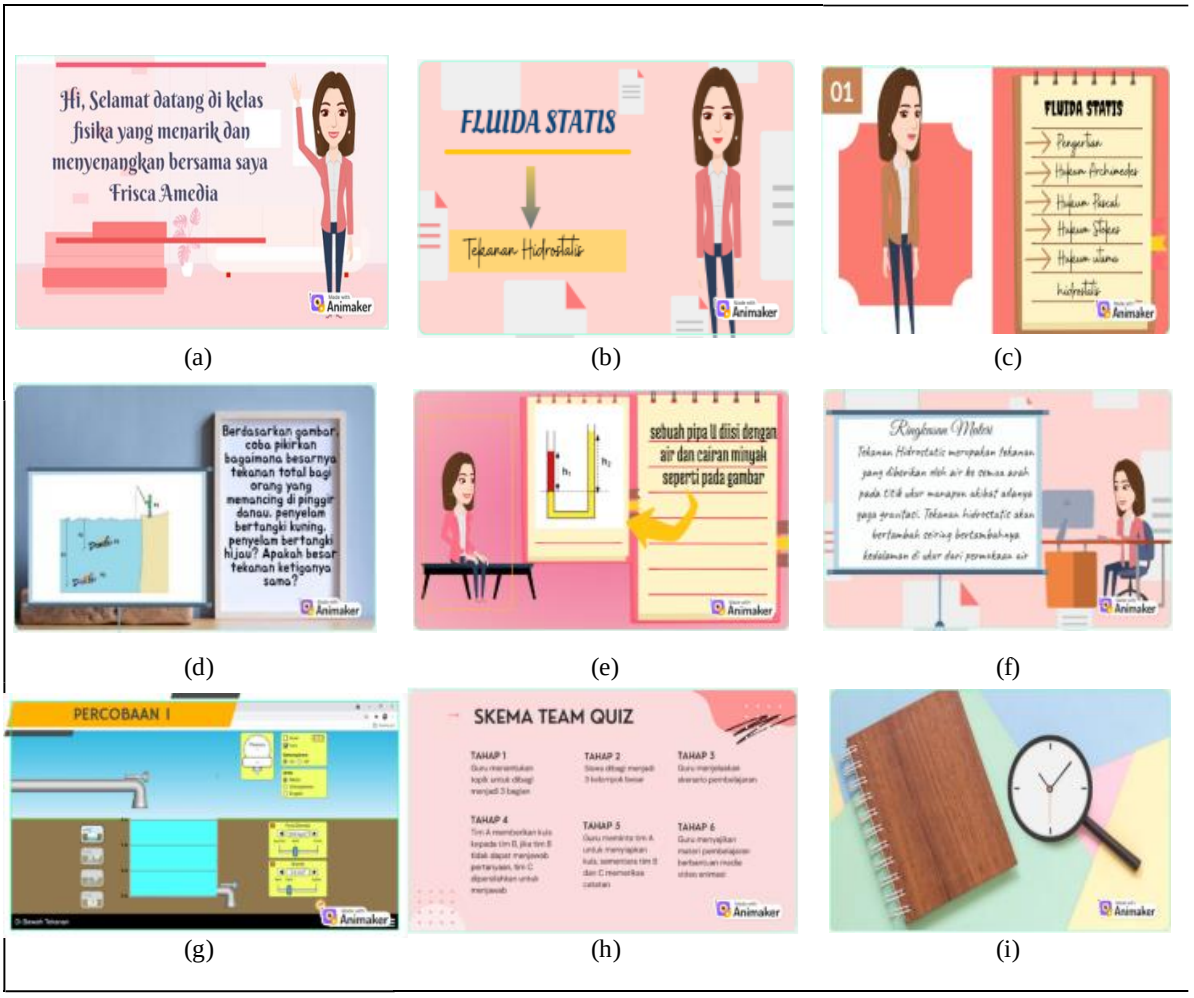

FIGURE 1. (a) Opening Section (b) Title Section (c) Material Section (d) Case Study (e) Practice Questions (f) Material Summary (g) Simulation (h) Team Quiz Scheme (i) Closing (Image Source: Media Development Results)

The video is made in sequence according to the storyboard from the opening part to the closing part. Based on these sections, this animated video media is broken down into 22 scenes with a video duration of 22 minutes 23 seconds. The feature of animaker-based animated video media are reflected in each part of the video as shown in FIGURE 1. Based on FIGURE 1 above, that in general the characteristics of animaker-based animated video media include: there is an animation of a teacher filling in the lesson with various activities and expressions, presenting several animations to explain an event which is the application of the static fluid concept, presenting several images illustrations that support material explanations, display case studies, display sample questions, present video examples of simulations using the PhET application regarding hydrostatic pressure along with explanations, display the stages of the quiz team activity , in terms of sound, it uses a lot of background music that has been provided by the animaker application for free and for animated voice actors the teacher uses two techniques. The characteristics of animaker-based animated videos are in line with the characteristics of animated videos in general according to Martha & Santoso (2019), such as the presence of characters and animation in the form of pedagogical agents which are anthropomorphic virtual characters such as tutors, moreover, the media developed also include a series of images that form a movement as a form of teacher interaction with students through moving images that resemble the actual situation (Alamsyah 2018).

Feasibility of Animaker-Based Animated Video Media on Static Fluid Material

After animaker-based animated video produced, the next activity is to review animaker-based animated video media through a process of expert validation and small-scale trials for students to determine its feasibility. In this study using media experts as validators with a total of 3 validators. The validation results of the three validators were analyzed using V-aikens trading to determine the average validity with the results presented in FIGURE 2.

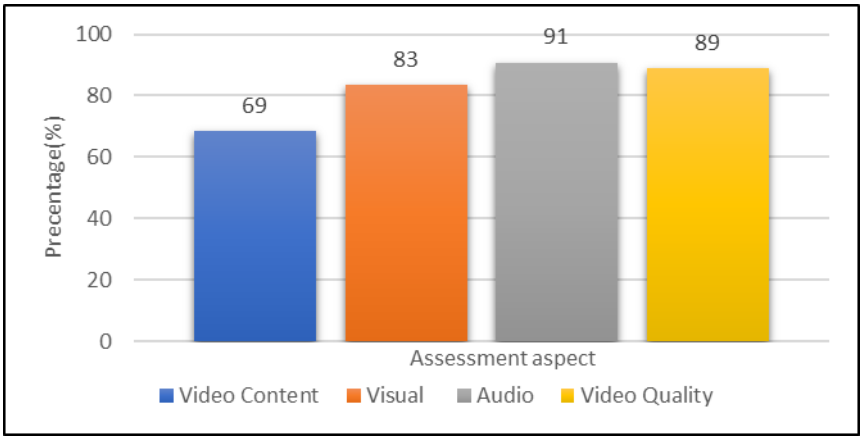

FIGURE 2. Diagram of Media Validation Analysis Results for Each Aspect (Image Source: Expert Validity Analysis Results)

Based on FIGURE 2 the feasibility of the video from the aspect of video content obtains a percentage of 69% with the high category, the feasibility of the video from the visual aspect obtains a percentage of 83% with the very high category, the feasibility of the video from the audio aspect obtains a percentage of 91%. in the very high category, and video feasibility in terms of video quality gets a percentage of 89% in the very high category. The average feasibility score of animaker-based animated video is 82% with a very high category.

The feasibility of the media is then reviewed with small-scale trials on students. Data for small-scale trials of students were obtained from an animaker-based feasibility questionnaire using a Likert scale which was then calculated to find the average. The results of the analysis are presented in FIGURE 3.

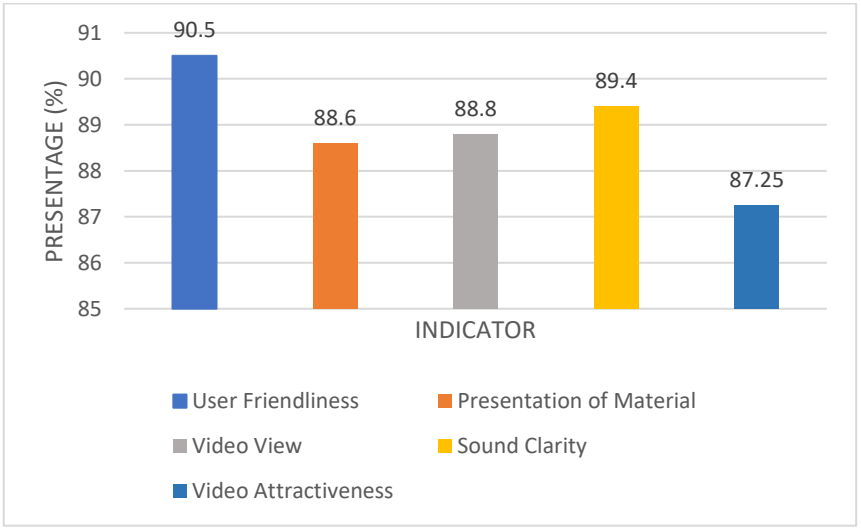

FIGURE 3. Diagram of the Results of the Media Feasibility Test for Class XII MIPA 6 (Image Source: Results of Research Data Analysis)

Based on the results on the small-scale trials in FIGURE 3, the feasibility of animaker-based animated video on the user friendliness indicator obtained an average percentage of 90.5%, the material presentation indicator was 88.6%, the video display indicator was 88.8%, the indicator sound clarity 89.4%, and video attractiveness indicator 87.25. So that the overall media feasibility percentage is 88.3% included in the very good category This is in line with research conducted by Jannah (2018) that the validity of animated video media products from the results of tests of material experts and media experts obtained a validity of 86% in the very good category and based on small-scale trials obtained the practicality of animated videos of 87.15%. Included in the very good category, animated video media is very suitable for learning as a medium for delivering material.

In the validation stage by experts and small-scale trials, the media is also equipped with qualitative data in the form of suggestions that will be considered for improving Animaker-based animated video media. The media expert from lectures suggested that coloring in several scenes that did not match the video theme and the use of background music in scenes that were not soft enough, replacing them with classical music, was suggested. Another media expert teacher added that selecting a font type that is not familiar to use and there is a font size that is too small/large, besides that the teacher suggests adding a description of the material in several sections, such as Archimedes' law accompanied by illustrations that support the explanation of the material. Students also gave suggestions about the animated sound that is not clear, and during use to anticipate a weak network, the video can be downloaded first. Based on the results of the media feasibility validation by experts and small-scale trials on students who have been presented, it can be concluded that Animaker-based animated video media is very suitable for use in static fluid learning by making improvements in several parts according to the suggestions given by the expert team and student.

The Effectiveness of Animaker-Based Animated Video Media and Team Quiz Activities to Improve Mastery of Static Fluid Concepts

TABLE 4. Results of N-Gain Test Analysis of Class XI MIPA 1 and XI MIPA 2

Class	Score Pretest Postest		N-Gain	N-Gain (%)	Kriteria
	Pretest	Post-test			
XI MIPA 1	22.36	73.08	0.65	65	Middle
XI MIPA 2	22.75	78.86	0.73	73	High

The overall results of the N-Gain Test Analysis are presented in TABLE 4. Based on TABLE 4, the results of the N-Gain for class XI MIPA 1 shows that there was an increase in student learning outcomes which indicated by the N-Gain of 0.65 with moderate improvement criteria. Meanwhile for class XI MIPA 2 there was also an increase in student learning outcomes, with high improvement criteria indicated by an N-Gain of 0.73.

Improved mastery of concepts for each indicator based on the results of the N-Gain test are as follows: Remembering indicator (C1), understanding indicator (C2), applying indicator (C3), analyzing indicators (C4), evaluating indicators (C5), and creating indicator (C6). The measured conceptual mastery indicators are presented in TABLE 5.

TABLE 5. Mapping of Concept Mastery Indicators

Indicator	Cognitive Realm
Able to mention the application of Pascal's law in everyday life	C1
Be able to define the concept of Archimedes' law	C1
Be able to give examples of capillarity symptoms in everyday life	C2
Be able to deduce the factors that influence Archimedes' law	C2
Able to calculate force using Pascal's principle	C3
Able to calculate the viscosity coefficient using Stokes law	C3
Able to analyze the amount of pressure in each position	C4
Able to analyze the correct statement regarding the application of hydrostatic pressure law	C4
Be able to categorize Pascal's law phenomena	C5
Able to categorize the largest density by applying Archimedes' law.	C5
Able to plan experiments related to the application of the main law of hydrostatics	C6

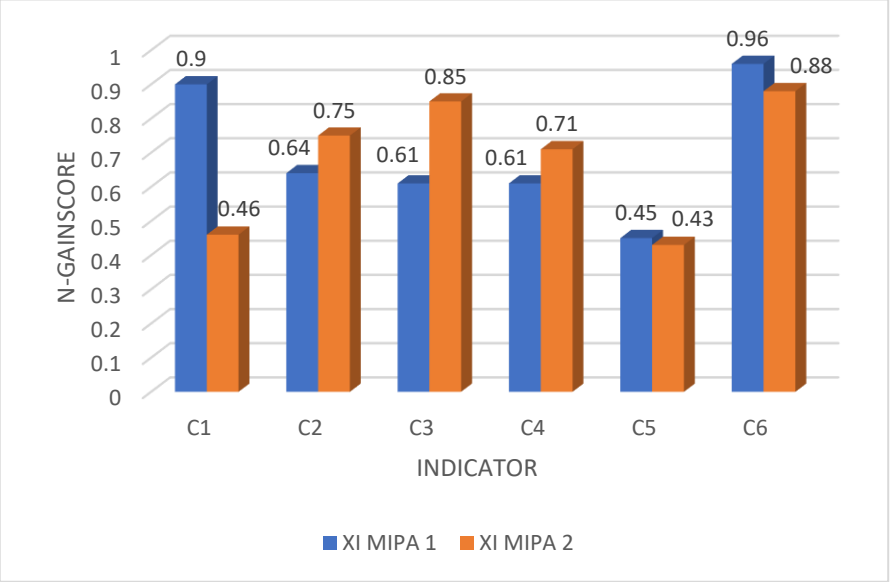

FIGURE 4. N-Gain Test Diagram for Each Indicator in Class XI MIPA 1 and XI MIPA 2 (Image source: Results of Research Data Analysis)

The results of the N-Gain test analysis for each indicator of mastery of the concept are presented in FIGURE 4. Based on FIGURE 4, information was obtained that for each indicator in the two classes, all of them experienced an increase of the six indicators each class has 3 indicators that are superior compared to other classes. Class XI MIPA 1 excels in the indicators of remembering, evaluating and creating. Class XI MIPA 2 excels on indicators of understanding, applying, and analyzing.

It was concluded that the application of Animaker-based animated video media and the activities of the team quiz effectively increased the mastery of the static fluid concept as indicated by the achievement of indicators, namely: 1) The average post-test results in both classes were higher than the pretest results, 2) the classical completeness of the post-test results in both classes are higher than the pretest results, 3) the average value of the N-Gain score shows an increase in all indicators of mastery of the concept with moderate to high criteria (Sinambela 2022). After using the quiz team strategy, the differences in pretest and post-test results experienced by students were better, with an average score of 50.66 to 77.81 in the good category (Maharani et al. 2019). Research conducted by Ayuliandari & Sylvia (2022) explains that based on the effectiveness test results, the application of animated video media to learning is very good and effectively used in learning.

Student Responses to the Application of Animaker-Based Animation Video Media and Team Quiz Activities on Static Fluid Learning

Student responses are known based on the results of student response questionnaires using a Likert scale.

TABLE 6. Results of Student Response Analysis of Class XI MIPA 1 and XI MIPA 2

ANALYSIS	ANALYSIS RESULTS
The Number Of Students	72
Total Score	3542
Ideal Score	4320
Percentage (%)	82
Criteria	Very Good

The overall response of students in class XI MIPA 1 and XI MIPA 2 is presented in TABLE 6. Based on the table, the average response from 72 students explained the application of Animaker-based animated videos, and the quiz team activities were very good, with a percentage of 82%. Student responses were analyzed from every aspect, namely aspects of software, material, communication,

visuals, and the team quiz method. The results of the analysis of student responses for each aspect are presented in TABLE 7.

TABLE 7. Results of Student Response Analysis for Each Aspect of Assessment

No	Aspect	Total Score	Ideal Score	%	Criteria
1.	Software	995	1152	86.4	VG
2.	Material	775	864	89.7	VG
3.	Communication	762	864	88.1	VG
4.	Visual	769	864	89.0	VG
5.	Team Quiz Method	493	576	85.6	VG

Based on the table, the software aspect, Scored 86.4% and was categorized as very good. From the material aspect, the average percentage is 89.7% in the very good category, and from the communication aspect, the average percentage is obtained. of 88.1% in the very good category, from the visual aspect it obtained an average percentage of 89.0% in the very good category and from the aspect of the quiz team method it obtained a percentage of 85.6% in the very good category. So it can be concluded that from all aspects of the assessment, Animaker-based animated video media and quiz team activities received very good responses from students.

Based on the results of student responses, Animaker-based animated video and team quiz activities are very good for use in static fluid learning. In line with research conducted by Fauziyah et al. (2020) that students' responses during learning with animation in video form increase students' curiosity about the complete material, which is shown by students actively asking the teacher, the presence of teacher figures in the form of animations in the video makes students believe about the material being explained because it's like the teacher who is teaching is in the video and with the voice actor in the animated video it makes students comfortable watching the video.

CONCLUSION

Animaker-based animated video media and quiz team activities have the opportunity to improve the mastery of static fluid concepts. This is shown by the results of the analysis of students' needs for the use of learning media that can visualize physics concepts, such as animated videos and are supported by interesting learning methods by increasing student activity in class through various activities facilitate students' 4C skills.

The feature of Animaker-based animated video media is shown in each part of the video. From all parts of the video, in general, the characteristics of animaker-based animated video media consist of: 1) animation of a teacher filling in the lesson with various activities and expressions, 2) presenting several animations to explain an event which is the application of the concept of static fluid, 3) presenting several illustrative images that support material explanations, 4) display case studies that can increase student understanding accompanied by illustrated pictures and explanations of answers, 4) display sample questions and complete explanations accompanied by pictures, 5) present video examples of simulations using the PhET application regarding hydrostatic pressure along with explanations, 6) showing the stages of the quiz team's activities, 7) in terms of sound using a lot of background music that has been provided by the animaker application for free, 8) and for teacher animation voice actors using two techniques, namely dubbing researchers or animated teacher voices that have been provided by animaker app.

The feasibility of Animaker-based animated video media that was reviewed based on the average validation results of three media experts consisting of one physics lecturer and two physics teachers is 87.1% which means very high criteria. The feasibility of an Animaker-based animated video from a small-scale trial of grade XII MIPA 6 Senior High School (SMAN) 1 Ajibarang is 88.3%, with very good criteria. Based on the results of the validation by the team of experts and small-scale trials on students, it was found that Animaker-based animated video media is very feasible to use in learning static fluid physics.

Animaker-based animated video media and quiz team activities effectively improve the mastery of static fluid concepts. This is shown from the average results of the N-Gain test for all indicators of mastery of concepts consisting of the ability to remember (C1), the ability to understand (C2), the ability to apply (C3), the ability to analyze (C4), the ability to evaluate (C5), and the ability to create (C6) in two classes, namely class XI MIPA 1 and XI MIPA 2, has increased with the medium to high N-Gain test category.

Student responses to the application of Animaker-based animated video media and team quiz activities in static fluid learning in XI MIPA 1 and XI MIPA 2 classes obtained an average percentage of 82% with a very good category assessed from the aspects of software, material, communication, visuals, and team quiz method.

ACKNOWLEDGMENT

We would like to send our gratitude to LPPM Universitas Negeri Semarang for funding this research of Matching Grand Research Scheme 2023.

REFERENCES

Aiken, LR 1985, 'Three Coefficients for Analyzing the Reliability, and Validity of Ratings', *Educational and Psychological Measurement*, vol. 45, no. 1, pp. 131-142.

Alamsyah, Rizki 2018, 'Pengembangan Video Pembelajaran Kepenyiaran Materi Produksi Program Televisi Untuk Mahasiswa Teknologi Pendidikan Universitas Negeri Malang', *Jurnal Kajian Teknologi Pendidikan*, vol. 1, no. 3, pp. 229-236.

Arianti, R & Wicaksono, I 2020, Efektivitas Media Video Animasi Untuk Pembelajaran Pemanasan Global Terhadap Aktivitas Dan Hasil Belajar Siswa', *Jurnal Pendidikan Fisika*, vol. 5, no. 2, pp. 92-103.

Ayuliandari, F & Sylvia, I 2022, 'Efektivitas Media Video Animasi dalam Pembelajaran Sosiologi terhadap Peningkatan Pemahaman Materi Peserta Didik pada SMAN 12 Merangin', *Naradidik: Journal of Education and Pedagogy*, vol. 1, no. 2, pp. 113-117.

Dalvi 2006, 'Upaya Meningkatkan Keaktifan Belajar Siswa dalam pembelajaran Agama dengan Menggunakan Metode Pembelajaran Aktif Tipe Quiz Team', *Jurnal Guru*, vol. 3, no. 1.

Fadilah, RU 2019, 'Penerapan Model Pembelajaran Quiz Team Untuk Meningkatkan Hasil Belajar Ekonomi Peserta Didik Kelas XI IPS 2 Sman 8 Kediri Di Semester Ganjil Tahun Pelajaran 2018/2019', *Journal of Sharia Economics*, vol. 1, no. 2, pp. 146-164.

Fauziyah, E, Praherdhiono, H & Ulfa, S 2020, 'Efektivitas Penggunaan Video dengan Pengayaan Tokoh dan Animasi terhadap Pemahaman Konseptual Siswa', *JKTP: Jurnal Kajian Teknologi Pendidikan*, vol. 3, no. 4, pp. 448-455.

Hapsari, GPP & Zulherman, Z 2021, 'Pengembangan Media Video Animasi Berbasis Aplikasi Canva untuk Meningkatkan Motivasi dan Prestasi Belajar Siswa', *Jurnal Basicedu*, vol. 5, no. 4, pp. 2384-2394.

Helmiati, H & Ag, M 2012, 'Model Pembelajaran', Aswaja Pressindo.

Ika, M 2021, 'Pengembangan Media Animaker Materi Keliling Dan Luas Bangun Datar Menggunakan Kalkulator Di Kelas Iv Sd Ump', *EL-Muhbib: Jurnal Pemikiran Dan Penelitian Pendidikan Dasar*, vol. 5, no. 1, pp. 1-11.

Jannah, M 2018, 'Pengembangan Media Video Animasi Digestive System Pengembangan Media Video Animasi Digestive System Untuk Meningkatkan Hasil Belajar Siswa Mata Pelajaran Ipa Kelas V, *Jurnal Penelitian Pendidikan Guru Sekolah Dasar*, vol. 6, no. 2.

Latif, A 2020, 'Tantangan Guru dan Masalah di Era Digital', *Jurnal Ilmu Sosial dan Pendidikan*, vol. 4, no. 3, p. 614.

Maharani 2019, 'Peningkatan aktivitas dan hasil belajar tematik siswa melalui strategi pembelajaran team quiz dan media teka teki silang', *International Journal of Elementary Education*, vol. 3, no. 2, pp. 151-158.

Martha, ASD & Santoso, HB 2019, 'The Design And Impact Of The Pedagogical Agent: A Systematic Literature Review', *Journal of Educators Online*, vol. 16, no. 1.

Mashuri, DK 2020, 'Pengembangan Media Pembelajaran Video Animasi Materi Volume Bangun Ruang untuk SD Kelas V', *Jurnal Penelitian Pendidikan Guru Sekolah Dasar*, vol. 8, no. 5.

Puspita, WI, Sutopo, S & Yuliati, L 2019, 'Identifikasi penguasaan konsep fluida statis pada siswa', *Momentum: Physics Education Journal*, pp. 53-57.

Putri, DP 2020, 'Penggunaan Metode Pembelajaran Team Quiz Sebagai Upaya Meningkatkan Prestasi Belajar PKn', *Journal of Education Action Research*, vol. 4, no. 4, pp. 452-458.

Rizqi, A, Parmin, P & Nurhayati, S 2013, 'Pengembangan Modul IPA Terpadu Berkarakter Tema Pemanasan Global untuk Siswa SMP/MTs', *Unnes Science Education Journal*, vol. 2, no. 1.

Sundayana, R 2016, 'Media dan Alat Peraga Dalam Pembelajaran Matematika, untuk guru, calon guru, orang tua dan para pecinta matematika', Alfabeta, Bandung.

Trilling, B & Fadel, C 2009, '21st Century Skills: Learning for Life in Our Times', John Wiley & Sons.

Ulfiati, R 2019, 'Penerapan Model Pembelajaran Quiz Team Untuk Meningkatkan Hasil Belajar Ekonomi Peserta Didik Kelas Xi Ips 2 Sman 8 Kediri Di Semester Ganjil Tahun Pelajaran 2018/2019', *Journal of Sharia Economics*, vol. 1, no. 2.

Yusrizal, 2016, 'Analysis of difficulty level of physics national examination's questions', *Jurnal Pendidikan IPA Indonesia*, vol. 5, no. 1, pp. 140-149.