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Design of After Effects-Based 2D Animation Learning Media Using the Expository Learning Method in the Theory of Physical Education, Sports, and Health (PJOK) for 7th Grade Students at Japara Public Junior High School 1

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Abstract

This research aimed to develop Adobe After Effects-based 2D animation learning media for theoretical learning in Physical Education, Sports, and Health (Pendidikan Jasmani, Olahraga, dan Kesehatan / PJOK) among seventh-grade students at SMP Negeri 1 Japara. This study employed a Research and Development (R&D) method using the ADDIE development model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. The research subjects included one PJOK teacher as a material expert, one media expert, and seventh-grade students, consisting of five students in the small-scale trial and 20 students in the large-scale trial. Data were collected through observations, interviews, and questionnaires. The data were analyzed using descriptive quantitative analysis based on media feasibility percentages. The results showed that material expert validation obtained a score of 90%, categorized as Very Feasible, while media expert validation obtained a score of 72%, categorized as Feasible. The small-scale trial obtained a score of 78.08%, categorized as Feasible, whereas the large-scale trial obtained a score of 72.79%, also categorized as Feasible. Based on these results, the developed Adobe After Effects-based 2D animation learning media was categorized as Feasible to Very Feasible and was considered suitable for use as learning media for PJOK subjects among seventh-grade students at SMP Negeri 1 Japara.

INTRODUCTION

Education is a process that plays a strategic role in improving the quality of human resources. Through education, students are guided to develop their potential optimally in terms of knowledge, skills, attitudes, and character values. Quality education focuses not only on academic achievement but also on students' physical and mental well-being, enabling them to lead balanced and productive lives. Therefore, educational implementation must be systematically designed and supported by effective learning processes (Labone & Long, 2016; Oberle et al., 2016; Soicher et al., 2020; Spatıotı et al., 2023; Van Merriënboer et al., 2024).

One subject that plays an important role in achieving this goal is Physical Education, Sports, and Health (Pendidikan Jasmani, Olahraga, dan Kesehatan / PJOK). PJOK aims to develop physical fitness, motor skills, sportsmanship, and students' understanding of health maintenance and healthy lifestyles. In practice, PJOK learning does not only involve practical

activities but also includes theoretical learning designed to provide students with conceptual understanding (Anwar, 2025; Fikri & Sukmawati, 2026; Hidayat & Sujarwo, 2022; Putra et al., 2026; Yudesta, 2025).

Theoretical learning in PJOK plays an important role as a foundation for students before applying physical activities directly. Materials such as physical fitness, physical health, exercise safety, and healthy lifestyles require students to understand various concepts. However, PJOK theory learning is often perceived as less engaging because the presentation of materials tends to be monotonous and lacks the use of varied learning media (Afif & Komari, 2024; Aziz et al., 2026; Baan & Rejeki, 2026; Shinta et al., 2025; Taufiq et al., 2025).

Low student interest and motivation in learning PJOK theory remain challenges frequently encountered at the junior high school (Sekolah Menengah Pertama / SMP) level, particularly among seventh-grade students. Students at this developmental stage tend to respond better to visual and dynamic learning approaches. When theoretical materials are delivered only through teacher explanations without the support of engaging learning media, students may experience boredom, reduced concentration, and difficulties in understanding the presented concepts.

The expository learning method remains widely used by teachers to deliver theoretical materials, including in PJOK subjects. This method positions teachers as the primary source of information who deliver learning materials directly and systematically to students. The expository method provides advantages in terms of time efficiency and structured material delivery. However, when implemented without appropriate learning media, the learning process may become teacher-centered and reduce students' active involvement in learning.

The use of learning media provides an alternative solution to address these challenges. Learning media functions as a supporting tool that can clarify material delivery, increase learning attractiveness, and assist students in understanding concepts presented by teachers. Well-designed learning media can stimulate students' attention, enhance learning motivation, and support more effective learning processes.

The development of information and communication technology provides opportunities for educators to create digital-based learning media. One form of digital learning media is 2D animation, which can present information through engaging moving visuals that are easier to understand. The use of 2D animation in learning enables materials to be presented concisely, systematically, and according to the characteristics of junior high school students.

Technological developments have provided significant opportunities for educators to develop digital-based learning media. One example is 2D animation learning media, which presents information through attractive and comprehensible moving visuals. The use of 2D animation enables learning materials to be delivered concisely, systematically, and in accordance with the characteristics of junior high school students (Melati et al., 2023; Rahmawati, 2024). Previous studies have demonstrated the effectiveness of animation-based media in various learning contexts. Pratiwi (2025) found that animated video media improved learning outcomes in Indonesian language subjects among fourth-grade elementary school students. Henandar et al. (2024) reported that animated videos increased students' interest in learning football within physical education subjects. Similarly, Zahroh et al. (2025) concluded that audio-visual animation media was effective as a learning resource for elementary school students because it enabled abstract concepts to be presented more concretely.

Adobe After Effects is software that can be used to design 2D animation learning media. This software provides various features that support the creation of communicative and engaging visual animations, including object motion settings, animated text, and audio-visual integration. The use of Adobe After Effects in learning media development is expected to produce media that is not only visually appealing but also effective in delivering learning materials.

Based on initial observations at SMP Negeri 1 Japara, PJOK theory learning among seventh-grade students was still dominated by expository methods with limited use of learning media. Teachers generally delivered materials through oral explanations and textbooks without interactive visual media support. This condition resulted in lower student enthusiasm, difficulties in understanding PJOK theoretical materials, limited student engagement, and less optimal achievement of learning objectives.

Considering these conditions, innovation in PJOK theory learning is needed by integrating expository methods with engaging media aligned with technological developments. Adobe After Effects-based 2D animation learning media is expected to assist teachers in delivering PJOK theoretical materials more attractively, effectively, and comprehensibly. The novelty of this research lies in the integration of Adobe After Effects-based 2D animation with the expository learning method specifically for PJOK theoretical materials at the junior high school level, a combination that has not been extensively explored in previous studies.

This study aimed to: (1) develop Adobe After Effects-based 2D animation learning media to support expository learning in PJOK theory for seventh-grade students at SMP Negeri 1 Japara; (2) describe the implementation of the expository learning method through the developed media; and (3) determine the feasibility level of the developed media based on expert validation and student responses. Theoretically, this research contributes to the development of knowledge in learning media, particularly regarding the use of animation technology in physical education, and expands the application of the ADDIE development model within the context of PJOK learning. This study also enriches the literature on integrating expository learning methods with technology-based media. Practically, this research is expected to benefit: (a) teachers, by providing alternative media for delivering PJOK theory materials more effectively and engagingly; (b) students, by supporting easier understanding of learning materials and increasing learning motivation; (c) schools, by serving as a reference for utilizing technology to improve learning quality; and (d) future researchers, by providing a foundation for developing similar media with different materials or more interactive features.

METHOD

Development Model

This research employed the Research and Development (R&D) method to develop Adobe After Effects-based 2D animation learning media for supporting expository learning in seventh-grade PJOK at SMP Negeri 1 Japara. The development model used was ADDIE, consisting of five stages: Analysis, Design, Development, Implementation, and Evaluation. This model was selected due to its systematic process for developing and evaluating learning media according to educational needs.

Development Procedure

The development procedure follows the stages of ADDIE. The Analysis stage is carried out through observation and interviews with PJOK teachers to find out the learning conditions, problems, media needs, and characteristics of students. The Design stage includes the preparation of materials, learning objectives, flowcharts, storyboards, and visual media design. The Development stage is carried out by creating 2D animations using Adobe After Effects, including text processing, illustrations, animated movements, audio, and narrative according to the storyboard. The Implementation stage was carried out through validation by one material expert and one media expert, then a small-scale trial to 5 students and a large-scale trial to 20 grade VII students using a Likert scale questionnaire. The Evaluation stage is carried out by analyzing the results of validation and student responses to determine the level of media feasibility and making improvements if necessary.

Population and Sample

The research population is all grade VII students of SMP Negeri 1 Japara which totals 236 students. Sampling uses the purposive sampling technique, which is the selection of subjects based on considerations that are in accordance with the research objectives. The sample consisted of 1 PJOK teacher as a material expert, 1 media expert, 5 students for small-scale trials, and 20 students for large-scale trials. The trial was carried out to determine the response of students and the level of feasibility of the learning media developed.

Data Collection Techniques

Research data was collected through observation, interviews, and questionnaires. Observations were carried out to determine the learning conditions of PJOK and the use of media in the classroom. Interviews were conducted with PJOK teachers to obtain information about learning obstacles and media needs. Questionnaires were given to material experts, media members, and learners to assess media eligibility. The aspects assessed include material, media appearance, presentation, and attractiveness.

Data Analysis Techniques

The data was analyzed using quantitative descriptive analysis. The data from the questionnaire is calculated based on the number of scores obtained, the maximum score, and then converted into a percentage to determine the level of media eligibility. The eligibility criteria used are 81–100% very feasible, 61–80% feasible, 41–60% quite feasible, and ≤40% not feasible. The results of the analysis were used to determine the feasibility of Adobe After Effects-based 2D animation learning media as a support for class VII PJOK learning.

RESULTS AND DISCUSSION

This research is a research and development that uses the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model as a guideline in developing Adobe After Effects-based 2D animation learning media in the subject of Physical Education, Sports, and Health (PJOK) grade VII SMP Negeri 1 Japara. The five stages are carried out sequentially, starting from the identification of learning needs to the evaluation of the feasibility of the final product. A description of the results at each stage is presented in the following section to answer the research objectives that have been formulated.

Analysis Stage

The analysis stage began with direct observation at SMP Negeri 1 Japara to find out the learning conditions of PJOK theory in grade VII, the media used by teachers, and problems that arose during the learning process (Figure 4.1). The results of the observation show that PJOK theory learning is still carried out conventionally through the lecture method combined with simple questions and answers, with package books and whiteboards as the main source and media. The limited use of technology-based media causes some students to be less focused and less enthusiastic as learning progresses, especially because the material is still dominated by verbal explanations without adequate visualization, even though the characteristics of junior high school students tend to be more interested in learning that combines visual, color, animation, and illustration elements.



Figure 1. Documentation of Observation Activities
Source: Primary documentation, 2024

The findings of these observations were reinforced through interviews with PJOK subject teachers (Figure 2). The teacher explained that the simple lecture and discussion method is still used to deliver material gradually according to the package book, but it has not been fully able to attract the attention of students, especially in theoretical material. Animation-based media or learning videos are also still rarely used, so that students receive more information in the form of text and oral explanations. The results of the interviews are summarized in detail in Table 1.



Figure 2. Interview Documentation of PJOK Teacher Class VII SMPN 1 Japara
Source: Primary documentation, 2024

Table 1. PJOK Teacher Interview Results

No.	Questions	Teacher's Answer
1.	Media commonly used when teaching PJOK theory material	More often use package books and whiteboards; occasional PowerPoint if LCD projector is available.
2.	Is the media used enough to help students' understanding?	It is quite helpful, but it is not interesting so that some students are less focused.
3.	Obstacles experienced when teaching PJOK theory material	Students quickly get bored because the material is more delivered orally.
4.	Students' responses when participating in theory learning	Paying attention at first, but losing focus if learning lasts long enough.
5.	What kind of learning media is needed?	The media has an attractive visual appearance, is easy to understand, and explains the material through images/animations.
6.	Opinions on the delivery of material through animation media	It is excellent because it helps explain the material more clearly and increases the enthusiasm for learning.
7.	Characteristics of grade VII students when learning PJOK theory	Prefer learning accompanied by pictures, videos, or animations rather than texts/lectures.
8.	Interest in visual media (video/animation)	More interested because visual media is easier to understand.

Source: Interview results with PJOK teacher of SMP Negeri 1 Japara, 2024

Based on the results of observations and interviews, an analysis of media needs was carried out which showed that students need learning media that presents material in a more interesting, communicative, and easy-to-understand manner by combining visual, animation, text, audio, and illustration elements, according to the characteristics of grade VII junior high school students who tend to like interactive learning. The material analysis then establishes the Physical Fitness Activity material as the focus of development, because the concepts are easier to understand through illustration and visualization than mere verbal explanations. The material is prepared following the steps of the expository learning method, namely the delivery of learning objectives, the presentation of the material, the provision of examples, the affirmation of concepts, and the closing, so that the results of the analysis of this material become the basis

for the preparation of storyboards, flowcharts, and the media development process at the next stage.

Design Stage

The design stage is carried out after the analysis stage is completed, aiming that the learning media developed has a systematic, interesting, and consistent material delivery flow according to the learning objectives. The design begins with compiling learning materials referring to the achievements and learning objectives of PJOK grade VII according to the applicable curriculum at SMP Negeri 1 Japara, arranged systematically following the order of expository methods with simple and communicative language so that it is easy for students to understand, as summarized in Table 2.

Table 2. Learning Materials Used

No.	Material	Description
1	Introduction	Opening greetings, the title of the material "Physical Fitness", and the learning objectives.
2	Definition of Physical Fitness	Definition of physical fitness and comparison of fit and unfit body conditions.
3	Benefits of Physical Fitness	Various benefits of maintaining physical fitness for health and body condition.
4	Core Materials	Elements of physical fitness along with examples of movements according to the curriculum.
5	Application Examples	Examples of the application of a healthy lifestyle in daily life.
6	Closing	Invite to implement a healthy lifestyle, thank you, and video closing.

Source: Developed based on PJOK curriculum for grade VII SMP Negeri 1 Japara, 2024

The material is then translated into a flowchart as an overview of the media flow, starting from the opening display, the delivery of learning objectives, the presentation of the material, the provision of examples, the delivery of conclusions, to closing, so that the production process is more structured. The flowchart is then described in more detail into a storyboard that contains the order of the display, narrative, text, illustrations, and types of animation in each scene as the main production guidelines. The final storyboard is composed of 23 scenes which include the opening, map and learning objectives, understanding, benefits, elements, and how to maintain physical fitness and closing, as summarized in Table 3 and depicted in some scenes in Figure 3.

Table 3. Summary of Final Storyboards Used

Segments	Number of Scenes	Main Contents
Opening & Learning Map	5	An opening salute, an overview of daily activities, and an introduction to the topic.
Learning Objectives	1	The expected competence is achieved after learning.
Definition of Physical Fitness	3	Definition of physical fitness and its benefits for daily activities.
Benefits of Physical Fitness	2	Fitness benefits for heart, muscle, endurance, weight, and concentration.
Elements of Physical Fitness	6	Strength, durability, flexibility, speed, and balance.
How to Care & Cover	6	Healthy lifestyle, an invitation to stay active, and a video closure.

Source: Developed based on media design for PJOK learning, 2024



Figure 3. Example of a Scene on a Learning Media Storyboard
Source: Media design documentation, 2024

The visual design is carried out so that the media has an attractive, consistent appearance, and in accordance with the characteristics of grade VII junior high school students, including the selection of bright color palettes with sufficient contrast levels so that each element is clearly visible (Figure 4), typefaces with a good readability level (Figure 5), and illustrations and icons adapted to PJOK material (Figure 6). The media is designed with the principle of simplicity (simple design) so that the display is not too full of visual elements that can interfere with concentration, and each animation is made with a proportionate duration so that information can be received optimally. The overall design results in the form of materials, flowcharts, storyboards, and visual concepts are the final design that becomes a guideline at the Development stage so that the media produced is in accordance with the research objectives and needs of students.



Figure 4. Media Color Palette
Source: Media design documentation, 2024

Poppins Bold

ABCDEFGHIJKLMNOPQRSTUVWXYZ

Poppins Regular

ABCDEFGHIJKLMNOPQRSTUVWXYZ

Poppins Medium

ABCDEFGHIJKLMNOPQRSTUVWXYZ

Poppins Medium

ABCDEFGHIJKLMNOPQRSTUVWXYZ

Figure 5. Font Types Used

Source: Media design documentation, 2024



Figure 6. Example Assets and Illustrations

Source: Media design documentation, 2024

Development Stage

The development stage is carried out by producing all media components into a complete learning product using Adobe After Effects, which was chosen for its ability to produce dynamic animations and support the use of various visual effects. The production process begins with preparing assets in the form of illustrations, icons, characters, supporting images, backgrounds, and text arranged in the order of the storyboard (Figure 7), followed by making compositions and importing all assets into the project according to the sequence of the scenes that have been designed. Animations are made using keyframe techniques on objects and text, including fade in, position shifts, size changes, rotations, and inter-scene transition effects, so that the delivery of material becomes more interesting and able to retain students' attention during learning (Figure 8). The production stage ends with the addition of audio in the form of background music, sound effects, and narration; preview checks to ensure animations are in sync with the narrative without misplacing objects or text; and the rendering process using

Adobe Media Encoder in MP4 video format (H.264) so that the media can be played on various learning devices (Figure 9).

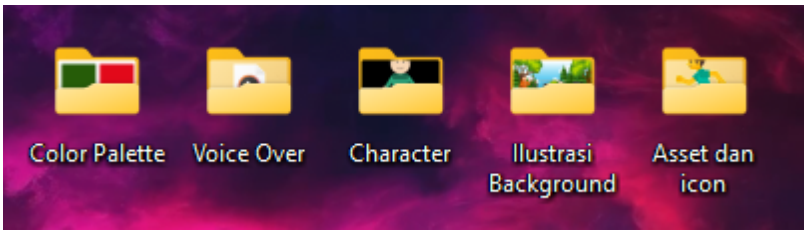


Figure 7. Media Asset Preparation

Source: Media development documentation, 2024

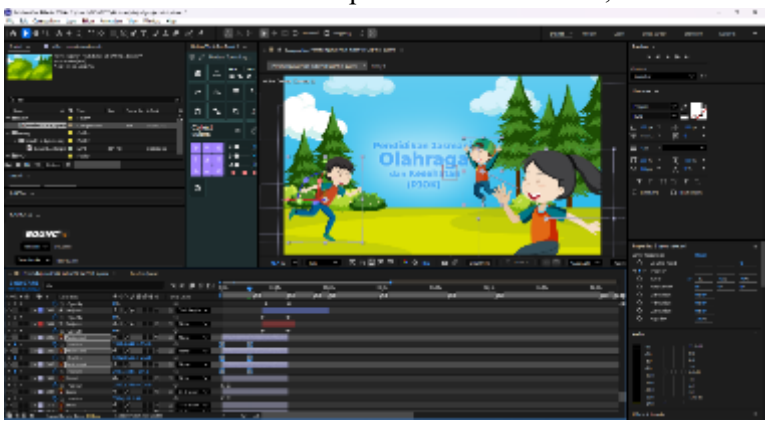


Figure 8. The Process of Creating Animations in Scenes

Source: Media development documentation, 2024

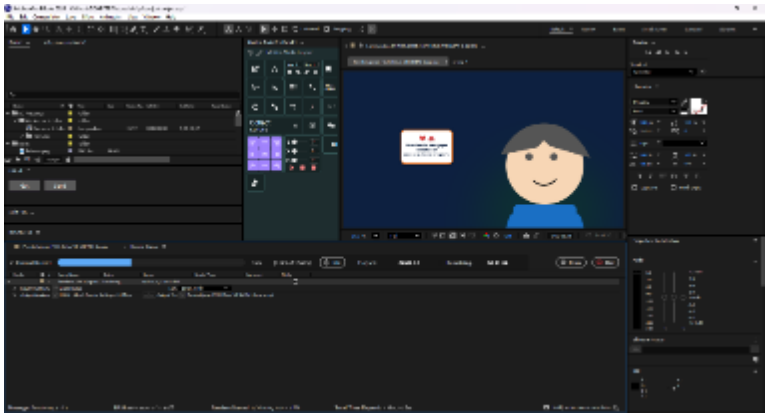


Figure 9. Video Rendering Process

Source: Media development documentation, 2024

The final product is in the form of a 2D animation learning video that is systematically arranged following the steps of the expository method: starting with the opening display containing the title of the material "Physical Education, Sports, and Health (PJOK)" accompanied by illustrations of students who are doing activities (Figure 10), followed by the delivery of maps and learning objectives, the presentation of core materials in the form of definitions, benefits, elements, and how to maintain physical fitness using a combination of texts, illustrations, icons, and animations (Figure 11), a summary of the material as an affirmation of important concepts, and ends with a closing display containing thanks and the identity of the media creator (Figure 12). Overall, the media was successfully developed in

accordance with the storyboard and design prepared at the Design stage, with an attractive visual appearance and systematic presentation of material, so that it is expected to be able to help students understand the PJOK theory material.



Figure 10. Media Opening Display

Source: Screenshot from developed learning media, 2024



Figure 11. Physical Fitness Material Presentation Display

Source: Screenshot from developed learning media, 2024

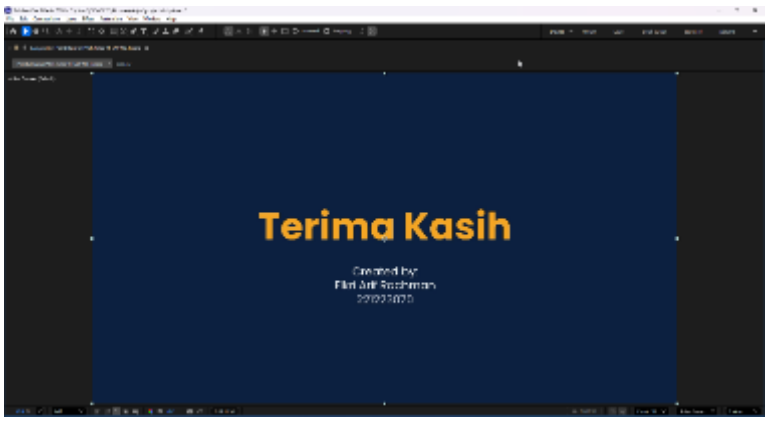


Figure 12, Media Cover Display

Source: Screenshot from developed learning media, 2024

The feasibility of the media was then tested through the validation of subject matter experts and media experts using the instruments that have been compiled in Chapter III, with the percentage of feasibility calculated using the following formula.

$$P = (\text{Score obtained} / \text{Maximum score}) \times 100\%$$

The validation of material experts assesses aspects of material suitability, content accuracy, presentation systematic, language use, and suitability of material with the characteristics of students, with the results presented in Table 4.4.

Table 4. Material Expert Validation Results

No	Description	Value
1.	Number of Statement Items	14
2.	Maximum Score	70
3.	Scores Obtained	63
4.	Percentage	90%
5.	Categories	**Highly Worth It**

Source: Material expert validation questionnaire results, 2024

From 14 statements with a maximum score of 70, a score of 63 was obtained so that the percentage of eligibility reached 90% (P = 63/70 × 100% = 90%), including the Very Feasible category because it was in the range of 81%–100%. The validator stated that the material was in accordance with learning competencies, easy to understand, and supported the learning process of PJOK theory in grade VII of SMP Negeri 1 Japara (Figure 13).



Figure 13. Subject Matter Expert Validation Sheet

Source: Documentation of validation instrument, 2024

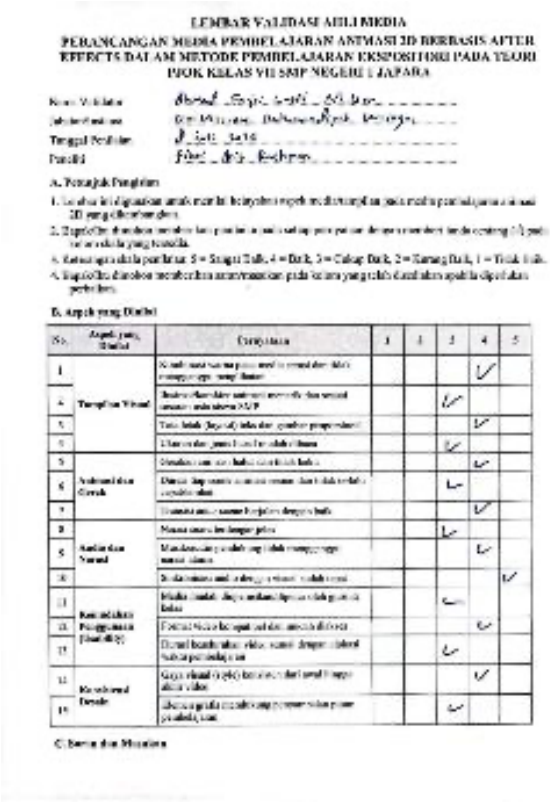
Media expert validation assessed the aspects of visual appearance, design, animation, typography, audio, ease of use, and quality of media presentation, with the results presented in Table 5.

Table 5. Media Expert Validation Results

No	Description	Value
1.	Number of Statement Items	15
2.	Maximum Score	75
3.	Scores Obtained	54
4.	Percentage	72%
5.	Categories	**Worthy**

Source: Media expert validation questionnaire results, 2024

From 15 statements with a maximum score of 75, a score of 54 was obtained so that the percentage of eligibility was 72% (P = 54/75 × 100% = 72%), including the Feasible category because it was in the range of 61%–80%. The validator assessed that the media display was quite attractive with animations, transitions, colors, typography, and layouts that were appropriate, but still provided a number of inputs as material for improving the media before being tested to students (Figure 14).



LEMBAR VALIDASI AHLI MEDIA

PERANCANGAN MEDIA PEMBELAJARAN ANIMASI 2D BERBASIS AFTER EFFECTS DALAM METODE PEMBELAJARAN EKSPOSITORI PADA TEORI POK KELAS VII SMP NEGERI 1 JAPARA

Figure 14. Media Expert Validation Sheet

Source: Documentation of validation instrument, 2024

Based on the validator's suggestion, a revision was made in the form of reducing the volume of background music (BGM) so that the narration sound sounds clearer and more comfortable to listen to, as summarized in Table 6, so that the Adobe After Effects-based 2D animation learning media is ready to be used at the implementation stage.

Table 6. Product Revision Based on Validation Results

Yes	Revised Sections	Before Revision	After Revision
1.	Audio (Background Music)	The volume of the BGM is still too loud so that the narration sound is not heard clearly.	The volume of the BGM is lowered so that the voice of the narration becomes clearer and more comfortable to listen to.

Source: Validator suggestions and product revision results, 2024

Implementation Stage

The implementation stage is carried out through small-scale trials and large-scale trials to find out the students' responses to the learning media that has been developed. The small-scale trial involved 5 students in grade VII of SMP Negeri 1 Japara who first watched the media, then filled out a response questionnaire related to the appearance of the media, the presentation of the material, the ease of understanding the material, the quality of animation, and the level of interest in the media (Figure 15), with the results presented in Table 7.

Table 7 Results of small-scale trials

No	Description	Results
1.	Number of Respondents	5 Students
2.	Number of Statement Items	13
3.	Scores Obtained	203
4.	Maximum Score	260
5.	Percentage	78,08%
6.	Categories	**Worthy**

Source: Student response questionnaire results (small-scale trial), 2024

Of the 13 statements with a maximum score of 260 (13 items × the highest score of 4 × 5 respondents), a score of 203 was obtained so that the percentage reached 78.08% (P = 203/260 × 100%), including the Feasible category because it was in the range of 61%–80%. These results show that the media received a good response from students in the initial trial.



Figure 15. Documentation of small-scale trials

Source: Primary documentation, 2024

After obtaining good results in the small-scale trial, the media was then tested with the same procedure on 20 students in grade VII of SMP Negeri 1 Japara (Figure 16), with the results presented in Table 8.

Table 8. Results of large-scale trials

No	Description	Results
1.	Number of Respondents	20 Students
2.	Number of Statement Items	13
3.	Scores Obtained	757
4.	Maximum Score	1.040
5.	Percentage	72,79%
6.	Categories	**Worthy**

Source: Student response questionnaire results (large-scale trial), 2024

Of the 13 statements with a maximum score of 1,040 (13 items × the highest score of 4 × 20 respondents), a score of 757 was obtained so that the percentage reached 72.79% (P = 757/1,040 × 100%), including the Feasible category because it was in the range of 61%–80%. These results confirm that the 2D animation learning media based on Adobe After Effects received a good response and is suitable for use as a learning medium for PJOK theory class VII SMP Negeri 1 Japara.



Figure 16. Large-Scale Trial Documentation

Source: Primary documentation, 2024

Evaluation Stage

The evaluation stage is carried out by recapitulating the assessment results from the validation of material experts, media expert validation, small-scale trials, and large-scale trials to conclude the overall level of media eligibility, as presented in Table 9.

Table 9. Recapitulation of Assessment Results

No	Appraiser	Percentage	Categories
1.	Material Expert	90%	**Highly Worth It**
2.	Media Member	72%	**Worthy**
3.	Small-Scale Trials	78,08%	**Worthy**
4.	Large-Scale Trials	72,79%	**Worthy**

Source: Recapitulation of all validation and trial results, 2024

The recapitulation shows that the validation of material experts obtained a percentage of 90% with the Very Feasible category, the validation of media experts obtained 72% with the Feasible category, small-scale trials obtained 78.08% with the Feasible category, and large-scale trials obtained 72.79% with the Feasible category. Overall, all stages of assessment are in the category of Feasible to Very Feasible, so that Adobe After Effects-based 2D animation learning media is declared feasible to be used as learning media in PJOK class VII SMP Negeri 1 Japara.

Discussion of Learning Media Planning Process

The development of 2D animation learning media in this study uses the ADDIE model which consists of five stages, namely Analysis, Design, Development, Implementation, and Evaluation. The selection of the ADDIE model is based on its systematic characteristics so that it makes it easier for researchers to develop media in stages, starting from needs analysis to product evaluation. The Analysis stage identified the learning conditions at SMP Negeri 1 Japara, where the results of observations and interviews showed that PJOK theory learning was still dominated by lecture methods with media limited to package books and blackboards, so that students tended to be less enthusiastic and needed more interesting media.

In the Design stage, the researcher compiles the learning materials, determines the learning objectives, makes flowcharts, compiles storyboards, and determines the concept of visual media as the basis for the production process so that all media content is systematically arranged according to the learning steps. The Development stage is carried out by producing media using Adobe After Effects, combining text, illustrations, icons, animations, audio, and narration to produce interesting and easy-to-understand media, followed by validation by material experts and media experts to determine the level of eligibility. The Implementation stage was carried out through a trial for grade VII students, with results showing that the media received a good response because it was considered interesting, easy to understand, and helped students understand PJOK theory material. The last stage, Evaluation, analyzes all the assessment results from validators and students and concludes that the media has met the eligibility criteria as a learning medium.

The results of this study show that the ADDIE model can be used effectively in developing 2D animation learning media that is in accordance with the needs of grade VII students of SMP Negeri 1 Japara. This finding answers the formulation of the first problem, namely how to develop Adobe After Effects-based 2D animation learning media in PJOK class VII of SMP Negeri 1 Japara.

Discussion of the Application of Expository Learning Methods

The learning media developed is prepared by applying the steps of the expository learning method, which was chosen because it emphasizes the systematic delivery of material by teachers so that students gain a complete understanding of the material being studied. The application of this method in the media begins with the presentation of learning objectives at the beginning of the video so that students know the competencies to be achieved, followed by the presentation of the material gradually using a combination of text, illustrations, animations, and narratives so that the information is easier to understand, as well as the presentation of examples related to the material to clarify the concepts being learned.

After all the material is delivered, the media provides a summary as a form of affirmation of the important concepts that have been learned, aiming to help students recall the material

before the learning ends. Based on the results of the implementation, the presentation of material using the steps of the expository method has been proven to be able to help students understand the content of the material better, as can be seen from the responses of students who gave positive assessments of the learning media. This finding answers the formulation of the second problem, namely how to apply the expository learning method to the developed 2D animation learning media.

Discussion of Media Eligibility Level

The results of the material expert's validation show that the material contained in the media is in accordance with learning competence, easy to understand, and presented using communicative language, so that it is declared suitable for use in the learning process. Based on the validator's suggestion, revisions were made in the form of adjusting the volume of the background music so that the voice of the narrative sounded clearer and more comfortable to be listened to by students. In addition, the results of the validation of media experts show that the media has good visual quality, with the use of colors, typography, illustrations, animations, and audio that are considered to be in accordance with the characteristics of grade VII junior high school students, so that an attractive media display is expected to be able to increase students' attention during the learning process.

Students' responses to both small-scale and large-scale trials also showed good results, with most students stating that the media was easy to understand, interesting to learn, and helped them understand the PJOK theory material better. These results show that the learning media developed has met the needs of students in the learning process, and is in line with previous research that has been discussed in Chapter II, which states that the use of animated learning media is able to increase learning interest, learning motivation, and make it easier for students to understand learning materials.

Overall, the results of validation of material experts, media experts, and student responses show that Adobe After Effects-based 2D animation learning media meets the eligibility criteria so that it is suitable for use as a learning medium in PJOK class VII subjects of SMP Negeri 1 Japara. This finding answers the formulation of the third problem, namely how to level the feasibility of Adobe After Effects-based 2D animation learning media based on the results of expert validation and student responses.

CONCLUSION

Based on the results of the research on the development of Adobe After Effects-based 2D animation learning media using the expository learning method for seventh-grade PJOK at SMP Negeri 1 Japara, it can be concluded that the media was successfully developed using the ADDIE model, consisting of the Analysis, Design, Development, Implementation, and Evaluation stages. The media was developed based on the results of the needs analysis, followed by material preparation, learning objective formulation, flowchart development, storyboard design, visual design, and production using Adobe After Effects. The developed media underwent validation by material and media experts, as well as small-scale and large-scale student trials. Furthermore, the media incorporated systematic stages of expository learning, including the presentation of objectives, material delivery, examples, summaries, and closing activities. The integration of animations, illustrations, text, and narration enhanced the presentation of physical fitness materials and improved their accessibility for students. Based

on the validation and trial results, the learning media was considered feasible for supporting seventh-grade PJOK learning, meeting the aspects of material quality, visual presentation, and attractiveness.

The findings indicate that Adobe After Effects-based 2D animation learning media can serve as an alternative medium to support PJOK learning, particularly for physical fitness materials. The use of animation-based media can assist teachers in delivering materials more systematically, engagingly, and understandably while increasing student attention during learning activities. For schools, the developed media can serve as a reference for utilizing technology to improve learning quality. Teachers are encouraged to utilize animation media as an alternative approach for delivering theoretical materials and to develop more innovative learning media according to technological advancements. Schools are also expected to support the implementation of technology-based learning by providing adequate facilities and infrastructure. Future researchers are recommended to develop similar media for other PJOK materials by incorporating more interactive features and to examine media effectiveness through experimental research designs to obtain more objective evidence regarding its impact on student learning outcomes. Thus, the development of 2D animation learning media can be further strengthened not only in terms of feasibility but also through empirical evaluation of its effectiveness in improving learning processes and outcomes.

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