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Article

Sound Show Suitcase (S3) is a Learning Media Innovation on Vibration, Wave, and Sound Material

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ABSTRACT

Learning innovation using the 3D model S3 (Sound Show Suitcase) media is a learning media that originates from the lack of interest of students in teaching and learning activities and the learning process is less interesting for students. So this research develops learning innovations using S3 (Sound Show Suitcase) media on vibration, wave, and sound material. S3 (Sound Show Suitcase) is a learning media in the form of a suitcase that contains teaching aids related to vibrations, waves, and sound. This learning media innovation aims to develop a product in the form of S3 (Sound Show Suitcase) and determine the feasibility of S3 (Sound Show Suitcase) in teaching and learning activities in schools. The method used is a research and development method with a 3D-based model (define, design, development). At the definition stage, problem analysis is carried out and innovation in science learning media is developed. At the design stage, a design was carried out to produce a product in the form of learning media innovation in the form of a Sound Show Suitcase (S3). And at the development stage, product feasibility tests are carried out with validation tests by media experts and material experts. Furthermore, a validation value of 4.25 was obtained, which was in the score scale interval 4.21 - X - 5.00 in the very good category. So the learning media innovation in the form of Sound Show Suitcase (S3) was declared suitable for use in teaching and learning activities in schools.

INTRODUCTION

Learning is a system, in which several components are interconnected with each other to achieve goals. The components of learning in question are (1) objectives, (2) teaching materials/materials, (3) methods, (4) tools/media, and, (5) evaluation (Supriyono, 2018). These

five components will be used in the learning process. The learning process is an activity between students and teachers to achieve learning goals. Whether a learning goal is achieved or not depends on the teacher, because the teacher's job is not only to convey lesson material, but the teacher also has the task of guiding students who are growing and developing both psychologically, physically, attitudinally, or other skills (Wahid., 2018). In the learning process, teachers must create a pleasant learning atmosphere, so that students do not get bored and bored easily (Wulandari et al., 2023). As an effort to create learning that is fun and not boring, it can be done by increasing students' participation and interest in learning. Student participation can be done by listening, seeing, writing, feeling and thinking (Supriyono, 2018). Student participation and interest can be increased by using media in the learning process.

Learning media is a tool that can assist the learning process so that the delivery of messages and material content becomes clearer and learning objectives can be achieved effectively and efficiently (Nurrita, 2018). Learning media that can be used are in the form of images, models, graphs, or other real objects. The use of learning media is intended to provide a more concrete, motivating experience and improve students' memory and absorption capacity in the learning process (Falahudin, 2014). Learning media can help students to learn actively, innovatively, creatively, and funly. Apart from that, it can also stimulate students to ask questions or simply give positive responses to the learning process carried out by the teacher in the classroom (Supriyono, 2018).

The role of learning media in realizing the learning process is to provide meaningful experiences to students to foster good learning motivation, making it easier to understand the material, and making it simpler but building interest in learning in the classroom (Asnawi and Usman, 2002). The choice of learning media is very important so that learning objectives can be achieved. Teachers are required to be skilled in selecting, adapting, and using media in the learning process. The use of learning media is very important in the learning process in all subjects, one of which is science subjects. Teachers are expected to be able to choose appropriate and interesting learning media to use in learning activities so that learning objectives are achieved. Learning media that is attractive to students can be a stimulus for students in the learning process (Nurrita, 2018). One of the learning media that is expected to attract students' attention is teaching aids. Teaching aids are learning media that can be used to help confirm students' abstract understanding. The purpose of using teaching aids is so that learning becomes active and creative and helps students understand the materi (Sidiq & Syaripudin, 2018)

The benefits of teaching aids in the learning process are: (1) Students' attention can be focused, (2) Helping students to receive and understand the lesson material, (3) Increasing students' enthusiasm and enthusiasm for learning, (4) Learning with appropriate teaching aids. combining theoretical and practical approaches as well as abstract and concrete ones will help students master the material, (5) Stimulate reasoning and thinking power, and (6) Increase creativity and imagination (Kaltsum, 2017). The use of teaching aids in the learning process will help communicate ideas that are concrete in nature, besides that it can also help students to integrate previously acquired experiences. So it is hoped that teaching aids will be able to speed up students' learning processes as well as increase understanding and strengthen students' memory (Telaumbauna, 2020). Considering the important role of learning media, one of which is teaching aids as an effort to improve the quality of education, teachers are expected to be able to choose and use teaching aids that are appropriate to the concepts being taught or discussed.

In class VIII junior high school science subjects there is material on vibrations, waves, and sound. In this material, there are basic competencies, namely analyzing the concepts of vibrations, waves, and sounds in everyday life, including the human hearing system and sonar systems in animals. So the author created learning media aimed at this material and linked it to

the human hearing system. Based on this description, in this research, we developed a learning media called S3 (Sound Show Suitcase). S3 is an innovative learning media that is packaged in the form of a suitcase, inside which there are teaching aids that explain vibration, waves, and sound material and are linked to the human hearing system. S3 (Sound Show Suitcase) as a learning media innovation is expected to be a learning media that is flexible or easy to carry anywhere because it is designed like a suitcase, easy to store, durable or not easily damaged because it is made of wood and can explain the material to be conveyed. The choice of learning media is expected to be able to stimulate students' thoughts, feelings, skills, attention, and desires so that they can encourage the learning process for students. Apart from that, the use of teaching aids can provide opportunities for students to actively participate in the learning process (Loban et al., 2021). The development of this learning media is an effort by teachers to create effective and efficient learning. This research aims to develop a product in the form of S3 (Sound Show Suitcase) and determine the feasibility of S3 (Sound Show Suitcase) in teaching and learning activities in schools.

METHODS

This research uses research and development methods with 3D-based models (define, design, development) which is a method used to develop and test the feasibility of products that will later be used in the world of education. The choice of this method is based on considerations to perfect the product to be developed in science learning. The Research and Development method using 3D models consists of 3 activities. First, Defining is a process of collecting data from various sources according to information needs for development. Second, Design is a learning media design activity, namely S3 (Sound Show Suitcase). Third, Development is a development activity. At the development stage, product validation was carried out with media experts and material experts, namely learning media lecturers and science lecturers through validation test instruments. The media expert validation instrument consists of 6 components, namely effectiveness, convenience, suitability, completeness, communicative interactive, and safety for students, while the material expert validation instrument consists of 4 components, namely suitability, completeness, convenience, and clarity. Then the validation results are calculated which can be calculated using a formula.

Average Rating per Validator

$$Final\ score = \frac{\sum \text{score obtained}}{\sum \text{item score}}$$

Final Value of Validation Test

$$\text{Final value of validator test} = \frac{\sum \text{validator final value}}{\sum validator\ final\ value\ item}$$

The eligibility criteria for media instruments are as follows

Table 1. The eligibility criteria for media instruments are as follows

Score Interval	Information
4,21– X –5,00	Very good
3,41 – X – 4,20	Good
2,61 – X – 3,40	Enough
1,81 – X – 2,60	Not Enough
1,00 – X – 1,80	Very Less

(Umar, 2011)

RESULTS AND DISCUSSION

. The research results were obtained through a predetermined method, namely by adopting a 3D development model (define, design, development).

Define (definition/analysis)

The definition stage is usually called the needs analysis stage which has the aim of defining development requirements and determining products according to needs (Al Azka et al., 2019). At the initial analysis stage, a problem was discovered, namely that students' interest in science subjects was still lacking. So the author develops innovative learning media with attractive shapes and appearances to attract students' interest. Then an analysis of the concept and content structure is carried out on the media that will be developed using vibration, wave, and sound material for class VIII according to the independent curriculum.

Design (Designing)

In this research, we developed a learning media called S3 (Sound Show Suitcase). S3 is a learning medium that is packaged in the form of a suitcase, inside which there are teaching aids that explain vibrations, waves, and sounds and are linked to the human hearing system. S3 media is expected to be a learning medium that is flexible or easy to carry anywhere because it is designed like a suitcase so it is easy to carry and store, durable or not easily damaged because it is made of wood and able to explain the material to be conveyed.

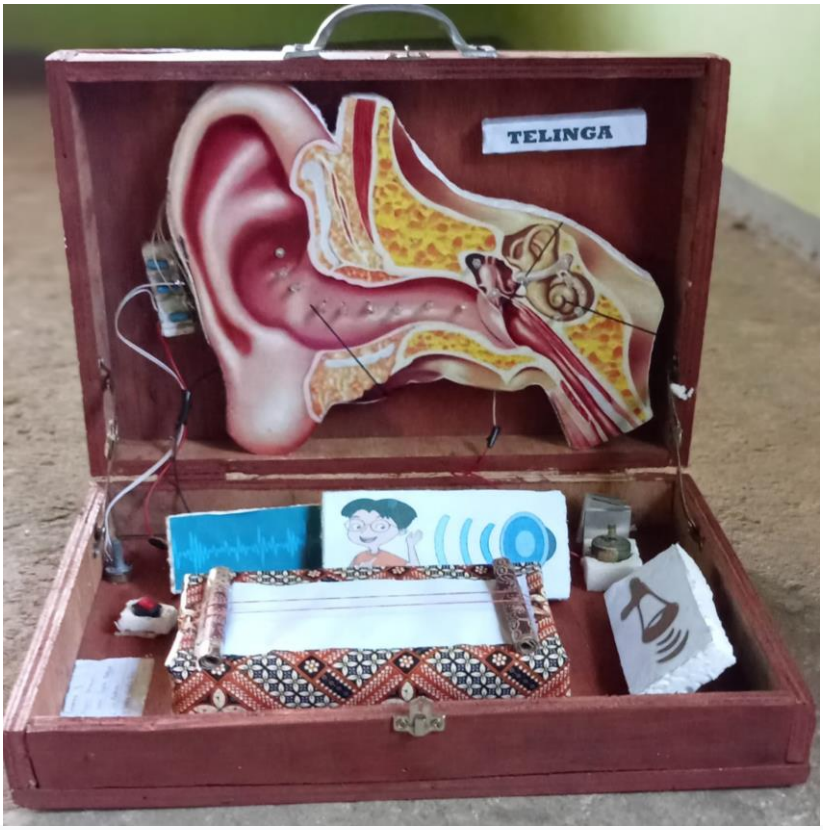

Figure 1. S3 Learning Media (Sound Show Suitcase)

Figure 1 is a picture of S3 learning media. The Media S3 consists of 2 parts, namely the upper suitcase and the lower suitcase. At the bottom of the suitcase, there is a teaching aid in the form of a vibration box as well as embossed images of vibrations, waves, and sound. The vibration box consists of a hollow box and rubber. When teachers or students move the rubber, the rubber will vibrate and produce sound. So it can explain one of the concepts in the matter of vibration, waves, and sound, namely that objects that vibrate can produce sound.

On the top of the suitcase, there is an image of an ear fitted with an LED light. The LED light is installed according to the sound process that enters the ear. When the light is turned on, the light will light up according to the process of sound entering the ear, starting from the earlobe to the inner ear. The upper case explains the relationship between sound and the human

hearing system, namely that the ear receives impulses in the form of sounds that will enter from the outer ear to the inner ear. The connection between the props on the upper suitcase and the lower suitcase is that the rubber that is moved on the vibration box will vibrate and produce sound, then the sound produced will be heard by the human ear by the process of the sound entering the ear according to the light on.

Development

The Sound Show Suitcase (S3) learning media is then carried out a feasibility test to see whether or not the learning media prepared for testing or use in teaching and learning activities is appropriate. The feasibility tested by the validator is the level of appropriateness of the media and appropriateness of the material. The validators in the Sound Show Suitcase (S3) learning media are 2 lecturers, material expert validators, and media expert validators. Validation of this learning media is carried out by showing the Sound Show Suitcase (S3) learning media which is then described to the lecturer as well as an evaluation instrument in the form of a validation sheet. After all the validation questionnaire instruments have been filled in by the validator, the next action is data processing. The data obtained from the evaluation results of the expert validation sheet is then processed into quantitative data obtained from the evaluation results of media experts and material experts and then the data is processed in the form of percentages. Apart from that, there are evaluation results by media experts and material experts in the form of comments or suggestions and proposed product revisions which are then described descriptively to be used as revision material for product improvements. The following is a diagram of the validation results from media experts

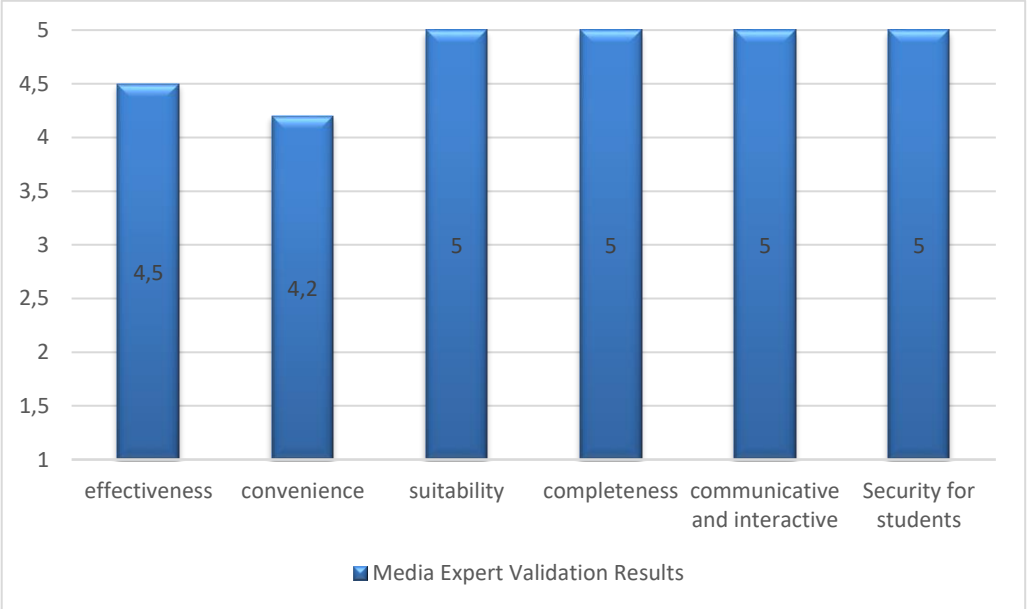

Figure 2. Bar diagram of validation results by media experts

From the validation results of media experts, there are 6 indicators, namely the first is effectiveness, the second is convenience, the third is suitability, the fourth is completeness, the fifth is communicative and interactive, and the last is safety for students. Of the six indicators there are several assessment criteria in them, for the effectiveness indicator there are 3 assessment criteria that get a score of 4.5 or can be categorized as very good, then in terms of convenience there are 4 assessment criteria with a score of 4.2 or can be said to be good, then in terms of suitability there are 4 assessment criteria with a score of 5 or can be said to be very good, then in terms of completeness there are 2 criteria with a score of 5 or can be said to be very good, then in terms of communicative and interactive there are 2 assessment criteria with

a score obtained of 5 or could be said to be very good, the last indicator of security for students with a score of 5 or could be said to be very good. Apart from that, there were comments or suggestions from media experts who explained that the electricity source was optimized and basic competence in physics or biology needed to be emphasized. From the 6 indicators assessed, an average value of 4.7 can be obtained or from validation by media experts, it can be concluded that the Sound Show Suitcase (S3) media is very good and can be used for teaching and learning activities with revision notes according to suggestions.

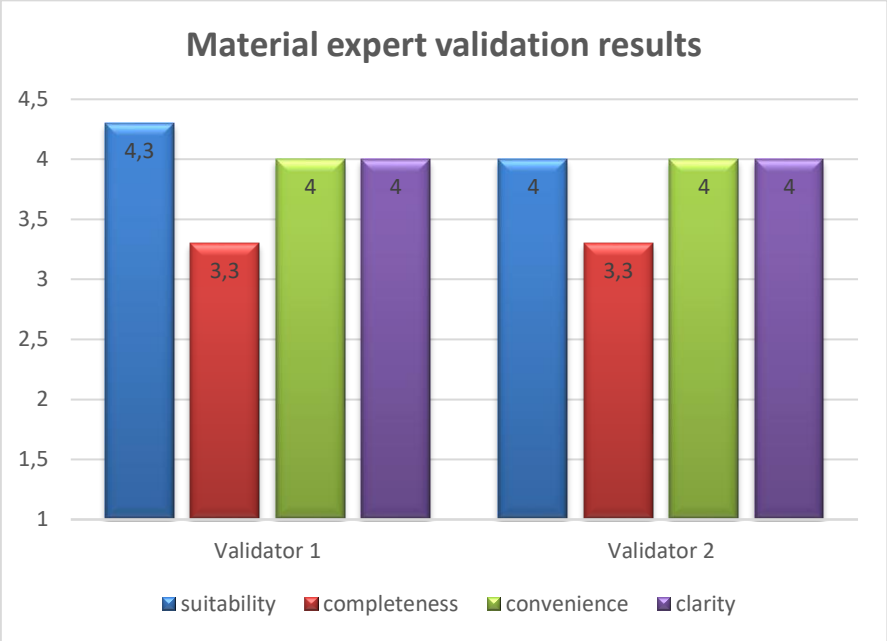

Figure 3. Material Expert Validation Results

Based on the evaluation results of the suitability level of the Sound Show Suitcase (S3) media which has been validated by two material experts, there are 4 indicators, namely suitability, completeness, convenience, and clarity. For these four indicators, there are several assessment criteria. The validation results from the two material experts showed that the suitability indicator got a score of 4.1 or could be categorized as good, then in terms of completeness it achieved a score of 3.3 or it could be said to be sufficient, then in terms of convenience the score obtained was 4 or it could be said good, the last indicator is the clarity with a score of 4 or it could be said to be good. Apart from that, there are comments or suggestions for our media, namely that vibration and sound wave material is less highlighted than material for the human hearing system, improvements are needed in the sequence of lights, and replacing the rubber so that the sound source is stronger. From the four indicators assessed, an average score of 3.8 can be obtained or from validation by two material experts it can be concluded that the Sound Show Suitcase (S3) media is good and can be used for teaching and learning activities with revision notes according to suggestions. Based on validation with 3 validators, namely 1 media expert validator and 2 material expert validators, the average validation result value was 4.25 with very good criteria.

Apart from quantitative data obtained from the evaluation results of media experts and material experts, there is qualitative data obtained from the results of evaluations by media experts and material experts in the form of comments or suggestions for product revisions

which are then described and defined qualitatively descriptively to be used as revision material at the improvement stage. product. Based on comments or suggestions from media experts, explain that the electricity source is optimized and basic competence in physics or biology needs to be emphasized. If the power source in the media being developed is optimized, it will minimize the occurrence of interference when using the learning media. The battery in the media can be replaced with a larger power source such as a plug. Then according to media experts, the Sound Show Suitcase (S3) learning media is seen from its context as if two components are combined into one material, wave vibrations and the human hearing system. So it is necessary to emphasize basic competencies in physics or biology.

Apart from comments or suggestions from media experts, there are also material experts to improve our learning media. Comments or suggestions from material experts are that the material of vibrations and sound waves is less highlighted than the material of the human auditory system. Judging from its appearance, the media we created in the part of the tool that shows vibrations, waves, and sounds is less highlighted or looks less big when compared to the tool that shows the human hearing system. If used in learning activities, students will focus more on the image of the ear which shows the human hearing system compared to the material they will study, namely vibrations, waves, and sound.

Meanwhile, comments or suggestions from material expert II are that improvements are needed to the sequence of lights and replacing the rubber so that the sound source is stronger. In the lighting section, it is best to adjust the lighting to the process of sound entering the ear, so that the lights do not come on at the same time but rather in certain parts through which the sound passes so that it reaches the ear. In our learning media, there is rubber that indicates the sound source, and the sound source used should be replaced with a stronger sound source, for example, tire rubber. So that the sound or sounds produced are stronger and can be heard clearly.

The comments and suggestions provided by 3 validators, namely 1 media expert validator and 2 material expert validators, are by the criteria for selecting learning media. There are several criteria used in selecting learning media, namely: (1) Appropriateness to the teaching objectives, the teaching media chosen is based on the instructional objectives that have been set.(2) Support for the content of learning materials, learning materials which are facts, principles, concepts, and generalizations need the help of media to make them easier for students to understand.(3) Ease of obtaining media, the media used is easy to obtain and easy for teachers to create when teaching.(4) The teacher's skills in using it, it is hoped that the teacher can interact with students when using this media.(5) There is time to use it, the media is useful for students during teaching.(6) By students' level of thinking, so that the meaning contained in it can be understood by students.

Apart from that, according to Junaidi (2019), the criteria that must be considered in selecting learning media include the purpose of use, target media users, media characteristics, time, cost, and availability. The intended use will refer to certain types of media, such as reality media, audio, still visuals, motion visuals, motion audiovisuals, and so on. The targets of media users must be by the students' conditions, the characteristics of the media must be known regarding its strengths and weaknesses as well as the suitability of the media to the learning objectives to be achieved. Furthermore, time is also needed to present learning media and the amount of time allocated for the learning process. When creating learning media, it is necessary

to pay attention to costs to increase the efficiency and effectiveness of learning. Expensive media is not necessarily more effective in achieving learning goals than simple and cheap media. The final criterion is availability, the media needed in the learning process is media that is around us, at school, or on the market. Making media requires ability, time, energy, and facilities (Wulandari et al., 2023).

CONCLUSION

This research was carried out to develop learning media entitled Sound Show Suitcase (S3) as an innovative learning media on vibration, wave, and sound material which is associated with the human hearing system. Development is carried out using a 3D development model which consists of definition, design, and development stages. At the definition stage, problem analysis is carried out. The problem found was the lack of innovation in learning media. So an innovative science learning media was developed, namely Sound Show Suitcase (S3). At the design stage, a design was carried out to produce a product in the form of learning media innovation in the form of a Sound Show Suitcase (S3). At the development stage, product feasibility tests are carried out with validation tests by learning media experts and material experts. The results at the development stage obtained a validation value of 4.25, which in the score scale interval was 4.21 - X - 5.00 in the very good category. So it can be concluded that the learning media in the form of Sound Show Suitcase (S3) is declared suitable for use as learning media in teaching and learning activities in schools.

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