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TEACHING SKILLS THROUGH THE USE OF AUDIO-VISUAL MEDIA AT MIDDLE SCIENCE TEACHERS IN SUBURBS

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ABSTRAK

Penelitian *Research and Development* (R&D) ini bertujuan: (1) mendesain media *audio-visual* untuk proses belajar mengajar dan (2) penggunaan modul media *audio-visual* dalam proses belajar mengajar IPA SMP di daerah terpencil. Penelitian ini melibatkan tahapan(1) analisis, (2) desain, (3) pengembangan produk, dan (4) validasi. Tahap pengembangan diawali dengan tahap produksi yang menghasilkan produk. Validasi produk dilakukan oleh ahli media, ahli ilmu teknologi, dan ahli materi dan pengulangan validasi setelah revisi produk. Data penelitian diperoleh melalui lembar penilaian/validasi ahli media, ahli ilmu teknologi, dan ahli materi yang terdiri atas sejumlah aspek penilaian. Penelitian ini melaporkan bahwa (1) desain media *audio-visual* untuk proses belajar mengajar pelajaran IPA SMP memiliki tingkat kelayakan sangat baik (90,29%) dan (2) modul penggunaan media *audio-visual* juga memiliki tingkat kelayakan sangat baik (91,14%). Penelitian ini merekomendasikan bahwa desain media *audio-visual* dan modul penggunaan media *audio-visual* dapat digunakan dalam proses belajar mengajar IPA setingkat SMP di daerah terpencil terutama materi Pencernaan Makanan pada Manusia

Kata Kunci: Pengembangan, Desain, Media Audio-visual, Modul.

ABSTRACT

This research study aims to: (1) design audio-visual media for the teaching and learning process for junior high school science lessons and (2) use audio-visual media modules in the teaching and learning process for junior high school science lessons in suburb areas. The research method used is a type of research and development method or Research and Development (R&D). This research and development model uses stages that have been adapted through the stages of analysis, design, product development, and (4) validation. The development stage begins with the production stage which produces the initial product, then validation is carried out by media experts, technology experts, and material

experts and repeated validation after revision. The research data was obtained through instruments in the form of assessment sheets/validation by media experts, technological experts, and material experts which consisted of a number of assessment aspects. This study reports that (1) the design of audio-visual media for the teaching and learning process for junior high school science lessons has a very good level of feasibility (90,29%) and (2) the module for using audio-visual media also has a very good level of feasibility (91,14%). This research recommends that audio-visual media designs and audio-visual media use modules can be used in the science teaching and learning process at the junior high school level in suburb areas, especially in the subject of Food Digestion in Humans.

Keyword: Development, Design, Audio-visual Media, Module.

INTRODUCTION

Teaching natural sciences to students at the junior high school level requires concrete practical skills with the aim of gaining a clearer understanding of existing theories [1], [2], [3], [4], and [5]. However, in reality at this time students tend to memorize more than understand, even though understanding is the basic capital for further mastery [6]. The use of media in science learning will help the students directly involved in the teaching and learning process. In addition to arousing student motivation and curiosity, instructional media also assist teachers in preparing teaching materials and increasing student understanding and presenting material in an interesting way. One of the media that can be used is audio-visual media.

Audio-visual media is an intermediary medium in conveying information that has elements of sound, image, color, movement and light. The learning materials to be developed are visible and audible (audio-visual) learning materials that can be used to convey subject matter [7]. However, not all teachers carry out the learning process by utilizing existing facilities, such as the use of LCD projectors for audio-visual media. This condition is caused by the teacher's limited skills in operating or using audio-visual media.

In comparison, a preliminary study on the design and use of audio-visual media in junior high schools in relatively suburb areas (far from the city center) within the Aceh Besar district showed that in general the skills

of science teachers at the junior high school level (SMP) were inadequate in designing and operating or using audio-visual media in the science teaching and learning process. The information in the following table is the basis for the rationality argumentation of this research so it needs to be followed up.

For example, natural science subject matter at the SMP level should be taught by involving audio-visual media, namely materials that students and teachers cannot perceive directly in the teaching and learning process. Among the science subject matter is Circulatory System of Human Blood and Sense of Sight and Optical Instruments. The material for the Human Circulatory System is one of the science learning materials studied in class VIII SMP in semester 2. This material is difficult to understand because it is involved with the processes that occur in the Blood Circulatory System in Humans and the organs that support the work of the system of blood circulation.

In addition, the material on the Digestive System in Humans is one of the main materials studied by class VIII students. The material in question will be more easily taught and understood by students if it is taught by involving audio-visual media where this media can explain and describe the digestive organs and show their parts. In connection with this research, however, the teacher's skills are full and diverse of techniques to convey material to help students [8], especially, learning science more meaningfully [9], in one hand. On the other hand, the results of Joni Purwono's et al. research, reported that the use of audio-visual media by teachers can make science teachers at the junior high school level (SMP) were inadequate in designing and operating or using audio-visual media in the science teaching and learning process. The information in the following table is the basis for the rationality argumentation of this research so it needs to be followed up.

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Table 1. Phenomena of Middle School Science Teachers regarding Design Skills and Operating Audio-Visual Media in the Learning Process

No.	School	Science Teachers	Skill full		Not skill full	
			Designing	Operating	Designing	Operating
1	SMPN Sukamakmur	7	2	2	5	5
2	SMPN Kuta Malaka	5	0	2	3	3
3	SMP Darul Hijrah	1	0	0	1	1
4	MTsN Jeureula	5	0	0	5	5
5	SMPN-1 Jantho	6	2	2	4	4
6	SMP-2 Jantho	3	0	0	3	3
7	SMPN Seulimum	4	0	0	4	4
8	MTsS Seulimum	7	0	0	7	7
Total		38				32
Percentage					84,21 %	84,21%

Source: Results of interviews from the principals of junior high schools (SMP) in relatively suburb areas: SMPN Sukamakmur, SMPN Kuta Malaka, SMPN Darul Hijrah, MTsN Jeureula, SMPN 1 Jantho, and SMPN 2 Jantho, October 2021.

The phenomenon of table 1 above reports that the reliability of concrete practice with the aim of obtaining a clearer understanding for students cannot be achieved because it is triggered by the teacher's skills in designing and operating the media which are still inadequate.

The formulation of the research problem consists of 1) how is the design of audio-visual media for the teaching and learning process for science lessons in junior high schools in suburban areas? And 2) how to use the audio-visual media module in the teaching and learning process for junior high school science lessons in suburban areas? Departing from the formulation of the problem above, the research objectives are 1) to design audio-visual media for use in the teaching and learning process for junior high school science lessons in suburb areas and 2) to develop modules for the use of audio-visual media for the teaching and learning process for junior high school science lessons in suburb areas.

METHOD

The first and second problem formulations or research questions will be answered by involving educational research and development methods. Educational Research and Development (R&D) is a process used to develop and validate educational products [11]. Research and development approach is a process to develop a new product or improve existing products, which can be accounted for [12]. Furthermore, the products developed in this research are audio-visual media designs and modules for using audio-visual media for junior high school natural sciences materials.

Data collection techniques were taken by involving expert judgment/ validators: (1) media experts, (2) information technology experts, and (3) material science experts from the product being developed. The instruments used were Material Test Validation Sheets (MTVS), Media Test Validation Sheets (MTVS), Teacher Test Validation Sheets (TTVS). The intended research data is data from the validation results of expert appraisers according to their respective areas of expertise.

Table 2. Operationalization of Research Methods and Instruments

RQ	Design	Instruments	Validation	Product
1	Audio-visual media designs	MTVS MTVS TTVS	*Expert Judgement*: 1. Media experts 2. Information technology experts 3. Material of science experts	Audio-Visual Media
2	Module for using audio-visual media	MTVS MTVS TTVS	*Expert Judgement*: 1. Media experts 2. Information technology experts 3. Material of science experts	Module of Using Audio-Visual Media

RESULTS AND DISCUSSION

The development procedure using the research and development model Borg & Gall (1983: 775) consists of ten stages [13]. Furthermore, the researcher simplifies and limits it into four stages, as follows: (1) Information Gathering Stage: initial field study and literature study, (2) Planning Stage: Making research instrument grids, instrument making, and instrument validation, (3) Product Development Stage: (a) creating storyboards for designing audio-visual media and using audio-visual media, (b) writing material, and (c) Making modules for designing audio-visual media and using audio-visual media, (4) Stage validation: (a) validation by media experts, technology experts, science subject matter experts, and expert science teachers, (b) the final results of audio-visual media design products and the use of audio-visual media modules for junior high science lessons. The data at all stages are described in detail, analyzed, and data conclusions are drawn.

1. Product Evaluation of Audio-Visual Media Design Development (Expert Judgment)

The results of initial and final validation by expert judgment of audio-visual media design products can be reported in table 03 below.

Table 3: Preliminary and Final Assessment Scores of Audio-Visual Media Design

No.	Expert Judgment	Expertise	Initial Validation	Final Validation
1	Fist Validator	Media expert	73,33%	82,29%
2	Second Validator	Media expert	78%	97,89%
3	Third Validator	Material expert	68,75%	83,75%
4	Forth Validator	Material expert	88,75%	93,73%
5	Fifth Validator	IT expert	77,64%	91,17%
6	Sixth Validator	IT expert	86,4%	92,94%

Based on the results of the assessment of audio-visual media design products that have been validated by expert judgment, an average score is obtained, namely: Average Percentage = (82.29 + 97.89 + 83.75 + 93.73 + 91.17 + 92.94)/6= 91.29% (very good). Similarly, Amaliyah reported that science [14] and social science [15] learning outcomes can be improved through the use of audio-visual media at elementary school.

2. Evaluation of Module Development Products for the Use of Audio-Visual Media

The results of the initial and final validation of the experts (Expert Judgment) for module products using audio-visual media can be reported in table 04 below.

Table 4. Scores of Preliminary and Final Assessment Results of the Audio-Visual Media Usage Module

No.	Expert Judgement	Expertise	Initial Validation	Final Validation
1	Fist Validator	IT expert	80,57%	88,57%
2	Second Validator	IT expert	85,71%	93,71%

Based on the results of the assessment of the use of audio-visual media modules that have been validated by expert judgment, an average score is obtained, namely: Average Percentage: (88.57+93.71)/2= 91.14% (very good).

CONCLUSION

The conclusions from the results of this research and development are emphasized as follows:

1. Designing audio-visual media for science teaching and learning in suburban junior high schools by developing audio-visual media designs that contain procedures for making or designing audio-visual media. The design for the development of audio-visual media that has been tested for validity is the design for the development of audio-visual media which is very good (90.29%) for use in the science teaching and learning process in suburban areas.
2. The module for using audio-visual media in the teaching and learning process for junior high school science in remote areas is by compiling a module for using audio-visual media which contains procedures for using audio-visual media. The module for the use of audio-visual media that has been tested for validity is an excellent development module (91.14%) for the use of audio-visual media in the process of teaching and learning science in remote areas.

SUGGESTIONS AND RECOMMENDATION

This study proposes several suggestions and recommendations, namely:

1. Science teachers at junior high schools in suburban areas are expected to be able to use this audio-visual media design product that the researchers have designed, so that it can be applied in the classroom to the teaching and learning process.
2. Science teachers in junior high schools in suburban areas are expected to be able to use module products using audio-visual media, especially the Human Digestive System Material that researchers have designed, so that they can be applied and facilitate the teaching and learning process in the classroom.
3. It is hoped that the next researcher will be able to continue this research by testing product designs and modules for using this audio-visual media in science classes at

junior high schools in the regions, so that this product can be more useful and get input/suggestions about the weakness of this product.

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