



The Urgency of Digital-Based Audio-Visual Learning Media in Natural Science Subjects in Schools

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Abstract

Background: Learning media is defined as a means or channeling of messages containing information sources that will be conveyed to students. In obtaining excellent and appropriate quality learning media and significantly influencing the learning process, selection, and learning media are needed to support the learning process. Advances in technology and science considerably affect the use of media in schools. However, not a few educators in Indonesian schools are still incompetent in knowledge about the use of technology. For the teaching material presented to be accepted by students, appropriate media is needed and can help deliver material, especially science material. **Methods:** The research uses a qualitative descriptive approach. Data collection instruments are questionnaire sheets and interview lists. Furthermore, the data was analyzed using data analysis techniques from Miles and Huberman (1994). **Results:** The results showed that almost 100% of learners already had a personal smartphone, laptop, or tablet. About 52% of learners use smartphones or laptops, or tablets for 6-12 hours per day used to study (92.9%), play (96.9%), search for information (92.1%) and communicate (89%). Science lessons are considered quite tricky subjects (62.2%), complex (17.3%), and very difficult (13.4%). **Conclusions:** The urgency of using digital-based audio-visual learning media in the learning process of science material has a very significant position, even if the role of media is parallel to methods in the learning process.

Keywords: Digital; Media Audio-visual; Natural Science

Introduction

Learning media consists of two words: medium, an intermediary, and learning, a series of learning preparations to facilitate the teaching and learning process. Learning media is also defined as a means or channel of messages containing sources of information in a learning material that can be conveyed to recipients of data (Suryadi, 2022). Learning media can also be explained as tools and materials that facilitate educators to present learning materials (Amali et al., 2019). Learning media in the learning process serves as a tool to stimulate the mind, attention, and interest in learning and facilitate the learning process so that learning targets and objectives can be achieved and appropriately fulfilled (Kustandi et al., 2021).

Learning media are categorized according to various functions, objectives, and abilities of each media to be used as guidelines for learning media that are adjusted to the learning outcomes provided to achieve good and appropriate quality learning media and have a significant impact on the learning process, and it is necessary to select and plan the use of learning media (Sapriyah, 2019).

More varied learning media can increase motivation and improve student learning outcomes (Triyadi et al., 2015). Advances in technology and science greatly influence the use of media used in schools. Selwyn (2011), revealed that educational technology that is developing today had been used as a means of learning either as a learning tool or as an



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information tool. This indicates that teaching media in schools are required to follow technological developments.

Not a few educators in Indonesia are still incompetent in knowledge related to the use of technology in learning media. In comparison, students continue to develop following the times. In addition, the low level of teacher welfare can affect the quality of teachers and teachers (Purnamasari, 2012). Therefore, educators are encouraged to use audio-visual learning media based on digital technology to support the learning process, especially in Natural Sciences (Science). Based on the explanation above, this study aims to see the urgency of digital-based audio-visual development media in learning Natural Sciences in schools.

Method

This research method is qualitative descriptive; the reason for using qualitative descriptive methods is that researchers will explain and explain the subject or object under study objectively and describe facts that occur characteristically and systematically (Zellatifanny & Mudjiyanto, 2018).

Research Subjects

The research subjects comprised 140 grade VII students at SMP Labschool Jakarta for the 2022/2023 academic year. In line with Roscoe (1975); Sugiyono (2013), guidelines in determining the number of samples should be between thirty to five hundred respondents.

Instruments

This study conducted interviews with science subject educators to determine the urgency of digital-based audio-visual development media for learning Natural Sciences in schools. In addition, the instrument is in the form of questionnaires disseminated to students. The goal is to discover students' needs and interests in digital-based audio-visual learning media.

Data Collection

The initial data collection in this study was a literature study by collecting data and information from several sources related to good research from books, scientific journals, literature, and other publications (Moto, 2019). Then distribute questionnaires to students and educators of science subjects related to the urgency of digital-based audio-visual development media for learning Natural Sciences. This research was conducted in August - September 2022, and the study location was SMP Labschool Jakarta.

Data Analysis Techniques

Data was obtained through student questionnaires and interviews with educators who teach science subjects, then analyzed using data analysis techniques from Miles & Huberman (1994), as in Figure 1. The stages consist of data collection, reduction, presentation of data, and withdrawal conclusion based on the data obtained (Wandi et al., 2013).

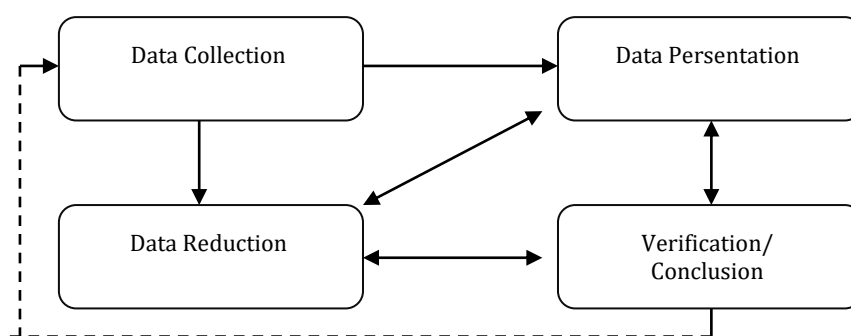


Figure 1. Analysis Model Data Miles & Huberman (1994)

Discussion

Technological developments in the era of globalization impact the ease of information dissemination, either appropriate or accurate information or an incompatible (hoax). Indirectly, these developments have a significant influence. The learning process in schools is a challenge for educators in using Digital Media as a Learning Media. So that the information received by the student can contain subject matter and be beneficial world education. Based on the results of research at SMP Labschool Jakarta shows that almost 100% of students already have a smartphone or personal laptop or tablet facilitated by parents to facilitate learning at school.

Sukaryanti, D., Nasution, F. N., Indria, S., & Hadi (2021), revealed that using digital media can be an alternative solution to create a more active learning process, one of which is utilizing their devices. About 52% of learners use smartphones or laptops, or tablets for 6-12 hours per day, which are used for learning (92.9%), playing (96.9%), seeking information (92.1%), and communicating (89%). This aligns with school policies that support using smartphones, laptops, or tablets to facilitate and keep learning. So inevitably, educators are required to be able to take advantage of technological developments with school policies that allow students to operate their devices in the learning process. With the development of digital-based learning media, students can easily access learning materials that can be learned well.

The learning process is composed of six main functions of learning media, including: 1) Can create a more active and effective learning situation; 2) Become a learning component that is interrelated with other components to make the expected learning situation; 3) Become a critical component of learning, not just an entertainment tool; 4) Its use is relevant to competencies and learning objectives; 5) Speed up the learning process and make it easier for students to understand the subject matter; and 6) Improve the quality of learning (Hasanah, 2016).

In obtaining good and appropriate quality learning media and significantly influencing learning, it is necessary to select and plan the use of supporting media in the classroom. Several learning media criteria need to be considered by educators in the selection of learning media, including 1) The type of ability that will be achieved by learning objectives, 2) The usefulness of various kinds of media, and 3) the Ability teachers to use a kind media; 4) Flexibility or flexibility in its use; 5) Compliance with allocating time and means existing supporters; 6) Its availability learning resources and 7) Cost (Yasinta, 2019).

In addition, the learning media that is developed must have three characteristics of Jalinus & Ambiyar (2016), namely:

- 1) Fixative characteristics describe a medium's ability to reconstruct or build memories about an object or event.
- 2) Manipulative characteristics describe the media's ability to modify or change events, objects, or processes to overcome the limitations of time and space.
- 3) Distributive characteristics describe the ability of the media to provide the same stimulus about an event without having to experience or see the event directly by transporting an event in space and then simultaneously displaying it to many students in the classroom.

In addition, the next problem in using learning media at SMP Labschool Jakarta is only in the form of e-books, package books, and PowerPoints. Using media is also considered monotonous and less exciting and straightforward in learning. Therefore, in addition to the importance of creating digital learning media in schools, educators must also adjust the elements contained in the learning media. One of them is audio-visual learning media. Using technological developments, learning media can be created as a video, sound, poster, image, diagram, graph, or map.

Audio elements allow students to receive learning messages through hearing, and visual elements enable students to create learning messages through visualization. It can provide students with increased knowledge, creativity, and skills. Anderson (1994), suggests several

learning objectives using audio-visual media, including Cognitive goals include (a) the ability to develop cognitive associations, which include the ability to recognize and provide movement and harmony stimuli, (b) the ability to display still media such as photographic media and photographic images, although less economical, (c) audio-visual media can also be used to teach knowledge about specific laws and principles. (d) Audio-visual media can show patterns and behaviors, especially those involving student interaction.

Based on the description above, the subject matter that requires learning media in the form of digital-based audio-visual media is science material. Based on observations shows that students feel that science subjects are pretty difficult subjects (62.2%), difficult (17.3%), and very difficult (13.4%). Science subjects are expected to be a means for students to learn and understand themselves and the natural environment that can be implemented in everyday life (Ningtiyas et al., 2019). Not only are concepts or theories discussed in science, but students also learn to observe various natural phenomena of life to formulate problems, propose solutions, and solve them (Simatupang & Ionita, 2020). Thus, it can be stated that digital-based audio-visual learning media in science subject matter is significant for educators and students.

The urgency of digital-based audio-visual learning media can be described as follows:

- 1) The delivery of learning material is not only verbal, and it happens because many educators in Indonesia use learning models with lecture or storytelling methods, resulting in students becoming less enthusiastic and enthusiastic in understanding learning material.
- 2) Help overcome barriers due to students' limited space, time, and sensory devices. The existence of digital-based audio-visual learning media can make it easier for students to learn anywhere and anytime. In addition, differences in the sensorial power of each student can affect differences in the acceptance of material by students in the learning process. The absorption of the five senses consists of 82% of vision (eyes), 11% of hearing, and 7% of the other five senses. Therefore, with both learning media, it is desirable that the learning process can increase learning success.
- 3) Increase the attraction, motivation, and interest in learning in students in ongoing learning. According to Sapto Haryoko (2006), audio-visual media contain sounds and images that can cause attraction and desire to study in students. In addition, learning materials can be readily accepted and improve students' memory. So, it is hoped that the learning material obtained can be implemented in everyday life.

In line with Wahid (2018) opinion, revealed that learning media has an urgency to provide convenience to teachers when teaching, generate learning motivation in children, increase and direct students' attention, clarify the presentation of messages and information, and improve student learning processes and outcomes.

Conclusions

Paying attention to technological advances and students' needs to achieve learning objectives, the urgency of using digital-based audio-visual learning media in learning science material has a very significant position; even the role of media in learning is parallel to learning methods.

Declaration statement

The authors reported no potential conflict of interest.

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