

Development of audiovisual learning media on ecosystem topic at SMA Negeri 1 Sigi

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Abstract

The objective of this study's endeavor is to create a digital audiovisual learning media product that serves as an innovative educational tool for the Biology curriculum in the tenth grade. Specifically, the focus is on the ecosystem topic. The utilization of an ADDIE approach is common in the field of research and development (R&D) studies. The process encompasses five distinct stages, namely Analysis, Design, Development, Implementation, and Evaluation. This audiovisual learning medium serves as a supplementary resource for the study of The field of biology, designed to complement the instructional materials provided to students during classroom instruction. The validation outcomes obtained from the three validators indicate that media, design, and material achieved percentages of 88%, 87%, and 76% respectively, based on highly attainable requirements. Moreover, the outcomes of student evaluations, which yielded an average score of 87% within a limited number of trials, demonstrate the utilization of very suitable criteria. According to established standards when assessing media, design, content, and restricted testing, audiovisual media is highly appropriate and beneficial for teaching.

Keywords: Development; Media; Audiovisual; Ecosystem

1. Introduction

The advancement of education in Indonesia is significantly impacted by the progress of information and communication technology, particularly in the field of audiovisual. It has become more extensive utilization as a tool or medium in educational instruction and learning endeavors [1]–[5]. Learning media is an essential instrument that educators require for the purpose of preparing and facilitating the execution of learning activities [6], [7]. The adaptability of creation of media aligns with the subject being studied by pupils [8], [9]. By utilizing these tools, students can acquire a comprehensive understanding of the subject being instructed and simultaneously mitigate adverse conduct throughout these educational endeavors. Within the realm of education, media serves as a valuable instrument that facilitates the acquisition of knowledge and the attainment of educational objectives [1], [10].

The findings derived from the study conducted at Sigi 1 Public High School indicate that Biology instructors continue to rely on printed learning materials, specifically Biology textbooks and limited learning media. These resources have proven to be less effective in facilitating the learning process, leading to student disengagement during lessons, particularly when covering ecosystem-related topics. Ecosystem material refers to a category of biological substances that exhibit a tight association with everyday life [11], [12]. These materials include inherent qualities that make them highly suitable for fostering students' interest regarding the natural world. According on the findings of these observations, the development of audiovisual-based digital learning medium was undertaken [13], [14].

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The pedagogical interaction between instructors and learners need to be characterized by elements of engagement, pleasure, and significance. The effectiveness of this learning process may be enhanced when instructors possess the capacity to comprehend the distinctive attributes of pupils, employ student-centered instructional approaches, and utilize engaging and pertinent learning materials. In this particular scenario, the presence of diverse educational materials will facilitate the establishment of engaging and delightful learning environments for pupils. One of the learning resources mentioned in the literature is learning media [1], [2], [9].

Learning media refers to various tools and materials employed to transmit messages from the presenter to the recipient, with the aim of engaging students' cognitive and affective faculties, capturing their attention, and fostering their interest. This facilitates the teaching and learning process. The utilization of learning media is applicable across many scientific disciplines, as it aligns with the unique attributes of each field. This is due to the significant role that media plays in facilitating teaching and learning endeavors [3], [4].

The utilization of learning media that have been tailored to meet certain media selection criteria has the potential to serve as innovative and creative tools, effectively capturing the attention and fostering the interest of students during the teaching and learning process [5], [13]. The subject addressed in this paper pertains to the suitability of audio-visual-based learning media for biology instruction at SMA Negeri 1 Sigi, as inferred from the presentation of preliminary study findings and relevant theoretical frameworks on learning media.

2. Methods

The study was conducted on May 17, 2023, at SMA Negeri 1 Sigi utilizing a research and development (R&D) methodology, namely the ADDIE Development Model. This model encompasses five stages, including analysis, design, development, implementation, and assessment [15]–[17].

- **Analysis Stage:** The objective of the analysis is to identify the issues that arise at SMA Negeri 1 Sigi, necessitating the development of learning materials that align with students' needs to facilitate more active learning.
- **Design Stage:** During this phase, the preliminary design of the product is formulated. For instance, the process of ascertaining the configuration of audiovisual media is undertaken to ensure its suitability for the content being conveyed. During this phase, data is also gathered from pre-existing sources of reference, such as scholarly research articles or educational materials.
- **Development Stage:** During this phase, the focus is on the production of a product, specifically audiovisual media that is organized and aligned with the relevant capabilities. During this phase, all necessary elements for the preparation and support of learning media will be assembled. At this level, it is necessary to do media selection, audiovisual design selection, and audiovisual learning design.
- **Implementation Stage:** Following the completion of the learning media modification process, product testing are conducted at SMA Negeri 1 Sigi. In the current phase, an assessment instrument in the form of a questionnaire is employed to evaluate the learning materials that have been developed, with a specific focus on their effectiveness for both students and teachers.

3. Results and discussion

The present study involved the participation of biology educators and a sample of 20 students from class X. The methods used the ADDIE technique.

Table 1 Criteria Achievement Appropriateness

Percentage	Criteria
0%-25%	Very No Worthy
26%-50%	No Worthy
51%-75%	Worthy
76%-100%	Very Worthy

The validation outcomes obtained from the three validators indicate that media, design, and content, each assessed against highly feasible criteria, achieved percentages of 88%, 87%, and 76% respectively. Moreover, the outcomes of student evaluations, which yielded an average score of 87% during a restricted number of trials, demonstrate very suitable criteria. According to established evaluative measures for analyzing several facets of media, including design, content, and limited testing, audiovisual media demonstrates high suitability and efficacy as an educational tool.

The utilization of audio-visuals in educational settings has been found to enhance comprehension and enjoyment compared to the mere provision of written materials. The visual and auditory presentation is aesthetically appealing to kids. Audiovisual media has the added advantage of being capable of repeated playback at any location and time [7]. The transmission of information in the contemporary digital age is facilitated by the utilization of audiovisual media, as well as the option of employing infographics as a means of communication. The utilization of audiovisual media in educational settings has been found to mitigate student boredom and foster increased excitement due to the captivating nature of the explanations provided.

Based on the data tabulation findings presented in the preceding analysis, it is evident that the students' answers to the utilization of learning media are favorable. Consequently, the students' feedback indicates that the learning media is effectively fulfilling its intended purpose. The audiovisual learning material employed at SMA Negeri 1 Sigi elicited a positive reception due to the clear and visually appealing presentation of pictures, colors, and designs. The language employed is characterized by its accessibility and clarity. The presence of educational media serves as a catalyst for motivation and aids in the retention of academic content, particularly in the realm of biology, specifically pertaining to ecosystem-related topics.

4. Conclusion

According to established standards for evaluating several facets of media, including design, content, and limited testing, audiovisual media proves to be an appropriate and effective tool for educational purposes. The presence of educational media serves as a source of motivation and aids in the retention of learning content, particularly in the context of biology, specifically pertaining to ecosystem topics.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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