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# Development of Interactive Science Learning Video Based on Ethnoedutour in Muaro Jambi Temple Area

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**Abstract:** This study aims to develop an interactive science learning video based on ethnoedutour on pressure material for junior high school students by integrating local wisdom from the Muaro Jambi Temple Area. The research method used is Research and Development (R&D) with the ADDIE model, as well as a mixed methods approach using exploratory sequential design. This research was conducted through three stages, namely analysis, design, and development. The analysis stage involved observations, interviews, and questionnaires to identify learning needs and learner characteristics. At the design stage, the video structure and storyboard were prepared based on the results of the analysis, while the development stage involved product validation by experts and student testing. The validation results show that this interactive learning video media is suitable for use, with significant improvements in the material and media aspects. The trial of 25 students showed a positive response with an average score above 80% on the aspects of material, feedback, motivation, ease of use, interaction, and accessibility. This study concludes that the interactive learning video based on *ethnoedutour* is effective in helping students understand pressure material through the local cultural context. However, further research is needed to evaluate the effectiveness of the product in increasing students' learning motivation as well as in the implementation and evaluation stages.

**Keywords:** Development; Ethnoedutour; Interactive video; Muaro Jambi temple; Science learning

## Introduction

In accordance with the guidelines set forth in the Minister of Education, Culture and Research Decree No. 56 of 2022, the independent curriculum, designed to address the challenges of 21st-century development, requires students to demonstrate the ability to engage in autonomous learning through the utilization of evolving technology. The independent curriculum not only emphasizes the use of technology but also encourages learners to gain a profound comprehension of the scientific principles that underlie everyday natural phenomena. Natural science (IPA) is a field of science that encompasses studies in the disciplines of physics, biology, and chemistry (Harefa et al., 2021). The field of physics is a branch of science that investigates the fundamental laws and phenomena of the natural world. It employs a systematic approach based on scientific methods and principles to develop a body of knowledge that can be universally applied. The findings of this process are expressed in the form of concepts, principles, and theories that provide a framework for understanding and predicting natural phenomena (Nurmayani et al., 2018).

One of the fundamental concepts in physics is that of pressure. The study of pressure is a topic that has significant implications in our everyday lives, as it pertains to the behavior of substances in a range of forms (Rahmawati & Wulandari, 2021). In the context of learning, students are presented with a comparable

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situation to that which they are currently experiencing, which serves to motivate them to engage with the learning process (Ilmia et al., 2022). One strategy that could be employed is to integrate a local cultural context (ethno) into the implementation of learning material on pressure topics.

The term "ethno-culture" is used to describe the heritage and identity of a particular group of people or community. Local culture can be defined as a culture that is situated within a village or community and is recognized and accepted by the surrounding community as a distinctive entity. Culture serves as a differentiating factor between communities, and its presence and acceptance within a particular locale are essential elements of local culture (Aisara et al., 2020). The term "culture" encompasses a multitude of forms, including the form of written records, traditional architectural works, cultural heritage objects, traditional arts/handicrafts, and advice conveyed verbally and passed down from generation to generation (Suryana & Hijriani, 2021).

The Muaro Jambi Temple represents a significant cultural heritage site within the province of Jambi. The Muara Jambi Temple area represents a vestige of the ancient Malay and Sriwijaya Kingdoms, which once functioned as the most prominent Buddhist worship center in the archipelago during the seventh to twelfth centuries (Firsty & Suryasih, 2019). The Muaro Jambi Temple area contains 82 ruins of brick buildings, which are buried in groups and surrounded by a fence wall. Of the 82 ruins, 10 have undergone a restoration process. The buildings that have undergone restoration include the Kedaton Temple, the High Temple, the Gedong I Temple, the Gedong II Temple, the Teluk Temple, the Gumpung Temple, the Twin Stone Temple, the Astano Temple, the Kotomahligai Temple, and the Telagorajo Pool (Syaputra et al., 2020).

One of the key challenges facing students in the learning process is their limited ability to grasp fundamental concepts and their interconnectivity with the surrounding environment. The extent to which students are motivated and enthusiastic about learning physics. The subject of pressure and its applications in everyday life is often perceived as abstract by students, which can impede their ability to grasp the concepts taught in this area (Permatasari et al., 2018). Furthermore, educators frequently assign exercises that require students to merely apply formulas without delving into the underlying concepts or meanings associated with these formulas. This ultimately leads to a deficiency in students' training to develop reasoning abilities in order to solve problems that require an in-depth understanding of physics concepts and to apply the concepts and principles that have been learned to real-world scenarios.

Additionally, a lack of familiarity with local culture represents a significant challenge facing Indonesian adolescents in the present era. The culture of Indonesia is no longer a significant aspect of the lives of many teenagers in the country. In comparison to their native culture, these individuals tend to adhere more closely to the customs and traditions of other countries. If a solution to the problem is not promptly identified, the result will be a reduction in the knowledge of local culture, which could ultimately lead to its extinction. One potential solution to foster student interest and knowledge is to integrate local culture into the learning process.

Based on preliminary observations conducted by researchers at SMP Negeri 25 Jambi City, it was determined that 89% of students had visited the Muaro Jambi Temple Area. Nevertheless, of the aforementioned 89%, only 10% of students visited Muaro Jambi Temple with the objective of acquiring knowledge, while the remaining 90% did so for recreational purposes and extracurricular activities. From the results of interviews with physics teachers at the school, it was determined that the primary factor contributing to the lack of learning opportunities that integrate local cultural wisdom is the unavailability of local cultural wisdom-based media, particularly those designed for physics learning in the Muaro Jambi Temple Area. Furthermore, the considerable distance between the educational facility and Muaro Jambi Temple presents a significant challenge to the implementation of the tour learning approach.

One potential approach for introducing cultural sites is the use of a tour method. The tour method is a pedagogical approach that entails bringing students to an object or location outside the classroom for the purpose of studying it (Wondal, 2019). The implementation of a tourism-based learning approach enables students to develop tangible skills and gain first-hand experience in the learning process. Nevertheless, the implementation of the tour method necessitates a considerable investment of time and financial resources (Ayuandia, 2017). It is, therefore, incumbent upon educators to select media that can be readily deployed with minimal preparation and at a relatively low cost.

In order to implement the tour method in the Muaro Jambi Temple Area, it is necessary to have a supporting tool in the form of learning media. Media has the capacity to make abstract concepts concrete, facilitate the introduction of challenging or inaccessible objects into the learning environment, display objects that are too large to be transported or observed in person, and provide opportunities for direct observation of objects that can be seen with the naked eye (Rahim et al., 2019). Video media represents one of the most effective mediums for illustrating the learning process at the Muaro Jambi Temple.

Video media represents a specific category of audio-visual media, characterized by the ability to depict a moving object in conjunction with sound that aligns with the visual content (Yuanta, 2020). The efficacy of video-based learning is enhanced when it is made interactive. Interactive video media is defined as electronic media that combines text, graphics, audio, and moving images accessed through video playback. It is equipped with a controller that can be operated by the user, facilitating interaction between the user and the media (Ginting et al., 2022).

The findings of research conducted by Sagita et al. (2022) indicate that learning videos can facilitate students' comprehension of temperature and heat concepts, thereby assisting teachers in their pedagogical endeavors (Sagita et al., 2022). However, a limitation of video development is the lack of interaction between students and the media. The research conducted by Horizon (2021) revealed that students who engaged in learning activities utilizing contextual learning videos exhibited superior learning outcomes compared to those who did not. However, a notable limitation of this development is the lack of interactivity in the media. The research conducted by Purwanti et al. (2022) revealed that the developed media facilitated educators' creation of content, contained concise material, included discussion of sample questions and exercises, and was of a relatively small video size, thus not imposing a significant burden on students in terms of access. Nevertheless, the developed media has not incorporated elements of local culture.

In light of the aforementioned background, our objective is to develop interactive learning videos that integrate elements of local wisdom, scientific knowledge, and tourism for the purpose of facilitating scientific learning in academic institutions. The objective of this study is to examine the potential for developing interactive science learning videos based on ethoedutourism in the Muaro Jambi Temple area.

## Method

*Research Method*

This type of research adapts the ADDIE development model as a framework for research and development activities. The methodology employed is a mixed method with an exploratory sequential design, which entails the initial collection of qualitative data to explore a phenomenon, followed by the subsequent collection of quantitative data to elucidate the relationships identified in the qualitative data (Creswell, 2019). The research design is illustrated in Figure 1.


**Figure 1**. Research design

*Research Procedure*

The research was conducted in three stages from ADDIE model: analysis, design, and development. The objective is to create a prototype or preliminary product that will undergo further testing at a later stage. Subsequent to further testing or the solicitation of feedback, researchers will proceed to the implementation and evaluation phases. In the initial phase of the study, the research team gathered qualitative data through an in-depth analysis of several key factors. These included the needs of potential users, the characteristics of learners, the prerequisites and initial abilities of the target audience, the learning environment, and a comprehensive curriculum analysis. Subsequently, at the design stage, the researchers employed the findings of the preceding qualitative data collection to ascertain the requisite resources, schedules, and design product prototypes. Moreover, at the development stage, researchers gathered quantitative data derived from the validation and revision of the resulting product. The research procedure is illustrated in Figure 2.

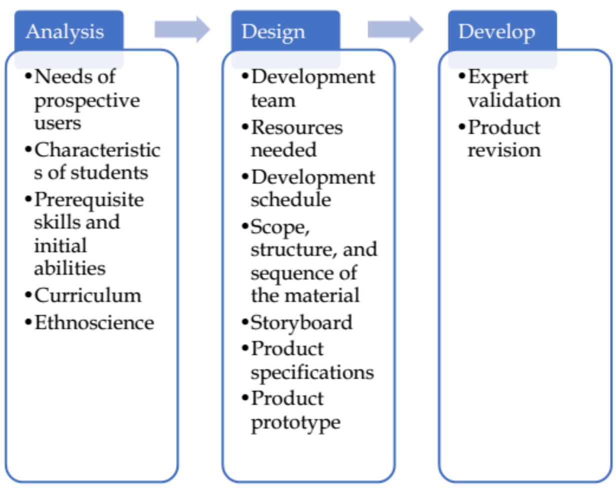


**Figure 2**. Research procedure

A needs analysis is conducted to guarantee that the product is developed in accordance with the requirements of the target users. In this analysis, a preliminary investigation was undertaken through a review of existing literature to ascertain the learning outcomes that are required. Subsequently, a needs questionnaire was administered to the student population. Subsequently, interviews were conducted with the subject teachers in order to ascertain the requirements of the media to be developed. The analysis of learner characteristics is an in-depth evaluative process of the intrinsic aspects of individuals, including interests, talents, limitations, and strengths. The analysis of learner characteristics is conducted in order to ensure the suitability of the media developed for use by learners as media users (Putri & Festiyed, 2019). A prerequisite and initial ability analysis is conducted to determine the fundamental knowledge and abilities that users are expected to possess. In this analysis, students are presented with a series of diagnostic questions that are integrated into the needs questionnaire. A learning environment analysis was conducted to ascertain the prevailing pedagogical culture within the school, the specific learning culture within the classroom, and the dynamics of interaction between teachers and between students. In this analysis, direct observation of the learning environment at the school and in the classroom is conducted. A curriculum analysis is conducted to ensure that the interactive science learning videos developed are aligned with the desired outcomes outlined in the curriculum. In this study, the interactive science learning videos developed will be aligned with the Learning Outcomes (CP) of the Merdeka Curriculum at the junior high school level in the science subject of pressure. An ethnoscience analysis is conducted to ascertain the interrelationship between scientific concepts and local wisdom.

*Data Collection*

The data collected in this study can be classified into two categories: qualitative and quantitative data. Qualitative data were gathered through observations and interviews conducted in the field. These observations and interviews were documented using observation sheets, questionnaires that assessed students' characteristics, and interview guide sheets. In contrast, the quantitative data was derived from expert validation sheets and user test questionnaires.

At the outset of the study, the researchers documented the procedures and science learning media employed in the classroom through the use of an observation sheet. Subsequently, the researchers conducted interviews with teachers using an interview guide to ascertain their perspectives and experiences regarding the utilization of science learning media, with a particular focus on interactive science learning videos. Subsequently, the researchers conducted a survey pertaining to the characteristics of the students, utilizing a questionnaire. Subsequently, the researchers validated two experts using a validation sheet to ascertain the viability of the interactive science learning media developed. The expert validation process encompassed an assessment of the material and media aspects. Subsequently, the researchers conducted a user test questionnaire survey with a number of students who had been involved in the trial use of the interactive science learning videos.

*Data Analysis*

The qualitative data obtained from observations and interviews were subjected to descriptive analysis. The qualitative data analysis process comprises five stages, as follows: 1) Organize data, 2) Transcribe data, 3) Explore the general sense of the data, 4) Code the data, and 5) Describe and develop themes from the data (Cresswell, 2019). Concurrently, the quantitative data obtained from expert validation, learner characteristics questionnaires, and user test questionnaires were subjected to statistical analysis. Descriptive statistics, specifically the mode with a percentage, were employed in the analysis of the learner characteristics questionnaire. The expert validation and questionnaires employed a Likert scale, with the following responses: 1 = Strongly Disagree, 2 = Disagree, 3 = Moderately, 4 = Agree, and 5 = Strongly Agree. Moreover, the data obtained from the validation and questionnaires were calculated using the following percentage formula:

$$Percentage = \frac{Total\ Score}{Maximum\ Score} \times 100\% \quad (1)$$

Ultimately, the researcher provided an interpretation of the percentage score. The interpretation is based on the findings presented by Oktaviara & Pahlevi (2019) in Table 1.

**Table 1**. Assessment Interpretation

| Assessment (%) | Interpretation |
|---|---|
| 0 – 20 | Not Very Good |
| 21 - 40 | Not Good |
| 41 - 60 | Fairly Good |
| 61 - 80 | Good |
| 81 - 100 | Very Good |

## Result and Discussion

*Result and Discussion of Analysis Stage*

A review of the literature revealed that the lecture method and group discussions are the most commonly used approaches to science learning. Some students display enthusiasm for the material, while others appear disinterested. The use of video media has been observed to elicit greater enthusiasm among students in the learning process. Students have utilized mobile devices, including cellphones and laptops, for educational purposes. The media employed are PowerPoint and video. The majority of learning videos are sourced from YouTube. The media utilized has not been integrated with local cultural elements. The dearth of local culture-based media in schools represents a significant challenge. A total of 52.56% of students indicated that they found science learning challenging to comprehend. Additionally, 87% of students expressed interest in tour-based learning, 70% indicated a preference for learning with videos, and 100% demonstrated a lack of familiarity with the scientific concepts associated with the Muaro Jambi Temple area.

Heavy reliance on traditional teaching methods, such as lectures and group discussions, is common in science education, a trend supported by numerous studies. For example, research shows that while lectures are effective in conveying large amounts of information quickly (Biggs & Tang, 2011), they often fail to engage all students equally, which may explain the mixed levels of enthusiasm observed among learners in this study. The introduction of more interactive and engaging methods, such as video media, can potentially address this issue, as videos have been shown to increase student motivation and interest in the material (Berk, 2009). The positive student response to video-based learning in the study aligns with the broader literature indicating that multimedia resources, especially videos, can make abstract or complex scientific concepts more accessible (Mayer, 2009).

The widespread use of mobile devices and tools like PowerPoint and YouTube for educational purposes is consistent with the increasing integration of technology in classrooms. However, the lack of local cultural content in these media is a notable gap. Cultural context plays an important role in making learning relatable and meaningful for students (Gay, 2000). The absence of locally-derived media reflects a broader issue in education where the inclusion of regional or indigenous knowledge is often overlooked in favor of more generalized, global resources (Aikenhead & Jegede, 1999). This underlines the finding that 100% of students had no familiarity with the scientific concepts associated with the Muaro Jambi Temple area, indicating a disconnect between the curriculum and the local environment.

The strong preference for tour-based learning (87%) and video learning (70%) further supports the idea that students are more engaged when they can experience learning through immersive, practical, and visual methods. These findings are consistent with experiential learning theories (Kolb, 1984), which emphasize the importance of hands-on, contextual learning experiences in science education. This also resonates with the need for more interactive learning materials that can bring science to life in a way that connects with students' everyday experiences and their cultural heritage.

The results of the interviews with science teachers revealed that interactive learning video media had never been employed in the teaching of science. Moreover, there is a dearth of locally-derived science learning media at the educational institution. Based on the results of the needs assessment conducted with students, it can be concluded that there is a need for media that can effectively explain and visualize the practical applications of physical science in everyday life. The questionnaire also revealed that students' knowledge of the culture of the Jambi region is still in need of development. Based on the findings of the observations, interviews, and needs questionnaires, it can be concluded that the development of interactive science video media integrated with local culture is a necessary step.

The findings from the teacher interviews reinforce the observation that local science media has not been developed or integrated effectively. Teachers' lack of experience using interactive video media in science teaching could be due to a variety of factors, including a lack of resources, training, or time to develop such materials (Voogt et al., 2013). The identified need for media that visualizes practical science applications, as indicated by both students and teachers, highlights the importance of developing educational tools that not only align with the curriculum but also incorporate local cultural elements to foster deeper understanding and relevance.

The need to incorporate local culture into science learning is supported by the broader discourse on culturally responsive teaching (Ladson-Billings, 1995). By integrating local knowledge, such as the scientific significance of the Muaro Jambi Temple area, educators can create learning experiences that resonate more deeply with students, fostering both scientific literacy and cultural awareness.

*Result and Discussion of Design Stage*

The design results, along with the developer structure, requisite resources, development schedule, storyboard, and product specifications, were obtained based on the aforementioned criteria. The requisite resources and product specifications are presented in Table 2.

The project's design structure is supported by a range of requisite resources, including high-performance hardware (Intel Core-i3 CPU, Windows 11), advanced editing software (Adobe Premiere Pro CC 2018, Adobe Photoshop CC 2018), and interactive tools such as H5P embedded through Lumi. This type of multimedia integration is consistent with Mayer's Cognitive Theory of Multimedia Learning (2009), which posits that combining visual and auditory information in a coherent manner enhances learners' ability to process and retain information.

**Table 2.** Spesification of Resources

| Resources | Spesification |
|---|---|
| Computer device | Minimum processor CPU Intel Core-i3, Windows 11, 1.7 Ghz |
| Software editing | Adobe Premier Pro CC 2018, Adobe Photoshop CC 2018, Lumi |
| Internet network | WiFi or data package |
| Reading sources | Books, scientific and non-scientific articles |
| Video ratio | 16:9 (1920 x 1080 pixel) |
| Interaction design | Multiple choice questions, description questions, and information menu |
| Audio-visual model | Interactive video in H5P format |
| Text design | Roboto, poppins |
| Graphic design | Square, circle, and temple elements |
| Animation | Zoom in, zoom out, slide, and pop up |

The Muaro Jambi Temple area comprises a number of temples. This connection was then utilized as the foundation for the development of the scope, structure, and sequence of materials, as illustrated in Table 3.

**Table 3.** Material in Each Section

| Video Section | Material |
|---|---|
| Section 1 : Introduction | Overview of Ethoedutour<br>Usage Guidelines<br>Educational Objectives |
| Section 2 : Pressure on solids | The Historical Background of Gumpung Temple<br>Analysis of Solid Material Pressure on Gumpung Temple |
| Section 3 : Pressure on liquids | Historical Overview of Telago Rajo Pond<br>Analysis of Liquid Pressure in Telago Rajo Pond |
| Section 4 : Pressure on gases | Overview of Astano Temple<br>Analysis of Gas Pressure in Lantern Ascension during the Vesak Festival at Muaro Jambi Temple |

The contextualization of educational content within the Muaro Jambi Temple area demonstrates the effective application of place-based learning. Place-based education, which emphasizes the use of local heritage and surroundings to teach broader concepts, has been identified as a successful strategy in fostering student engagement and connecting academic content with real-world scenarios (Sobel, 2004). By linking the historical context of the Muaro Jambi temples with physics concepts such as pressure on solids, liquids, and gases, the project ensures that learning is both relevant and immersive.

During the development of a product prototype, the researchers performed video recording, video editing, and incorporated interactions. The recording was captured with a high-definition smartphone camera at various sites within the Muaro Jambi temple complex, including Gumpung Temple, Astano Temple, and the Telago Rajo pond. The editing process for educational videos entails merging and trimming footage, integrating the narrator's voice, adding visual components, supplementing with supplementary movies and images, and inserting music. The processing of video footage from the Muaro Jambi Temple location to distinguish between usable and unusable videos. This edit employs the mark in and mark out functions on the Source Panel or the razor tool. The clips prepared for editing are subsequently amalgamated on a timeline. The audio recordings detailing the history of the Muaro Jambi temple location are integrated with the previously recorded material explanations and video clips. The researcher synchronizes the previously recorded narrator's voice with the video footage in the same chronology. The narrator's voice is synchronized with the video's images. Images, videos, and supplementary graphics are sourced from personal records and online searches. The photos, movies, and supplementary drawings are arranged on separate tracks from the primary video track, enabling them to overlay the main video. Music is incorporated to mitigate monotony in the explanation and to augment the video's visual impact. The researcher selected Malay instrumental music as the background audio for the video. The music volume must be calibrated to avoid interference with the narrator's voice, decreasing during narration and increasing after the narration ceases. The completed video is thereafter exported in MP4 format. The footage is then uploaded on the researcher's YouTube channel. The objective of uploading the film to YouTube is to enable its embedding in H5P, hence preventing an increase in H5P's data burden.

During the interaction addition phase, the video project posted to the YouTube channel is then embedded into H5P (HTML5 Package) to incorporate interactive features. Researchers utilized Lumi software to facilitate the modification of H5P interactions. The interaction menus employed by the researchers comprise text interaction, table interaction, multiple-choice interaction, and essay question interaction. This assortment of interactions is customized to meet user demands. Researchers employ text interaction and table interaction to furnish consumers with more information. Simultaneously, multiple-choice and essay question interactions are employed to present inquiries that provoke students' critical thinking and evaluate their competencies. The researchers are revising the chosen interactive menu. This editing seeks to allocate display time for interactions, text, and feedback. The duration of the interaction is modified in accordance with the narrator's directives in the video. The content of the engagement is customized to the forthcoming declarations or inquiries. The researcher's input includes true/false statements, grading, and the right answers to the given questions. Upon completion of the feedback, the interactive video project is subsequently saved in H5P format. This H5P file can subsequently be integrated into e-learning platforms such as Moodle. The educational media videos currently accessible can be viewed using the link provided in the table below.

**Table 4.** Links of Video Parts

| Title | Link |
|---|---|
| Introduction | https://app.lumi.education/run/oTfXhW |
| Part 1: Pressure on Solids | https://app.lumi.education/run/I0Bug6 |
| Part 2: Pressure on Liquids | https://app.lumi.education/run/rYzjGc |
| Part 3: Pressure on Gases | https://app.lumi.education/run/LY69Kn |

The introductory video presents the features of the interactive science learning video centered on ethnoedutour, including the tour map of the Muaro Jambi Temple area, the scientific topic of pressure, and the guidelines for utilizing the interactive science learning video based on ethnoedutour. Figure 3 displays an excerpt from the introductory video.


**Figure 3**. Introductory video

In video 1, the narrator encourages users to explore the Jambi Muaro Temple area virtually, beginning at the front gate and progressing to various temples and other solid structures within the area, including Gumpung Temple, Kedaton Temple, Gedong Temple, High Temple, Twin Stone Temple, and Astano Temple. In addition to inviting users to visit various temples and solid objects, the narrator provides an overview of the history, function, shape, and physics concept of pressure on solids related to the temple. The narrator poses a series of straightforward and interactive questions, encouraging users to engage with the material by attempting to provide answers. Subsequently, the narrator encourages users to undertake a quantitative analysis of the physical measurements of the temple, including mass and cross-sectional area, and then apply them to an illustrative example of a problem pertaining to pressure on solids in relation to the temple. Subsequently, the narrator provides users with the opportunity to respond to the exercise questions pertaining to the concept and equation of pressure on solids that have been presented. During the viewing of the learning video, users have the ability to advance, rewind, respond to interactive questions, skip to specific points, repeat the video at their discretion, and receive immediate feedback on their responses. Figure 4 provides a representative sample of the content presented in the Introduction Video.

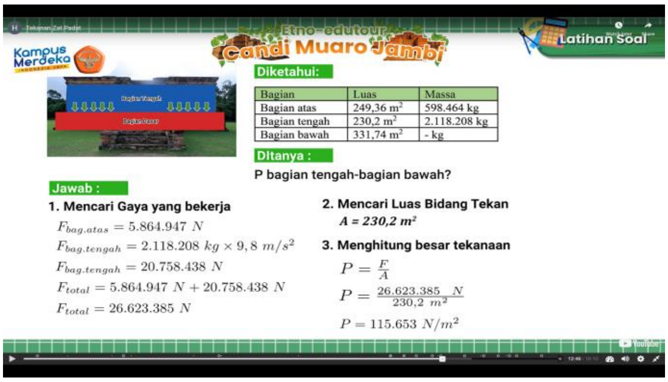


**Figure 4**. Video 1: pressure on solids

In video 2, entitled "Pressure on Liquid Substances," the narrator invites users to virtually visit the Telago Rajo Pool, situated within the Muaro Jambi Temple complex. In addition to inviting users to visit the pond, the narrator provides an overview of its history and function, as well as a discussion of the physics concept of pressure on liquids in relation to the pond. The narrator poses a series of straightforward and interactive questions, encouraging users to engage with the material by attempting to provide answers. Subsequently, the narrator encourages users to undertake a quantitative analysis of the physical measurements of the pond, including density and depth, and then apply them in an illustrative example of pressure on liquid material related to the temple. Subsequently, the narrator provides users with the opportunity to attempt to respond to the exercise questions pertaining to the concept and equation of pressure in liquids that have been presented. During the viewing of the learning video, users have the ability to advance, rewind, respond to interactive questions, skip to specific points, repeat the video at their discretion, and receive immediate feedback on their responses. Figure 5 provides a representative illustration of the introductory video.

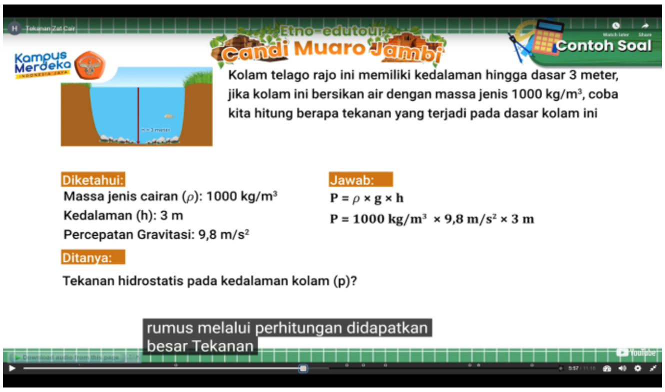


**Figure 5**. Video 2: pressure on liquids

In Video 3, entitled "Pressure on Gas Substances," the narrator invites users to undertake a virtual excursion to the Kedaton Temple, situated within the expansive Muaro Jambi Temple complex. The narrator introduces Muaro Jambi Temple as one of the primary locations for Vesak celebrations among Buddhists in Jambi. Subsequently, the narrator posits that the Vesak celebration typically involves the release of lanterns, which he links to the concept of pressure in gaseous substances within the context of physics. The narrator presents a series of straightforward and interactive questions, encouraging users to engage with the material by attempting to provide answers. Subsequently, the narrator encourages users to undertake a quantitative analysis of the physical measurements in the pool, including lift force and atmospheric pressure, and then apply them in an example of pressure on gaseous substances related to the temple. Subsequently, the narrator provides users with the opportunity to respond to questions pertaining to the concept and equation of pressure in gaseous substances that have been presented. During the viewing of the learning video, users have the ability to advance, rewind, respond to interactive questions, skip to specific points, repeat the video at their discretion, and receive immediate feedback on their responses. Figure 6 provides a representative sample of the content presented in the Introduction Video.

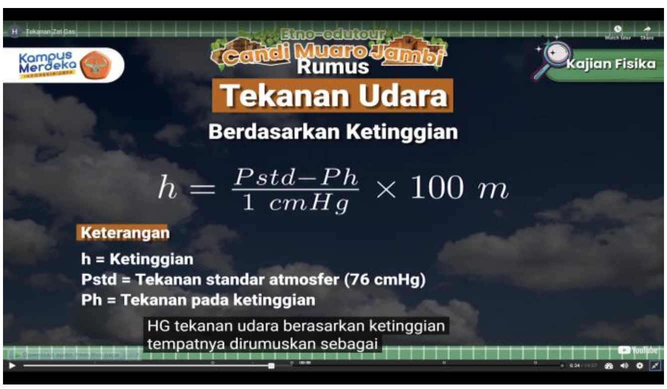


**Figure 6**. Video 2: pressure on gases

The inclusion of interactive features such as multiple-choice questions, description questions, and information menus in the H5P format is particularly noteworthy. Research suggests that interactive video content significantly improves learner engagement and comprehension (Zhang et al., 2006). By allowing users to control the flow of the video (rewind, skip, respond to questions), this project capitalizes on active learning principles, which have been shown to promote higher-order thinking skills (Prince, 2004).

The use of high-definition smartphone cameras for recording, along with professional editing techniques (e.g., mark in/out, syncing audio with video), reflects current trends in educational media production. As the research by Guo et al. (2014) indicates, video content that is concise, interactive, and well-structured can enhance the learning experience, particularly in online environments. The integration of Malay instrumental music also adds a cultural layer, making the content more engaging while adhering to cognitive load principles by ensuring that background audio does not overwhelm the learner (Sweller, 2010).

*Result and Discussion of Develop Stage*

At this juncture, the interactive learning video media that has been designed is subjected to assessment by validators. Validation is conducted by experts in the field of media and by material experts. Validation is conducted on three occasions in order to ensure the creation of valid and feasible media. Following the assessment of the learning video media, the subsequent phase is the implementation of a trial with students, with the objective of gauging their response to the developed material. The results of the validation process are presented in Figures 7 and 8.

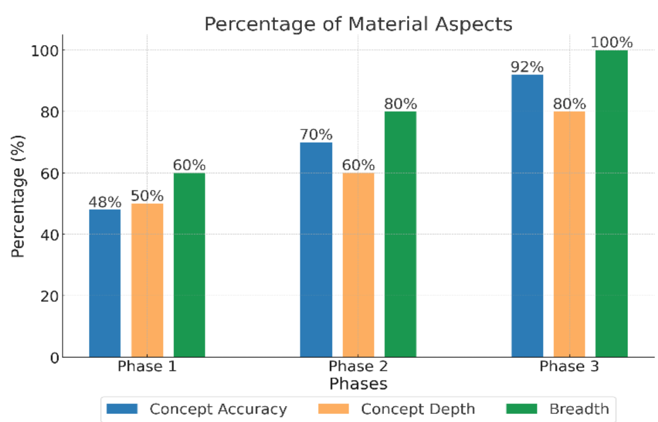


**Figure 7**. Percentage of material aspects

As illustrated in Figure 7, the initial stage of material aspect validation yielded the following results: a score of 48% for concept correctness, a score of 50% for concept depth, and a score of 60% for concept breadth. This indicates that at the preliminary stage, the material presented exhibits deficiencies, particularly with regard to correctness and the depth of the concept. Consequently, revisions are necessary to enhance these shortcomings. Following the revisions made in stage 2, a notable enhancement was observed. The correctness of the concept increased to 60%, the depth of the concept to 70%, and the breadth of the concept remained consistent at 80%. In the final stage, the concept was deemed to be 92% correct, 80% deep, and 100% broad. This suggests that at this juncture, the media in question had satisfied the desired criteria standards with respect to accuracy and the depth of the material presented, as well as its broad coverage. At the final stage, the concept was found to be 92% accurate, 80% deep, and 100% broad. This suggests that at this juncture, the media has satisfied the desired standard criteria with respect to accuracy and depth of material, as well as broad coverage of material.

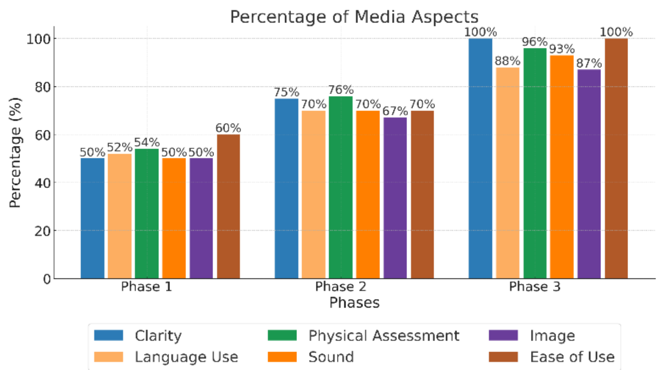


**Figure 8**. Percentage of media aspects

As illustrated in Figure 8, the initial stage of media aspect validation yielded the following scores: 50% for clarity, 52% for language, 54% for physical assessment, 50% for sound, 54% for images, and 60% for ease. At this juncture, the elements of language and clarity were subjected to particular scrutiny, as the scores remained relatively low, indicating a necessity for enhancement to augment comprehension and the simplicity of material delivery. In the second stage, all aspects demonstrated improvement. An increase was observed in clarity (75%), language (70%), physical assessment (76%), sound (70%), pictures (67%), and ease (70%). This increase demonstrated a notable enhancement in the visual, verbal, and physical elements of video media delivery. In the final stage, all aspects demonstrated notable improvement, with 100% clarity, 88% language, 96% physical assessment, 93% sound, 87% image, and 100% convenience. This demonstrates that the developed learning video media meets the requisite feasibility standards and is suitable for use by students.

The validation conducted in three stages revealed a notable enhancement in the material and media aspects. The initial two stages served as corrective steps, ultimately culminating in the production of a valid and feasible media product in the third stage. The conceptual correctness, depth of concept, and breadth of material all reached the desired standard, as did the media aspects, including clarity, language, and visuals that support the effective delivery of the material. Following the completion of the validation process, the media was deemed suitable for testing with students.

In the testing phase of the ethnoedutour-based interactive science learning video with a sample of 25 students from a junior high school, the researchers distributed questionnaires to the students. The questionnaire presents user responses in the form of statements and assessments of ethnoedutour-based science learning videos from six perspectives: material, feedback, motivation, user-friendliness, interaction, and accessibility. The results of the user response are presented in Figure 9.

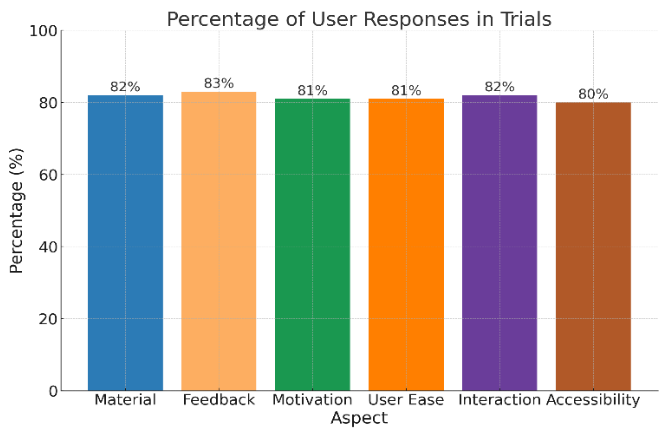


**Figure 9**. Percentage of user responses in trials

As illustrated in Figure 9, the material aspect is determined to be 82%. The high percentage indicates that the majority of students express satisfaction with the content of the material presented. This may be indicative of the material's relevance, interest, and alignment with students' learning needs. The highest percentage was obtained in the feedback aspect, at 83%. This indicates that students perceived the feedback provided during the learning video to be beneficial in enhancing their comprehension of the material. This is significant in facilitating an interactive and responsive learning process. Additionally, students provided a favorable evaluation of the learning video's motivational impact, with an average rating of 81%. A high level of motivation suggests that the video is effective in capturing students' attention and sustaining their interest in the subject matter, namely science. Similarly, ease of use was rated highly, with an 81% response rate. This suggests that the interface of the video or application utilized for learning is not perplexing and straightforward for students to navigate, thereby facilitating a more seamless learning experience. The level of interaction between the learning video and students was also rated quite highly, at 82%. This suggests that the video is capable of actively engaging students in the learning process, whether through quizzes, questions, or other methods that encourage active participation. Although the percentage for accessibility is slightly lower than the other aspects, at 80%, it nevertheless indicates that the majority of students perceive the learning video to be readily accessible. Nevertheless, there is potential for enhancement in this area, such as facilitating access for students with special needs or ensuring compatibility with a range of devices. The overall response from students to this learning video was markedly positive, with an average score exceeding 80% for all assessed aspects. This demonstrates that the creation of this ethnoedutour-based learning video has effectively fulfilled students' expectations in regard to content, interactivity, and ease of access. Nevertheless, further enhancements to the accessibility of the video could be beneficial in order to reach a broader audience with diverse needs and learning environments.

## Conclusion

The research has yielded a product in the form of junior high school science learning video media on the topic of interactive and ethnoedutour-based pressure material in the Jambi Muaro Temple area, which can be utilized for educational purposes. The interactive video presents pressure concepts in the format of a virtual tour. The interactive science learning video was deemed feasible by the validators and garnered favorable feedback from users. It is recommended that the research be continued with the stages of the development model that have not yet been carried out, namely implementation and evaluation, in order to ascertain the effectiveness of the products developed. Moreover, it is recommended that the relationship between the utilization of interactive science learning videos and the motivation of students be investigated.

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Conceptualization, Jufrida and M. Furqon; methodology, M. Furqon; software, M. Haykal Alfaizi; validation, Jufrida and M. Furqon and Hebat Shidow Falah; formal analysis, M. Haykal Alfizi; investigation, M. Haykal Alfaizi.; resources, Rahma Dani.; data curation, Hebat Shidow Falah; writing—original draft preparation, M. Furqon; writing—review and editing, M. Furqon; visualization, M. Haykal Alfaizi; supervision, Jufrida; project administration, Rahma Dani; funding acquisition, Jufrida. All authors have read and agreed to the published version of the manuscript.

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**Conflicts of Interest**
The authors declare no conflict of interest.

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