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Developing Interactive Multimedia-Based Locomotor Basic Motion Teaching Materials in the Physical Education Course

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ABSTRACT

This developmental research aims to produce products in the form of interactive multimedia when learning Physical Education in the PGSD FIP UNIMED Study Program, which is suitable for use as a learning resource. This type of research is research and development (Research and Development). The participants of this study consisted of 28 students enrolled in the PGSD physical education course. The designed product consists of interactive multimedia-based instructional material applications and videos demonstrating basic locomotor movements. The learning application includes fundamental locomotor motion materials such as walking, running, leaping, and other instructions that facilitate the basic locomotor motion process. The practicality of interactive multimedia is supported by the assessment findings conducted by media experts, which achieved a score of 4.84 (in the very good category), and material experts, who achieved a score of 4.83 (also in the very excellent category). These are interactive multimedia products specifically designed and evaluated for students enrolled in the PGSD study programme, focusing on physical education courses. The small-scale testing yielded a result of 85.95% in the "very good" category, while the large-scale tests achieved a value of 93.65% in the same category. The field implementation tests have demonstrated that the product is highly effective in facilitating interactive multimedia learning in Physical Education within the PGSD FIP UNIMED Study Programme. Therefore, it is deemed suitable for use as a learning resource.

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1. INTRODUCTION

Education is the transmission of knowledge, skills, and customs from one generation to another through teaching, training, and research. Education cultivates qualities such as ambition, virtuous behaviour, individuality, inner fortitude, and practical abilities that are advantageous both personally and for the betterment of society. Education has the ability to continually shape and develop one's ideas

and emotions, resulting in ongoing changes in human consciousness that greatly influence the educational process (Darmawan, 2018). Physical education, sports, and health are included as subjects in the formal curriculum of elementary schools. According to Article 37, Paragraph 1 of the Law of the Republic of Indonesia No. 20 of 2003 on the national education system, the fundamental curriculum for basic education must include religious education, civic education, language, mathematics, natural sciences, social sciences, arts and culture, physical education and sports, as well as local content (Pradana, 2021).

Physical education is the deliberate and systematic process of educating an individual or a member of society through a range of physical activities. Its purpose is to enhance physical abilities and skills, promote intellectual growth, and foster personality development. Utama Bandi (in Vai et al., 2019) asserts that physical education is an integral component of national education that seeks to enhance students' capabilities through physical exercises (Wardani, 2018). Moreover, Paramitha and Anggara (2018) emphasise the meticulous implementation of physical education planning to effectively address the individual requirements of children in terms of their development, growth, and behaviour. Physical education aims to enhance not just psychomotor talents but also the cognitive and affective abilities of children. As stated by Kadek (in Komaini et al., 2021), basic movement skills refer to the fundamental talents that students often engage in to enhance their overall quality of life. The acquisition of motor skills coincides with physical maturation, particularly during the initial stages when fundamental movement patterns are established (Agustina et al., 2021). The fundamental locomotor actions encompass walking, running, and leaping (Muryani, 2019).

Teaching materials are very important for lecturers and students in the learning process. Without teaching materials, it will be difficult for lecturers to improve learning effectiveness. Likewise, without teaching materials it will be difficult to adjust to learning, especially if the lecturer teaches the material quickly and less clearly (Wiguno et al., 2022). Therefore, teaching materials are considered as materials that can be used by both lecturers and students as an effort to improve the quality of lectures. Teaching materials are very important for lecturers and students in the learning process (Wahyudin et al., 2022). The teaching materials compiled are very important to overcome the limitations of motion learning books in physical education so far. This is because teaching materials have several advantages including: 1) increasing motivation and interest, 2) containing material according to the demands of needs, 3) using flexible learning patterns, 4) can be relearned at any time, 5) accommodating various difficulties, 6) providing summaries, 7) having a communicative writing style (Safudin, 2022).

Basic motion ability is divided into three categories, namely Locomotor, Non locomotor, and manipulative. According to Utari & Indahwati (in Kurniawan et al., 2022), the nature of basic locomotor motion owned by children basically must be done by children according to their age development stage. However, some children still find it difficult to perform basic locomotor movements. Such difficulties can cause obstacles to child development. Basic locomotor motion can be said to develop when children who are taught are skilled in using good limb coordination such as walking, running, bending, pedaling legs and hands, jumping, walking twisting right and left. According to Widiarti, et al (in Thoms et al., 2022) the basic locomotor motion can be concluded as follows: Basic locomotor movements can be said to develop if children are skilled in using the coordination of their limbs such as walking, running, bending, pedaling legs and hands, jumping, walking twisting right and left. Based on the opinion of these experts, it can be concluded that the basic motion of the locomotor consists of walking, running, and jumping. Basic locomotor motion aims as a pattern of basic motion skills that are complex, specific, and have a regular rhythm of motion. Locomotor motion is the motion of moving the body from one place to another (Mintriarti, 2020).

To enhance the efficacy of information distribution, a medium is required in learning activities (Lestari & Puspitasari, 2021). Interactive multimedia is the most effective form of communication media for learning purposes. Haffost (in Wang & Tseng, 2020) defines multimedia as a computer system that comprises both hardware and software, facilitating the integration of various elements such as photos, videos, photography, graphics, and animation, along with sound, text, and data, all of which are

controlled by computer programmes. Interactive refers to a state of mutual action or activity that involves interaction. This has been said by the Guidelines for Bibliographic Description of Interactive Multimedia (in Steynberg et al., 2020) namely "Interactive multimedia contains two-way communication, namely the relationship between humans (users) and computers (applications). Humans as users are involved to interact with the program so that users have a habit of controlling the application." The use of multimedia allows students to receive learning information audio, visual, and audio-visual so that students can capture the content of the material or information optimally and are able to maintain memory of the material for a long time. With interactive multimedia, it is possible that in addition to understanding the material provided, students will be motivated to take part in learning activities because they feel interested in the learning tools used (Chen et al., 2022).

The results of interviews with lecturers of the PGSD FIP UNIMED Study Program show that the basic locomotor motion material is only given six times in 1 semester and the resources used are also still limited to books, the internet, and submissions from teachers. This makes the material less conveyable to learners due to lack of learning opportunities. The delivery of material by a teacher needs a method so that this material is delivered and implemented by students. According to Riza, et al, (2021), the educational process is said to be advanced and successful if we can contribute to the development of science and technology (Drey et al., 2022). This mindset demands the role of a teacher in the learning process. Advances in information technology can certainly be a tool to improve teacher competence. Technology that can be used in this era is technology that can certainly be a tool in solving student learning problems. Development of an interactive multimedia to assist a teacher in overcoming problems and to achieve the expected competencies (Makhachashvili & Semenist, 2022). Researchers try to develop interactive multimedia learning through research and development models in learning Physical Education learning courses in the PGSD FIP UNIMED Study Program of locomotor basic motion materials (Harden, 2022). This research and development resulted in a product in the form of interactive multimedia learning basic locomotor motion material. Through this interactive multimedia learning, students are expected to be able to understand the material thoroughly and be able to understand the basic locomotor motion material.

2. METHODS

This research employs a quantitative approach with the method of Research & Development (R & D) Sugiyono (2019). This research uses a research model adapted from the ADDIE developmental model (analysis, design, development, implementation, and evaluation). The ADDIE model is used to guide development in building effective training program tools or infrastructure. However, in this research, only 4 stages were carried out, namely analysis, design, develop, and implementation, because research only assesses the feasibility of the product, it does not assess the effectiveness of learning media products. Product development in this research is in the form of developing teaching material media. The developed media will be assessed by media and material experts. So it is expected that the results of the development of learning media. The data collection used for PGSD study program students who attend physical education courses is qualitative data, because sentences and not numbers express it, while the quantitative data is obtained by converting qualitative data by giving scores to the data that has been collected (Riza et al., 2021).

The data analysis technique employed is descriptive analysis, which involves the process of describing and evaluating data from each individual component. The data collected will be analysed using quantitative descriptive techniques. Once the requisite data is gathered, it undergoes additional analysis. The description then subjected to statistical analysis, where it is categorised as either "Strongly Agree," "Agree," "Disagree," or "Strongly Disagree." These categories are then turned into quantitative data using a scoring scale ranging from 1 to 4. Moreover, the outcomes of the product testing are expressed as percentages. This technique is employed to acquire quantitative data analysis derived from the dissemination of surveys.

3. FINDINGS AND DISCUSSION

The main result of this research and development is the development of interactive mulitimedia-based locomotor basic motion learning media in Physical Education lessons with the subject matter of Locomotor basic motion of Walking, Running and Jumping. This research and development is carried out using development procedures according to Sugiyono which have been adjusted to research needs. Data on the results of each stage of the research and development procedure carried out are as follows.

The interactive multimedia-based locomotor basic motion learning media has been deemed valid based on product validation conducted through a series of trials and revisions. The trial was conducted in four stages: (1) assessment of three expert validations, including subject matter experts for physical education lecturers, material experts, and validations by interactive multimedia media experts/programmers specialising in android applications; (2) small group trials; and (3) large group trials (Nasution & Sibuea, 2022).

The results of the media expert's assessment of the development of interactive multimedia-based locomotor basic motion learning media based on two aspects, namely the display aspect and the programming aspect, showed the average percentage of assessment of 77.89% to 96.84% (large-scale) each on the display aspect, and 75.0% to 100% (large-scale) on the program aspect including the overall Good category with an average of 76.45% to 98.42% (large-scale), Which means interactive multimedia-based locomotor basic motion learning media can meet the demands of learning needs. The average percentage of media expert assessment results is shown in Figure 1 below.

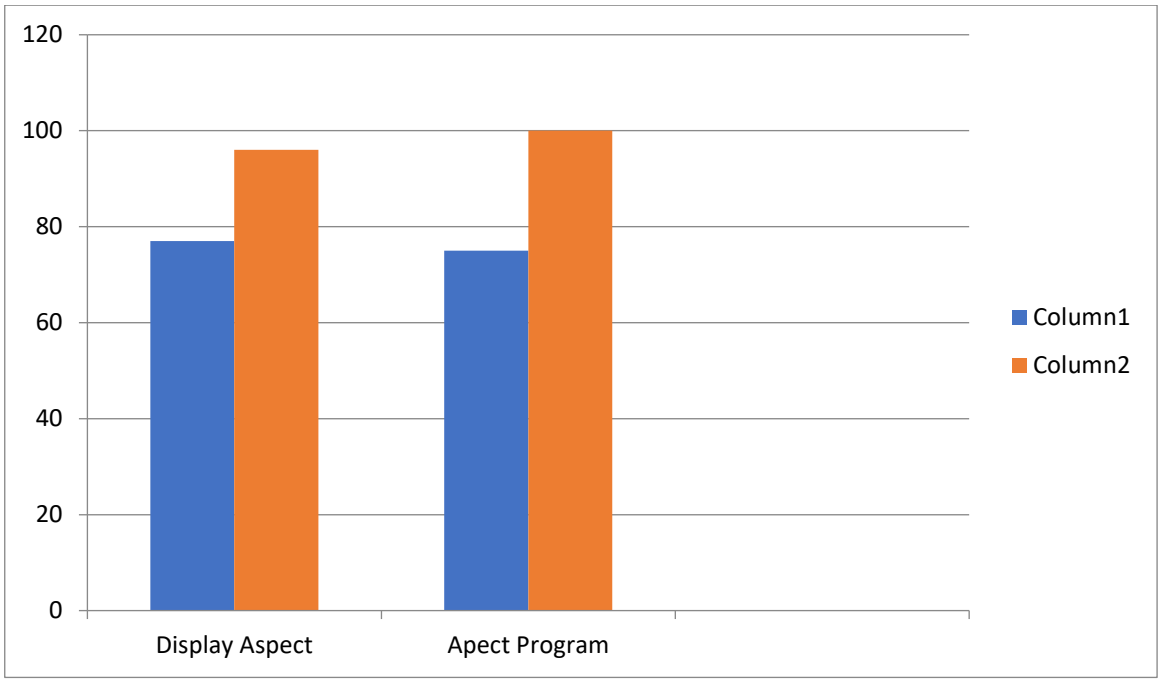

Figure 1. Bar Chart of Assessment Score Acquisition of Interactive Mulitimedia-Based Locomotor Basic Motion Learning Media Development by Media Experts

The assessment of the created interactive multimedia-based locomotor basic motion learning media indicates that the learning media employed are highly effective in facilitating teaching and learning activities. Modifications have been implemented to the media, wherein the text and background colours have been updated and are now fully operational. The feasibility of using interactive multimedia-based learning media for fundamental locomotor motion was determined by media experts. It was concluded that the media is suitable for field testing, but some aspects need to be revised (Nopiyanto & Raibowo, 2019).

Based on two categories—learning material quality and material content—the results of the material expert's evaluation of the development of interactive multimedia-based locomotor basic motion learning media ranged from 76.36% to 96.36% (large scale) for the former, and from 76.67% to 96.67% (large scale) for the programme aspect, which included an overall Good category with an average of 76.52% to 96.52% (large scale). This indicates that the content of these learning media can fulfil the demands of learners. Figure 2 below shows the average percentage of results from material expert assessments.

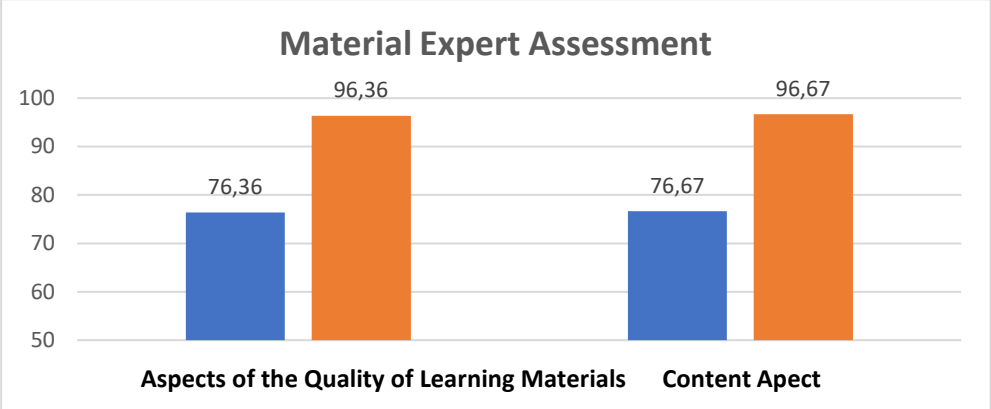

Figure 2. Bar Diagram of Assessment Score Acquisition Development of Interactive Mulitimedia-Based Locomotor Basic Motion Learning Media by Material Experts

The results of the material expert's assessment of the interactive multimedia-based locomotor basic motion learning media developed, namely Learning Videos, are good, so the research should continue. Revisions have been made to the learning material and are easily understood by students. The interactive mulitimedia-based locomotor basic motion learning media by material experts was declared feasible for field trials with revisions to the wrong sections.

The results of the lecturers' assessment of the development of interactive mulitimedia-based locomotor basic motion learning media based on three aspects, namely the display aspect of learning media, the content / material aspect and the learning aspect showed an average percentage of assessment of 100% each in the display aspect, 96.67% in the content / material aspect and 100% in the learning aspect including the Very Good category as a whole with an average of 98.89%, which means the material on the basic motion learning media Interactive mulitimedia-based locomotors can meet the demands of learning needs. The average percentage of PJOK teacher assessment results is shown in Figure 3 below.

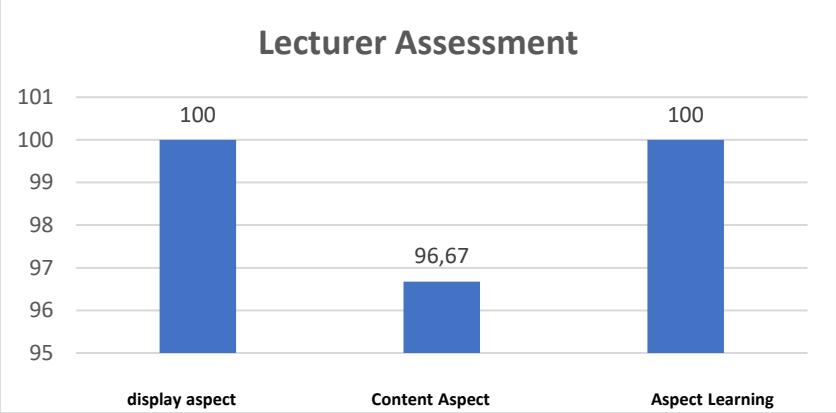

Figure 3. Bar Chart Lecturers' Assessment of the Development of Interactive Mulitimedia-Based Locomotor Basic Motion Learning Media

The results of the material expert's assessment of the interactive multimedia-based locomotor basic motion learning media were developed, namely Learning Media, which is easy to understand and easy to understand by students (Putri & Aulia, 2020).

The results of the assessment in small group trials on PGSD study program students on aspects of appearance, content/material and learning amounted to 85.95%, consisting of display aspects at 85.48%, aspects of content/material of 85.78%, and learning aspects of 86.60%, each of which was included in the Very Good category. Based on the results of the assessment on interactive mulitimedia-based locomotor basic motion learning media in small group trials, there are no suggestions for improvement (Gunadi, 2018).

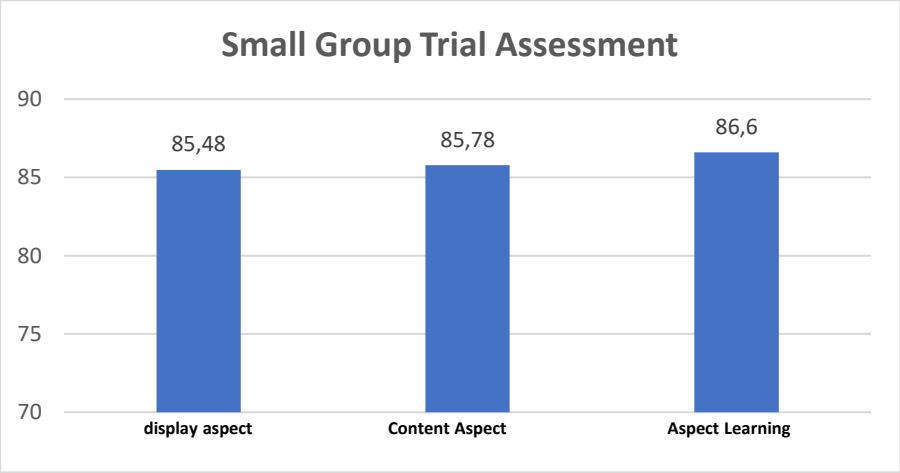

Figure 4. Bar Chart of Small Group Trial Assessment Scores on the Development of Interactive Mulitimedia-Based Locomotor Basic Motion Learning Media

The results of the assessment in large group trials on PGSD study program students on aspects of appearance, content/material and learning amounted to 93.65%, consisting of display aspects of 90.56%, aspects of content/material of 94.82%, and learning aspects of 95.57%, each of which was included in the Very Good category. Based on the results of the assessment on interactive mulitimedia-based locomotor basic motion learning media in large group trials, there are no suggestions for improvement.

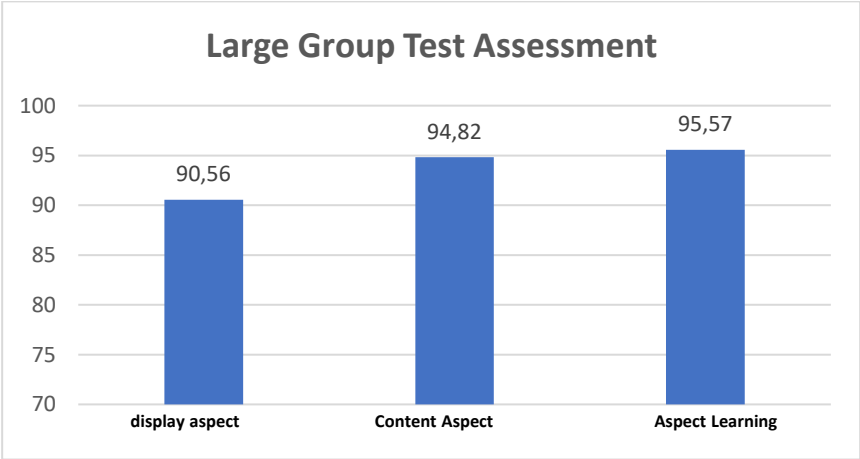

Figure 5. Bar Chart of Large Group Trial Assessment Scores on the Development of Interactive Mulitimedia-Based Locomotor Basic Motion Learning Media

Students may have a "very good" degree of acceptance for the created interactive multimedia-based locomotor basic motion learning media, according to the results of the large group test

assessment. This suggests that the interactive multimedia-based learning media for locomotor basic motion is both prepared and highly practical for testing its efficacy in a large-group setting (Bayu, 2018).

The benefits of using interactive mulitimedia-based locomotor basic motion learning media are as follows: (1) the material is easy to understand because the concepts presented are planned to facilitate students and systematically, (2) interactive multimedia-based learning media provide opportunities for students to learn at the pace of each individual (Anderson & Krathwohl, 2021), (3) learn faster and more interesting so as not to cause boredom because it is equipped with pictures and animations and Varied practice questions, (4) there is an opportunity to answer questions at test time if the answers are considered wrong with the aim that students can understand the material that has been learned, (5) this interactive learning media can also be used as an alternative learning media individually (Arif, 2022).

4. CONCLUSION

The validation results from both small group trials and large group trials on the interactive multimedia-based locomotor basic motion learning media have been categorised as "Very Feasible". Therefore, they may be accepted and are highly suited for use as student learning media. Moreover, the assessment conducted by material experts and learning media experts indicates that interactive multimedia-based learning products in Physical Education subjects, presented in an interactive multimedia format, are deemed qualified and appropriate for use as learning materials. The overall average rating, after several revisions, falls under the "Eligible" category, allowing the media to be utilised for further trials.

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