

The Validity of Physical Education Teaching Materials Product in Elementary School Based on Science and Technology with Local Wisdom of PGSD FIP Universitas Negeri Medan

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Abstract. This research intends to create Physical Education Teaching Materials for Elementary Schools that integrate Science and Technology with Local Wisdom, associated with the Elementary School Teacher Education Program at the Faculty of Education, State University of Medan. Data analysis employs a qualitative descriptive method and a percentage quantitative descriptive method. This research is part of the development study that employs the 4-D Model which includes 4 Development Stages: the Definition Stage (Define), the Planning Stage (Design), the Development Stage (Develop), and the Dissemination Stage (Disseminate). Along with creating educational material products, it also offers students and instructors hands-on experience in conducting classes with scientific teaching materials and local technological wisdom, making lectures more interactive, effective, and efficient. The evaluation of the feasibility component of the media regarding materials yielded a percentage result of 86.08% (very valid), while the feasibility aspect concerning the media achieved a validity value of 88.41% (very valid). The outcomes of the evaluation of teaching materials conducted by a team of validators composed of university instructors indicated that the designed teaching materials fell into the very valid category. Therefore, it can be concluded that Science and Technology-Based Teaching Materials According to Local Wisdom are highly appropriate for use as teaching resources in the learning process within the PGSD FIP UNIMED study program, in line with the relevant Curriculum.

Keywords: Teaching Materials, Elementary School Physical Education, Science Technology, Local Wisdom.

1 Introduction

The future desire to achieve success in both professional and individual fields recognizes the authority of 21st century skills as a basic competency standard for students. (Novitra et al.,

2021). The competencies needed by students to face global challenges are known as 21st century skills. (Wati & Syafriani, 2023). According to the Partnership for 21st Century Skills, there are four competencies needed in the 21st century, one of which is creative thinking skills. Through creative thinking, students can apply various techniques in generating ideas, designing projects, improving projects, and analyzing and evaluating projects to improve and maximize creative efforts. However, 21st century learning requires significant innovation, especially in learning media (Ramli, 2023). In addition, digital technology plays a very crucial and inseparable role in facing the world of education in the 21st century (Yulkifli et al., 2022). In the entire educational process, learning activities are the most basic activities. This means that the success or failure of achieving educational goals depends greatly on the learning process experienced by students as learners. "Learning is an activity carried out by someone to acquire skills, abilities, and attitudes". The activity in question is a person's experience that results in a relatively permanent change in mental structure. Learning experience is a person's mental reaction or action to information or objects being studied (Sinaga, B. 2008). Unimed is an educational unit that organizes higher education, research, and community service that functions to provide fair and quality services to students and prepare students who have academic and professional abilities to apply science, technology, and art through the learning process in the fields of education and non-education. The Faculty of Education Unimed is an element of Unimed's academic implementation that carries out the main tasks and functions of Unimed as an organizer of higher education through the learning process in the fields of educational science, and applications in the fields of education and education. The Elementary School Teacher Education Department is an academic implementing element under the faculty that organizes academic education in the field of Elementary School Teacher Education.

The Elementary School Teacher Education Study Program is a unit of educational and learning activities that has a curriculum and learning methods for Elementary School Teacher Education in one type of academic education, professional education, and/or vocational education. Professional education in education is based on students' complete mastery of the academic field of education that has personality, social, pedagogical, and expertise competencies in both theoretical and practical aspects (pedagogical content knowledge and skills) and scientific disciplines according to their fields (content knowledge) or a combination of both in the field of educational study (content specific pedagogy) which is based on the values of religious, national, and local wisdom inherent in the philosophy of student life. PGSD has a basic physical education course that is taught in the even semester, to support the Vision and Mission of PGSD and the Faculty of Education in accordance with the curriculum and demands of the University, changes are needed in the development of teaching materials that have not included elements of OBE and the vision of the study program on Local Wisdom in the teaching materials in the Basic Physical Education Course in the PGSD study program.

2 Method

This research is a development research or Research and Development (R&D). The development research method, according is a research technique used to create a specific product and assess its viability. Development research (R&D) is a procedure used to create and validate a product



Fig. 1. Development Research Flow Chart

Targeting PGSD students enrolled in basic physical education and basic sports classes A, B, C, D, and E, the study is focused on the PGSD Department within Unimed's Faculty of Education. There are usually about 30 students in each class. The study, which focused on the lecture schedule of PGSD students specializing in foundational physical education courses within the PGSD department, was conducted during the even semester of the 2023–2024 academic year.

3 Result and Discussion

Research on Basic Physical Education Teaching Resources that integrate Science and Technology with Local Wisdom for the PGSD FIP UNIMED Study Program has been conducted in the 2023 cohort of PGSD FIP UNIMED, following the Research and Development (R&D) method's framework. Drawing from the findings of the conducted research and development, the researcher shares multiple outcomes as listed below:

Local knowledge is incorporated into science and technology-based educational materials by researchers. By choosing the Research and Development (R&D) category of inquiry. As a development approach, researchers use the 4D development model, which comprises definition, design, development, and implementation. Instructions for making and using the product are included in the material, making it simple to incorporate into the learning process and reducing the likelihood of errors in both creation and use.

Table 1. Research result of validation

No.	Aspect	Data Obtained	Respondent	% of validation	Result
	Validation	Validation material test	Expert of material	86.08%	Very feasible
		Validation media test	Expert of media	88.41%	Very feasible

Science and technology-based teaching materials that incorporate local knowledge are considered suitable for use because they have been verified by a material expert and received a final percentage of 86.08%, which puts them in the "very feasible" category. Following that, validation by media experts revealed a final percentage of 88.41%, classifying it as "very feasible." The validation results showed that both students and lecturers could benefit from using teaching materials that combine science and technology with traditional knowledge.

4 Conclusion

In order to improve science literacy skills based in science and local technology, the research aims to create science-informed teaching materials and locally-focused technology for Faculty of Education (FIP) PGSD UNIMED students as the first teaching materials at FIP UNIMED. The 4D Model, which comprises four phases - define, design, develop, and disseminate is the methodology used in this study to study development. In addition to producing educational materials, this research gives teachers and students practical experience delivering lectures utilizing locally relevant technology and science teaching resources, which enhances the effectiveness, efficiency, and engagement of the lectures. The assessment of the media suitability component based on the content produced a validity score of 88.41% (very valid) and a percentage result of 86.08% (very valid). The PGSD FIP UNIMED study program's learning process can thus benefit greatly from the use of technology and science-based teaching materials that are grounded in local knowledge. According to the findings of a team of validators made up of university lecturers who validated the draft teaching materials, the created materials were classified as good.

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