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Analysis of Learning Style Needs through the Development of A Simple Booklet in Physics Learning For Phase F

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ABSTRACT: This study aims to analyze the learning style needs of students in physics learning at stage F through the development *of Simplebooklet* in physics learning. The research approach used is a descriptive method with data collection techniques through questionnaires, interviews, and observations of students. The results of the study showed that students have diverse learning styles, including visual, auditory, and kinesthetic learning styles. The results of the analysis need the development *of Simplebooklet,* which presents interactive multimedia content based on text, images, videos, and animations to improve understanding of Physics material more effectively. Thus, the development of Simplebooklet in learning Physics can increase student engagement and facilitate better understanding according to their learning style.

KEYWORDS: Learning styles, *Simplebooklet*, learning Physics, Phase F

I. INTRODUCTION

Physics Learning at stage F has its own challenges because of its abstract nature and requires a deep understanding of concepts. The great hope in learning Physics is that students understand the theory, apply it in everyday life, and have good problem-solving skills (Arends, 2012). Therefore, an approach in accordance with students' characteristics is needed to make learning more effective. The use of teaching materials greatly helps the learning process be more effective, one of which is through developing a *simple booklet.*

Simplebooklet is *a three-dimensional digital book* containing text, images, videos, music or songs, and moving animations. In *Simplebooklet*, users only need to slide their fingers sideways, either right or left, to go to the next page. In contrast, in a regular book, users only need to move the cursor or *scroll the screen* up and down to read the page. *Simplebooklet* can display animations and videos. The videos displayed on *Simplebooklet* are parabolic motion activities in each sport that make the display more interesting and sophisticated. In addition, students with talents in sports often find it easier to understand material they can carry with them and study at any time.

However, the reality in the field shows that many students still have difficulty understanding the concept of Physics. More than 60% of students have difficulty understanding the basic concept of Physics due to the lack of varied learning methods (Susanti, 2021). Learning dominated by lectures and practice questions is less able to meet the needs of students' diverse learning styles. It was also added that the teaching materials used in schools, especially in Sports Talent Schools such as SMAN 4 West Sumatra, often contain errors or deficiencies. The error happens because the teaching materials do not match the students' needs or characteristics and lack actual teaching aids or Simulations. If Physics learning is only given in theory without actual teaching aids or simulations, students may have difficulty understanding abstract concepts such as Newton's laws or parabolic motion. Teaching materials that are not related to sports, namely those that do not link Physics material to sports activities such as jumping, ball movement, or force, can make students feel that the learning is irrelevant to their daily lives as athletes.

Students' learning styles vary widely, including visual, auditory, and kinesthetic learning styles (Fleming, 2012). Unfortunately, many teachers have not fully accommodated this diversity of learning styles in Physics learning. As a result, students with particular learning styles have more difficulty understanding the material than students with a dominant learning style that is in accordance with the method used (Dunn & Dunn, 2003).

The solution that can be applied to overcome this problem is the development of technology-based learning media that can support various learning styles. Using digital-based interactive media can improve student understanding by allowing the presentation of information in various forms, such as text, images, audio, and video (Mayer, 2009). One of the digital media that

can be developed is *Simplebooklet*, which is an interactive digital book creation platform that allows the integration of various multimedia elements. Studies show that using *Simplebooklet* in learning can increase student learning motivation and engagement because of its attractive and interactive appearance (Wijayanti & Suryadi, 2022).

In addition, *Simplebooklet* allows personalization of learning following student needs. Research shows that students are more interested in learning when the material is interactive and can be accessed only through digital devices (Prasetyo, 2020). Simplebooklet aligns with technological developments that increasingly encourage using digital-based learning resources.
Implementing *Simplebooklet* in learning Physics is expected to help students with various learning styles understand concepts more deeply. With various multimedia elements, visual students can gain understanding through images and diagrams; auditory students can utilize narration and sound, and kinesthetic students can explore digital content independently (Clark & Mayer, 2016).

The development of *Simplebooklet* can make it easy for students and teachers to understand physics concepts. Technology-based learning can facilitate higher levels of thinking, such as analysis and evaluation, which are very important in learning Physics (Anderson et al., 2001). Therefore, this study focuses on analyzing students' learning style needs. Through the development *of Simplebooklet* as a digital teaching material in Physics learning stage F. Thus, this study aims to analyze the needs of students' learning style in Physics learning stage F through the development of *Simplebooklet.* in physics learning.

II. METHODS

This study uses a qualitative descriptive approach with a research and development (R&D) method (Winaryati et al., 2021). The development model refers to the Plomp model (Plomp, 2013), which consists of three stages pr: preliminary research, prototyping, and evaluation. Research data were collected through observation, interviews, questionnaires, and document analysis. The data analysis technique used was qualitative analysis to interpret findings based on data collection results.

The research was conducted at State Senior High School 4 Sumbar (Gifted) Sports); the research subjects were students in class XI F consisting of 72 students and 1 Physics teacher. The data collection instruments were teacher needs analysis interview sheets, students' needs analysis questionnaires, and test scores.

III. RESULTS AND DISCUSSION

RESULT

Based on the analysis of current teacher needs, the results of observation during the interview obtained the following data.

Analysis of teacher needs for learning resources and learning media is carried out through an interview process with the following interview guidelines:

1) What common learning resources are used to teach physics in class F at SMAN 4 Sumbar, especially for students involved in sports activities?
2) What are the advantages and disadvantages of the teaching materials currently used in physics learning in the classroom?
3) Have you ever created learning materials independently, especially for students who like sports?
4) What teaching materials do you use to teach sports to students who like sports?
5) Have you ever used the Simplebooklet interactive book as a learning aid in physics lessons?
6) What do you think about using Simplebooklet in the physics curriculum of SMAN 4 Sumbar in class F?
7) To what extent do you believe that Simplebooklet can help students learn physics better?
8) Have you ever used Simplebooklet to measure students' ability to understand the physics material being taught?
9) How can you tell how effective Simplebooklet is in helping students with sports talents understand physics?
10) In your opinion, by using Simplebooklet, how does the student's critical thinking ability in physics material improve? Is there any significant progress?

Table 1. Analysis of Teacher Needs During Observation

Number	Analysis Questions
1	Physics Learning in School Still lacks teaching aids or actual simulation.
2	Development of technology-based teaching materials such as Simplebooklet is required, which can help replace physics teaching aids in the form of interactive simulation.
3	More interesting teaching materials are needed to provide an accurate and concrete physical design description and replace the lack of available teaching aids or simulations.

4	Teachers must take the initiative to develop technology-based teaching materials.
5	Training and introduction to Simplebooklet are needed to help replace the limited real-world teaching aids or simulations in schools with a more interactive approach.
6	Teachers see Simplebooklet as an alternative tool for demonstration and simulation but still need to understand its method in physics learning.
7	Physics Learning must be more innovative and engaging, with authentic experiences that are accessible.
8	Although teachers have used suitable methods to assess students' critical thinking skills, the use of learning strategies that encourage students to think critically and see the demonstration design directly is needed by using Simplebooklet as a substitute media for the lack of actual demonstration tools or simulations.
9	The teacher has used a good method
10	More learning strategies are needed to encourage students to think critically.

Student Needs Analysis Results

Based on the results of distributing pre-research questionnaires to 108 class XI F students, the following results were obtained:

Table 2. Results of Student Needs Questionnaire Analysis

Number	Question	Frequency		Percentage	
		Yes	No	Yes	No
1	Do you have a textbook for studying physics?	100	8	92.6	7.4
2	Is this handbook enough as a Physics learning resource?	50	58	46.3	53.7
3	Are you looking for other materials besides school books to learn physics, such as modules or materials from the internet?	23	85	21.3	78.7
4	Do you like physics lessons?	101	7	93.5	6.5
5	Are you interested? Learn Physics? Are the questions given in Physics lessons related to sports?	98	10	90.7	9.3
6	Are you having difficulty understanding the material through the teaching materials and methods presented by the teacher?	63	45	9.3	90.7
7	When teaching Physics, has your teacher ever used Electronically assisted teaching materials?	10	98	88.0	12.0
8	Do you like learning with interactive digital media?	95	13	88.0	12.0
9	Would you like to try it? The study uses SimpleBooklet, which contains material Physics, which is easy for you to learn?	97	11	89.8	10.2
10	Do you need teaching materials that can be used to learn Physics concepts more interestingly?	99	9	91.7	8.3

Table 3. Analysis Need Student

Number	Analysis Questions
1	92% of students have textbooks, but 7.4% still do not have textbooks to study Physics.
2	46% of students felt that the handbook was sufficient for learning Physics, but some others felt that it was insufficient; therefore, additional sources were needed.
3	21.3% of students look for additional materials outside of school books; this shows the need for various teaching materials to make them more interesting and relevant.
4	93.5% of students like Physics lessons, but their % are still 6.5% less interested, so more interactive and applicable learning strategies are needed.
5	91% of students are more interested in Physics if the material is related to sports, showing that a sports-based contextual approach can increase their interest in learning.
6	9% have difficulty understanding the material through teachers' teaching materials and methods, so a more effective and easy-to-understand learning approach is needed.
7	88% of students stated that teachers rarely or never use *Simplebooklet* in Physics learning, so further

	implementation is needed regarding interactive digital teaching materials.
8	88% of students prefer learning with interactive digital teaching materials, showing the need to utilize technology in teaching and learning.
9	90% of students want to try to study using *SimpleBookle*, which contains sports-based Physics material, showing high potential for applying this innovative teaching material.
10	92% of students need more straightforward and engaging teaching materials, so developing *SimpleBooklet* as an interactive sports-based teaching material is the right solution.

DISCUSSION

Analysis Teacher Needs

Based on interviews with physics teachers, several things were obtained, namely that physics learning in schools has not used enough teaching aids or real simulations. Therefore, alternative technology-based teaching materials are needed to help students understand concepts more concretely. One example of technology-based teaching materials is *SimpleBooklet*, which can be used to replace teaching aids through interactive simulations. In addition, teachers need more interesting and inventive teaching materials to help students understand physics concepts. Although teachers have tried to develop technology-based teaching materials, they need guidance and training to maximize the use of *SimpleBooklet* in learning (Darmoko, 2012; Pralisaputri et al., 2016).

In addition, learning physics must be more creative by incorporating real-world situations into learning. Teachers have used good techniques in the Forknow style to study students. However, a more efficient learning approach is still needed to push the students to be directly involved in learning through teaching materials in the form of *SimpleBooklet*. Expected *SimpleBooklet* will become more interactive teaching materials and an alternative for teachers to use in learning (Hapsari et al., 2018). Thus, through Simplebooklet, teachers can know the studying style of students to increase efficiency in learning physics with technology teaching materials and provide instruction using digital teaching materials.

Student needs analysis

The results of a survey conducted on 108 class XI F students showed that students (92.6%) have textbooks to study physics. However, only 46.3% of students felt that the textbooks were sufficient as a learning resource, and many students sought additional information via the internet or other modules (78.7%), indicating that students needed additional teaching materials that further supported their understanding. In addition, 90.7% of students expressed interest. In terms of method learning, 90.7% of students have difficulty understanding teaching materials and techniques learning used, 88.0% of students like interactive digital media-based learning, 89.8% want to try learning using *SimpleBooklet-based on sports*, and 91.7% of students stated that they needed easier to understand and more interesting teaching materials. Therefore, to help students understand Physics concepts better, more varied, interactive, and technology-based teaching materials are needed.

The research data shows that simple booklet teaching materials can influence students' study styles. Other research also supports the idea that using interactive teaching materials can increase understanding of concepts in learning physics (Chairunisatara, 2024). Therefore, interactive digital media integration like customized SimpleBooklet with student-style study can become an effective solution for increasing students' understanding of lesson physics.

IV. CONCLUSION

Research results say that students need interactive and technology-based Physics teaching materials, according to teacher and student needs analysis results in a simple booklet. In addition, a simple booklet makes the Study students more varied, increasing their understanding of material learning physics.

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