

## STUDY ANALYSIS OF STUDENT NEEDS FOR THE DEVELOPMENT OF SCIENCE EBOOK BASED 3D PAGE-FLIP TO IMPROVE CRITICAL THINKING SKILLS IN TARAKANITA SOLO JUNIOR HIGH SCHOOL

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### ABSTRACT

This study aims to analyze the needs of Tarakanita Solo Baru Junior High School students towards the development of the Flip Page-based 3D Science ebook. The research method used is the descriptive analysis by analyzing the needs of students towards the development of the ebook using a questionnaire. The results of the questionnaire research based on the analysis of student needs were 56% answering requiring 3D Flip Page based teaching materials so that learning was more enjoyable, efficient and effective. The Flip Page 3D ebook is one of the technology-based learning media that can facilitate teachers in simplifying abstract material that is difficult for students to understand. 3D Page Flip based ebook can be an effort to overcome various gaps that occur in science learning, especially in class VII Tarakanita Solo Junior High School. Besides that, the 3D Page Flip based e-book is also expected to be a solution that can provide stimulation for students to focus more on the subject, have more interest in science lessons, to improve their critical thinking skills.

**KEYWORDS:** Ebook, Science, 3D Flip Page, Critical Thinking.

### A. INTRODUCTION

The progress of education is the main trigger for the progress of human civilization today. Science and technology have encouraged humans to continue to innovate. This progress was marked by the development of the industrial revolution that began from the first industrial revolution until the time of reaching the fourth revolution. The first industrial revolution was born with the invention of the steam engine as a human and animal substitute power. The second industrial revolution was born with the development of the concept of mass production through interchangeable parts production machines that have used electricity. The third industrial revolution was born with the adoption of computer and internet-aided information technology that had an impact on changing fundamental human cultures.

According to Aji Muhammad Qudrat Wisnu (2017) at this time, education is in the age of knowledge (knowledge age) with the acceleration of an extraordinary increase in knowledge. The accelerated increase in knowledge is supported by the application of digital media and technology called the information superhighway. The style of learning activities in the knowledge age must be adjusted to

the needs of the knowledge age. Learning materials must provide a more authentic design through challenges where students can collaborate to create solutions to solve the problem of learning. Principles of learning that are appropriate and must be met in the 21st-century education process are contained in the 21st-century national education paradigm book published by the National Education Standards Agency (BNSP). In the 21st-century education process skills needed include Communication, Collaboration, Critical Thinking and Problem solving as well as Creativity and Innovation.

Thinking is an activity related to the mental experience of a person when faced with a problem that must be solved. Suryabrata (1990), argues that thinking is a dynamic process that can be described according to the process or the way. The thought process consists of 3 steps, namely the formation of understanding, the formation of opinions and concluding. Critical thinking is a picture of higher-order thinking skills. This is because the ability to think is the highest cognitive competency that students need to master in class. The ability to think critically in students can be used by students to compare and analyze two or more information, for example, information possessed and information from outside. New thinking can be said to be critical if the thinker tries to analyze opinion and problem carefully and in detail, looking for evidence and looking for solutions to solving the right problem to get a solid conclusion to believe and do something.

Based on observations through interviews with teachers of integrated science subjects at Tarakanita Solo Baru Junior High School, the school has implemented the 2013 curriculum but the learning method commonly used is the lecture method, Project- Based Learning and discussion where the teacher is still dominant, while the media used is blackboard and ppt slides, internet. While the obstacles faced by teachers in the learning process are students very difficult to analyze and solve a problem presented by the teacher. Besides, the results of observations and observations also found that the learning process of science at Tarakanita Solo Baru Junior High School still uses teaching materials in the form of textbooks (science books in general).

Therefore in the learning process required learning methods, approaches, learning strategies and teaching materials that are following current learning needs. E- book, one of the answers to equip students to have 21st-century skills. With the E-book, the subject matter can be easily accessed anywhere and anytime, because every student has a tool to access it. The learning process in Tarakanita Solo Baru Junior High School has implemented 21st-century skills by applying character education in each of its learning, but for the use of books, it is still conventional, still using printed books not using digital books (ebooks). Therefore, the ebook is a solution to overcome the problems of student learning to increase motivation and critical thinking skills.

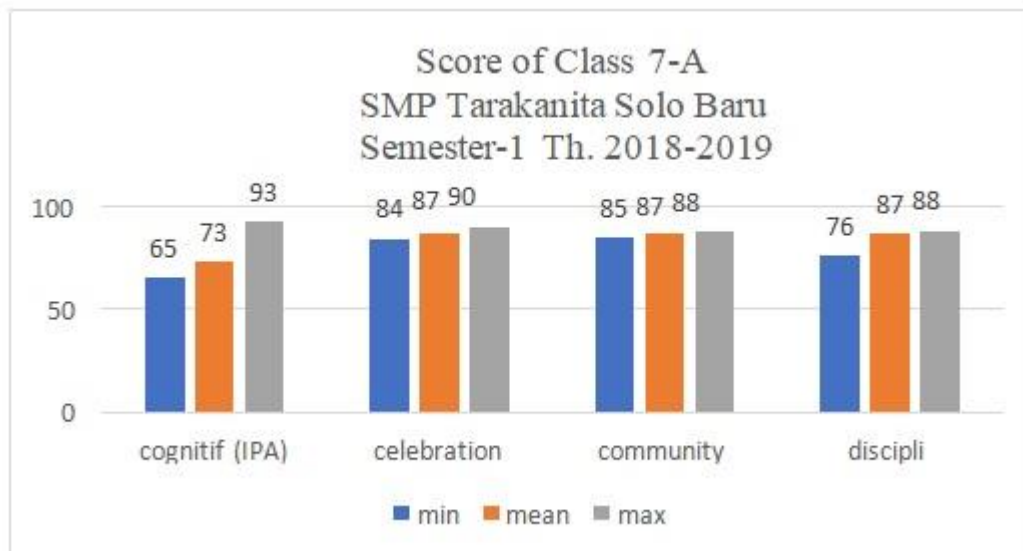
## **B. METHOD**

This type of research uses descriptive analysis that focuses on analyzing the needs of students towards the development of a Sciences ebook 3D Flip Page-based. When the study was conducted in

September-October 2019 with the subjects in this study were teachers and grade VII students. The location of the study was conducted at Tarakanita Junior High School, Solo Baru. The sample in this study was obtained by purposive sampling technique. Purposive Sampling, which is a sampling technique by determining certain criteria (Sugiyono, 2008) In the research methodology book by Kothari CR (2004) explains that in the Purposive Sampling technique, the sample is chosen deliberately which is considered capable of representing the whole to achieve the research objectives. In this case, the researchers took a sample based on field observations on grade VII students who were considered to be good enough in the learning process. The data in this study were collected by observation, interview and questionnaire distribution techniques. The instrument of interviews with teachers is used to obtain information on the results of daily tests of class VII students and teaching materials used in integrated science learning. While the questionnaire instrument to students was used to find out views about the needs of students towards digital-based teaching materials (ebook) in integrated science learning.

**C. RESULT AND DISSCUSSION**

Based on the results of the evaluation at Tarakanita Middle School, Solo Baru shows that students have quite good intellectual abilities in terms of learning, they still need to improve critical thinking processes and collaboration in teams. Low critical learning and student communication with low science learning outcomes semester 1 of Tarakanita Junior High School Solo. For more details, you can read as follows.



**Figure 1.1 Diagram of Recap of Sciences Values and Semester-1 Attitudes**

Based on the diagram in Figure 1.1, it can be seen that the cognitive values above are values collected from all assessments starting from the daily tests, the middle semester and the end of the odd semester in 2018-2019. As for the value of celebration, community, and discipline. The

celebration is an attitude of humility that all life events can never be separated from God's intervention, each student is expected to be able to interpret every life event with gratitude. Community is a person's ability to develop true brotherhood and equality, diversity is not a division, but enriches one another. Discipline is obedience to the rules, applicable provisions. But discipline is not a superficial attitude that is just to obey the rules and follow the rules, but sincere because there are goals to be achieved.

This shows that learning following the 2013 curriculum has not been applied by teachers because they have never invited their students to think critically, creatively, innovatively and collaboratively and communicatively. Besides learning materials

become unattractive because only focused on conventional learning models while the material that is essential, actual, relevant and prospective as well as contextual that takes place around students is never mentioned. The results of the analysis of student needs are as follows.

**Table.1 1 Analysis of student needs for the teaching material developed**

No	Known Aspects	Students Answer (%)	
		Yes	No
1.	Do you agree if it is said that science learning has been fun?	36,56%	23,44%
2.	Is a science subject one of the subjects like?	51,19%	8,81%
3.	Are the science lessons on Solar System material difficult to understand?	49,23%	10,99%
4.	Is the number of textbooks available sufficient (one student per book)?	58.20%	1,8%
5.	Are existing textbooks available that can improve your communication skills and critical thinking?	6,82%	53,18%
6.	Do you need digital-based science teaching materials?	59%	1%
7.	Do you agree that digital-based teaching materials are applied in science learning?	56%	4%

Source: student needs analysis questionnaire

Based on table 1.1 above it can be seen that the science lessons so far are the subjects that are liked by students. This can be seen from the results of the questionnaire 36.56% answered yes while 23.44% answered no. But in the second aspect which is about science lessons as lessons that are much liked by students as much as 51.19% answered agree. But on the topic of the solar system, many students have difficulty this is devoted to almost all students namely 49.23% stated that the topic is one of the material that is difficult to understand. Even though the school has facilitated students with 1 package each book. But they admit that the book has not been able to improve communication skills and critical thinking this can be seen from the answers of students as much as 53.18% claimed that the available books have not been able to facilitate students to hone their communication skills and critical thinking even though 6.82% answered yes.

Based on this, students want digital-based teaching materials as alternative teaching materials so that students can still adapt to the progress of information and technology and 21st-century learning. In the aspects of their needs for digital-based teaching materials, on average, all students agree, with the acquisition of questionnaire values 59% agreed. Students are very supportive and enthusiastic about implementing digital books in the science learning process. Because learning science is a natural learning concept and has a very broad relationship related to human life. Science learning is very instrumental in the process of education and also the development of technology because science has an effort to arouse human interest and the ability to develop science and technology as well as an understanding of the universe that has many facts that have not been revealed and are still confidential so that the findings can be developed into new natural sciences and can be applied in everyday life. Thus, science has a very important role. The rapid progress of science and technology greatly influences developments in 21st-century education.

Referring to the problems that have been described above, a strategy is needed to resolve the problem. One of them is by utilizing the use of appropriate tools/media in learning activities. Media that can attract interest and help increase the activeness and independence of students in learning so that it can be expected to be a solution to improve communication and critical thinking. Then it is necessary to develop learning media, namely the development of 3D Page Flip based e-books to improve communication and critical thinking.

## **D. CONCLUSIONS AND RECOMMENDATIONS**

The development of the 3D Page Flip based ebook needs to be followed up to be able to change the paradigm of traditional teaching specifically on the methods and learning media that are often used by teachers even though basically the findings of teaching materials used are not perfect. Related to this the teacher has the freedom to develop existing material into teaching material. to improve communication skills and the quality of students' critical thinking, a teacher should be able to facilitate the teaching and learning process and change the components that can influence the teaching and learning process itself. For consideration, teachers should use the Flip Page 3D based ebook, so that learning is more active, interactive, and effective and can improve students' critical

thinking and communication skills at school. Besides, it is necessary to do further research by taking other material so that more convincing results are obtained about the effectiveness of the 3D Flip Page-based eBook on science materials. For principals as policymakers at the school level should: Facilitate and always motivate teachers to always develop digital-based learning. educational staff and learning technology developers are expected to collaborate to create a learning environment that facilitates the needs of students who are constantly following the times

## **E. REFERENCES**

- Aji Muhammad Quadrat Wisnu. (2019). Mengembangkan Kecakapan Abad 21 Mahasiswa Melalui Model Pembelajaran Inkuiri. Jurnal Teknodika. Vol. 17 No. 02 September 2019. <http://jurnal.uns.ac.id/Teknodika>
- Kothari,C.R. (2004). Research Methodology: Methods and Techniques. NewDelhi: New Age International (P) Ltd.,Publishers.
- Sugiyono. (2008). Metode Penelitian Bisnis. Alfabeta: Bandung.
- Suryabrata, Sumadi. (2002). Psikologi Pendidikan. Jakarta: PT. Grafindo Perkasa Rajawali.