STUDENTS' RESPONSES TOWARD THE IMPLEMENTATION OF C-MAP TOOLS IN PHYSICS LEARNING

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Abstract
This research aims to describe students' response toward the implementation of C-Map Tools in Physics Learning. This research used quantitative research method. The participant of this study was 36 students of natural science group Senior High School One of Menganti. The instrument research was student responses questionnaire. The questionnaire consists of 12 statements in term of response in motivation, independently, novelty and mastery of concept. Based on data analysis, student responses questionnaire, it can be concluded that student response toward the implementation of C-Map Tools to Physics Learning got a percentage 72,97 % with a good category.
Keywords: C-Map Tools, Students Response and Physics Learning.

Abstrak
Penelitian ini bertujuan mendeskripsikan respons peserta didik terhadap penerapan *C-Map Tools* pada pembelajaran fisika. Penelitian ini menggunakan metode penelitian kuantitatif. Subjek dalam penelitian ini adalah kelas X MIPA 1 SMAN 1 Menganti yang berjumlah 36 peserta didik. Instrumen yang digunakan adalah angket respons peserta didik. Angket respons peserta didik berisi 12 pernyataan terkait dengan motivasi, kemandirian, kebaruan dan penguasaan konsep peserta didik. Berdasarkan data dari instrumen penelitian lembar angket respons peserta didik disimpulkan bahwa respons peserta didik terhadap penerapan *C-Map Tools* dalam pembelajaran fisika memperoleh persentase 72,97 % dengan kategori baik.
Kata kunci: *C-Map Tools*, Respons peserta didik dan pembelajaran fisika.

INTRODUCTION

In 21st century, knowledge develops more rapidly with the utilization of technology, information, and communication in various aspect, one of them is education aspect (Daryanto & Karim, 2017). 21th century is knowledge century, because the information is widely spread. According to BSNP, (2010) in Daryanto, (2017) 21st century education aims to realize the ideals of the nation, namely the people of Indonesia who are prosperous and happy, with an honorable and equal position with other nations in the global world, through the formation of a society that consists from qualified human resources, namely an independent, willing and capable person to realize the ideals of his nation. In line with the goals of the 21st century education, the Ministry of Education and Culture formulated that the 21st century learning paradigm emphasized the ability of students to find out from various sources, formulate problems, analytical thinking and cooperation and collaborate in solving problems (Research and Development Ministry, 2013 in Daryanto, 2017).

One utilization of technology information that contributes to preparing 21st century learning is the use of applications (software) that are used as learning media. One application that is used as in learning media is C-Map Tools. C-Map Tools is a software initiated by the Institute for Human Machine Cognition (IHMC) that contributes to information technology that focuses on creating concept maps in the learning process (Suprapto et al, 2018). According (Suprapto et al, 2018) Creating a concept map can be facilitated through manually via paper and pencil or utilized a software. Based on the results of pre-research conducted at Menganti Senior High School in natural science group showed that concept maps were never used in physics learning activities. To evaluate student learning outcomes, the teacher uses practice questions or tests. Most students have made concept maps manually. However, students have never made concept maps through an application (software). Almost all students do not know an application that is used for making concept maps, namely C-Map tools.

So that based the problems, and in line with the 21st century education goals, to find out the responses of students to the application of C-Map Tools in learning, it will be trained to make concept maps using an application (software) C-Map Tools then students fill out questionnaire response. By using C-Map Tools, students were expected to have new experiences in utilizing the technology used in learning.

LITERATURE REVIEW

Concept Mapping

According to Novak in Coutinho, (2014) concept maps were made to find out the students knowledge and changes in concepts that have been learned based on the relationships between concepts found by students. Novak and Gowin said in Gourlay, (2017) concept maps is tools

or ways that teachers can identify or know what students have known. Novak's idea, based on Ausubel's learning theory Ausubel emphasizes that teachers must know the concept of concepts that students have so that meaningful learning can take place. In meaningful learning, learners able to associate new knowledge with relevant concepts that already have on the cognitive structure of students. The structure of the concept map is in the form of a schematic diagram that is composed of general concepts towards a more specific concept.

C-Map Tools

Suprapto et al. (2018) said that there are several ways that can be used to creating concept maps, which can be used manually or using software. Creating concept maps with manually was done by using pencil or paper. While making concept maps can also be helped by software. The software is a C-Map tool.

As technology develops, software (software) has been developed that is used in making concept maps namely C-Map tools. C-Map tools has been developed for the first time by the Institute for Human Machine Cognition (IHMC) which is a contribution to the field of information and technology focused on making concept maps in teaching and learning activity.

RESEARCH METHOD

This study used quantitative research methods. The study was conducted at Menganti Senior High School in March 2019. The participant of this study was the natural science group, which consist of 36 students. Questionnaire response of student sheet is used for collecting data. Student response questionnaire sheet contains 12 statements in term of motivation, independently, novelty and mastery of student concept toward implementation C-Map Tools in physics learning.

RESULT AND DISCUSSION

The student response questionnaire sheet is used to obtain the results of student response toward implementation of C-Map Tools in physics learning. Student questionnaire response sheet contains 12 statements in term of motivation, independently, novelty and mastery of student concept toward the implementation of C-Map Tools in physics learning activities.

The following are the results of students responses to the application of C-Map Tools in physics learning.

Tabel 1. The Result of Students' respond

No	Statement	Percentage (%)
Responses related of Motivation, independence, novelty, and mastery of students concept		
1	I became more active and motivated to participate in learning process	73,61
2	I get new experience in physics learning by used C-Map Tools	75,69
3	Learning by using C-Map Tools can increase my interest and motivation in learning process	69,44
4	Learning by using C-Map Tools makes classroom learning more effective and innovative	70,83
5	The implementation of C-Map Tools in learning makes me independently and explore my abilities	67,36
Responses related to Mastery of Student Concepts		
6	The implementation of C-Map Tools in learning helps me to practice mastering my concepts	73,61
7	The implementation of C-Map Tools in physics learning helps me to arrange concepts according to the hierarchy	75,69
8	Through learning with concept maps, I know and can assess the components of the concept map according to the rubric	81,25
9	Learning by using C-Map Tools, improves my understanding of the concepts that I have, because I can arrange the concepts that have been taught through concept mapping	74,3
10	Learning using C-Map Tools helps me in physics concept	75,69
11	Learning with using C-Map Tools in concept mapping helps me to distinguish concepts, laws and principles	72,22
12	Learning with using C-Map Tools in concept mapping helps me to distinguish concept and not concept	65,97
Average		**72,97**

Based on the Tabel 1, the results of the students' questionnaire responses showed that the percentage obtained was 72.97%. This shows that students respond positively to each statement. Based on the results of the analysis of the results of the questionnaire responses of students to the implementation of C-Map Tools in learning activities, it shows good categories. This is supported by research conducted by Austin et al (1995), which states that in general students give a good response to physics learning by creating concept maps with C-Map Tools.

CLOSING

Conclusion

The response of the students in creating concept maps using C-Map Tools in physics learning got a category with percentage 72,97%.

Suggestion

Based on the research that has been done, there are several suggestions as follows:

1. In learning activities, students were more introduced to technology or learning media that can support learning activities, using technology could increase the motivation of students in conducting learning activities. In addition, the use of technology is one form of implementation of 21st century learning.
2. Students need assistance and direction from the teacher in creating concept maps using C-Map Tools, because the students are the first time recognizing the application (C-Map Tools).
3. Electrical installations in the classroom need to be considered for availability, because in learning activities students bring laptops to make concept maps using C-Map Tools.

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