STUDY OF 4C COMPONENTS THE AVAILABILITY AT PHYSICS WORKSHEETS OF SENIOR HIGH SCHOOL GRADE XII IN SOUTH PESISIR

UNDERGRADUATED THESIS

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It was declared that he had passed after being defended in front of the Thesis Examiner Team for the Department of Physics, Faculty of Mathematics and Natural Sciences, UniversitasNegeri Padang

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STATEMENT

I hereby declare that:

1. My scientificwork, the final project is in the form of a undergraduate thesis with the title: "Study of 4C Components the Availability at Physics Student Worksheet of Senior Hihg School Grade XII in South Pesisir", is my original work.
2. This paper is purely my own ideas, formulations and research, without the help of other parties, except the supervisor.
3. In this paper, there is no work or opinion that has been written or published by other people, unless in writing it is clearly stated as a reference in the manuscript by mentioning the author and being included in the literature.
4. I have made this statement in truth and if there are deviations in this statement, I am willing to accept academic sanctions in the form of revocation of the titles that have been obtained because of this paper, as well as other sanctions in accordance with the norms and provisions of the applicable law.

Padang, August 20th 2021

Who made the statement,

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ABSTRACT

Anisa Meysi Wardi. 2021. "Study of 4C Components the Availability at Physics Student Worksheet of Senior Hihg School Grade XII in South Pesisir " Undergaduated Thesis. Physics Education Study Programe, Faculty of Mathematics and Natural Sains, Universitas Negeri Padang.

The 2013 curriculum requires teachers to encourage students to be able the 21 st century skills consist critical thinking, creativ thinking, communicaton, and collaboratively . To achieve this, teacher must practice using learning strategies with an orientation to train students to be able have 4C skills. This relates to the learning component that must be prepared by the teacher such as teaching materials. One of the aids for students is teaching materials in the form of worksheets. 4C-based worksheets can help students to train train 21st century skills. The 4C based worksheetss can be a tool in meeting one of the demans of the curriculum where students must be able to think critically,creatively, communication and collaboration. Therefore, a research study was conducted to study the availability of the 4C component at physics worksheets of senior high school grade XII.

This researh is descriptive study with a qualitative approach. The population of data in this study were physics Worksheets grade XII at Senior High Scholl in Pesisir Selatan. While taking samples for worksheets to be analyzed using purposive sampling. The samples in this research are fourth student worksheets made by Physics Teacher. The data in this study were taken using LKS presentation analysis instrument with the data analysis technique is a content study technique and data collection techniques through documentation studies.

Based on the analysis conducted, it can be coclude d tha the analysis of the Physics Worsheets at Senior High School grade XII related to availability of the 4C component shows that LKS who obtained a percentage with the fulfillment of the indicator on the highest 4C component is LKS made by subject teacher of 59% SMA N 2 Painan. From the result of the analysis , this worksheets has facilitated critical thinking and creativ thinking. Whereas the Physics Worksheets that gets percentage with lowest indicator of 4C components is LKS made by subject teacher 39%. This is because 4C indikators that should be met are included in the category lowest facilitating.

Keywords : Study, Student Worksheets, 4C

DEDICATION PAGE

Never stop dreaming or hoping, because hope will deliver a miracle. Trust that Allah is the best of planners. "Man Jadda Wa Jadda"

For the first time, I dedicate this thesis to my father, mother and younger siblings, the four figures who are the main goals in my life who always give me encouragement and encouragement. Thank you, God, for giving me the opportunity to be present among my four angels.

For my best friends who always support and encourage both joy and sorrow. Friends with hearts of gold are hard to find. Your kindness is truly incomparable. You are the one I dedicate this form of my struggle to.

Time is the most precious thing in our life and people who are willing to sacrifice their time for others deserve respect and gratitude. Thank you for your involvement and time.

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Padang , August 20th 2021

Reseacher

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INTRODUCTION

A. Background of the Research problem

Education is a conscious and planned effort to create an atmosphere of learning and the learning process so that students actively contribute their potential to have spiritual spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, society, the nation and the State (UU,2003). 21st century education wants quality human resources in order to get superior results that can compete globally in the 21st century. The demands of 21st century education are being able to create education that can produce human resources who are capable of critical thinking and problem solving, able to communicate and collaborate , as well as the ability to create and renew (BSNP, 2010).

Learning carried out in Indonesia on average has used the 2013 revised 2017 curriculum. In the 2013 revised 2017 curriculum there are several important points including strengthening character education (PPK), 4C skills (*communication, collaboration, critical thinking, creativity*), literacy and *Higher Order Thinking Skills* (HOTS). Because the curriculum is a competency-based curriculum that is indispensable as an instrument to guide students to become: (1) qualified human beings so they can respond to the challenges of the ever-changing times; (2) educated human beings who believe and fear the Almighty God, have noble character, are healthy, knowledgeable, capable, creative, independent; and

(3) democratic and responsible citizens (Kemendikbud, 2017). This statement is the same as the demands of the 21st century which state that education does not only emphasize cognitive aspects, but aspects of attitudes and skills are also the main capital in global competition in this century. For to faced global competition, in education each student was trained to 21st century skills that the emphasize the ability of each student be able to critically think in problem solving, have idea and innovation, be able to team work and commicated (Ningsih, 2020).

The Government will facilitate learners to have skills to face global competition. As for these skills contained in the curriculum 2013 revision of 2017 namely 4C skills (critial thinking, creative thinking, colaboration and communication), so students should be able to work in a team with a good, innovative and creative, critical thinking in problem solving and subsequent capable communicate well. So it can be concluded that the 4C component is very

important for students by starting to be trained and developed in a lesson. The 2013 curriculum seeks to further inculcate the values reflected in attitudes so that they are directly proportional to the skills stsudents acquire through knowledge in school. In other words, soft skills and hard skills can run in a balanced way, side by side, and are expected to be able to be implemented in everyday life. One of the lessons that use critical and creative thinking skills is Physics.

Physics is a branch of science that underlies the development of technology and the concept of living in harmony with nature. As a science that studies natural phenomena, Physics also provides good lessons for humans to live in harmony based on natural laws . The objectives of learning physics as stated in the 2013 Curriculum are to master the concepts and principles of physics, have the skills to

develop knowledge and a confident attitude as provisions for continuing education and as a reference in developing science and science and technology (Abidin, 2014). 4C skills are needed so that students are able to face and adapt to the challenges of increasingly complex developments. In learning physics, it is expected to be a forum for students to solve problems in their environment by utilizing critical and creative thinking skills that students can develop in facing the challenges of the 21st century. One of the learning resources that encourage the physics learning process is a worksheets.

Worksheets are sheets containing assignments that must be done by students (Depdiknas. 2008). Worksheets can be in the form of guides for cognitive aspects development exercises as well as guides for the development of all aspects of learning in the form of experimental or demonstration guides (Trianto. 2011) . Worksheets contains activities that students must do to maximize better understanding and creativity. The achievement of using student work sheets depends on the student work sheets presentation that the teacher gives to students. The worksheets used must contain 4C skill indicators so that the expected abilities can be realized.

LKS is also one of teaching that can be modified according to the needs and goals of 21st century skills the in accordance with existing demans and of course must still follow the guidekines for developing teaching materials taht have been regulated by the ministry of nasional education. In modifying LKS, educators can be adapt to the demands of 21st century skills. One off the 21st century skills is the 4C skills , namely critical thinking skills, communication skills, colaboration skills and creativity skilla (Bungsu. 2019)

The worksheets used by students are expected to facilitate 4C skills consist critical thinking, creative thinking, collaboration and communication . The 4C in the worksheets should be available in the existing material content and evaluation components . With the 4C-based worksheets, it will help students practice their thinking skills. In addition, teachers must also be able to make 4C-based worksheets and can be used in the teaching and learning process. The worksheets used by the teacher in physics learning in south learning vary, from the publisher's worksheets to the student worksheets made by the teacher. The student worksheets have variations according to the teacher's abilities. With this variety of worksheets, of course there are also various thoughts and indicators to be achieved. As far as the observations made, student can not applied 21st century skills in everyday life.

Based on the results of a survey conducted at high schools in Soouth Pesisir, information data was obtained about a number of student worksheets used in several schools which are shown in the table below:

Table 1. The Use of student work sheets High School Physics Class XII in Pesisir Selatan

No	Physics Worksheets	User
1	Physics Worksheets Issuer	6
2	Physics Worksheets Teacher	4
3	Learning Teaching	12

(Survey: 2021)

Based on the survey data above, information has been obtained regarding the use of high school physics worksheets for class XII which is very varied. The worksheets are written and designed by various publishers or made

by teachers who teach at the school concerned. Even though they have been made and used in teaching and learning activities, it is not yet known which worksheets can practice the 4C skills as a learning guide. From some of the LKS above, it is not known whether the LKS already contains the 4C components in terms of presentation.

Based on a survey conducted during the Educational Field Experience Practice (EFEP) , the researcher collected the student's UTS scores then analyzed the exam, it was known that the understanding of the concepts and student learning outcomes was still not optimal . The ability of students to answer questions that test the level of critical thinking is still not optimal. It can be seen berdasark an analysis of the results of the midterm in which researchers take the s am p el in three classes different, sample this class according to researchers take high to low class category as shown in Table 2**.**

Table 2. Student's Ability to Complete Questions Based on Cognitive Levels

TYPE OF PROBLEM	NUMBER OF PROBLEMS	PERSENTASE		
		Class A	Class B	Class C
HOTS	5 soal C4	35%	38%	32%
MOTS	10 soal C3	39%	38%	32%
LOTS	5 soal C2	52%	54%	47%

(Survei : 2020)

From Table 2. it is known that the percentage of students' ability in answering HOTS questions is still not optimal. It can be seen in the table that the percentage of answering HOTS questions (C4) Class A is 35% with the low category, Class B 38% with the low category, Class C 32% with the low category and. The interpretation of the percentage value above is taken from the classification of Dr. Purwanto, M.Pd. From these data it can be concluded

that the student's ability to answer HOTS questions is still low. Based on the analysis of the questions that have been carried out, it is obtained that the questions in the LOTS category are 25% of the questions that are in the MOTS 50 % category , and the questions that are in the HOTS category of 25 %. Based on the description above, it can be seen that the questions in the HOTS category are still small, namely 25% of the total questions. Whereas the demand for questions in the 2013 curriculum for SMA / MA level is at the cognitive level C4-C6 (HOTS) and there should be a balance between the presentation of LOTS, MOTS and HOTS questions.

Based on the results of observations on learning activities, it was also found that the ability to work together in groups was not optimally implemented by students. There are still many students who have not been able to divide the assignments according to the group's goals. As a result, if they are given assignments, these tasks only involve a few students. Not all students collaborate in completing the group assignments. In addition to the collaborative abilities mandated in 21st century education, there are also communication skills. Student communication skills can also be said to be not optimal because it is found that in the learning process, students communicate still in doubt, stammer and anxious.

It is of course a question of why students are still not able to answer about the high level and the abi ladies collaboration and communication with the well and whether the materials used in the form of worksheets that students already trains students to mem possess skills 4C . Therefore, the researcher is interested in conducting a research **" Study of 4C's components the Availability at**

Physics Jobsheets of the Senior High School Grade XII In West Sumatra " to determine the availability of component 4C in Physics LKS class XII in South Pesisir.

B. Identificaton of the Research Problem

Based on the explanation that has been given in the background, several problems were found. In this study, researchers identified the problems in the study as follows:

1. There is still a lack of understanding of students to answer questions with high-order thinking characteristics
2. There is still a lack of student collaboration and communication skills in the learning process
3. The learning carried out is not optimal in training students' 4C skills
4. The worksheets used by students have not been identified whether they are based on 4C or not.
5. No research has been found regarding the study of student worksheets that facilitate 4C

C. Limitation of Research Problems

Based on the identification of the problems that have been put forward, so that research is more focused and directed, it is necessary to limit the problem. The limitation of the problem in this research are: The study was conducted to find out whether the content of the XII class XII Physics Worksheet currently used has a 4C component in learning.

D. Formulation of the Reasearch Problem

Based on the research problems that have been stated, the problems to be studied will be the formulation of this research. The formulation in this study is "Does the Physics worksheet for class XII material used today contain the availability of 4C components in learning?"

E. Purpose of the Research

In accordance with the formulation of the problem made, a solution will be given which is the purpose of the research. The purpose of this study was to determine the availability of the 4C component in the XII class XII high school Physics LKS in terms of 4C indicators in learning.

F. Benefits of the Research

The results of this study are expected to be useful for students, teachers, and schools. The problems of this research are as follows:

1. For researchers, it is useful for researchers, as a condition for obtaining a bachelor's degree in physics education at FMIPA UNP and increasing insight and experience as prospective educators.
2. For teachers, it is useful as a material for consideration in determining teaching materials that will be used in delivering Physics learning materials in schools and as a reference for improving LKS in order to facilitate the 4C component.
3. For other researchers, it is useful as a reference in conducting future research. Research that can be carried out in the future includes the creation of 4C-based worksheets and the development of 4C-based worksheets.