CHAPTER I

INTRODUCTION

1.1   Background

Education is one important aspect for the progress of a country, it is also the formation of the character of the nation. Therefore, every citizen has the right to get a decent education. According to Law Nb. 20 of 2003 concerning the National Education System states that education is a conscious and planned effort to create an atmosphere of learning and the learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and the skills they need, society, nation and state (Sanjaya, 2011).

Learning is basically an individual event, namely the occurrence of changes in behavior as a result of individual experiences. Learning is generally defined as changes in individuals that occur through experience, and not because of the growth or development of the body or the characteristics of a person who is born. The change in question is a permanent change in behavior in the form of knowledge, understanding, skills and habits that have just been acquired by individuals (Nurdiansyah, 2016).

Changes in learning patterns at this time are seen still being carried out starting from the elementary school, the junior high school, the senior high school and even the university. The United Nations organization in charge of education, science and culture (UNESCO) said that more than 1.5 billion students in the world can not study in school because of the Covid-19 virus. This problem of course requires educational institutions and educators to be at the forefront of implementing the appropriate learning process. Regulations implemented by the government by studying at home, working at home by implementing physical distancing so that the Covid-19 virus does not spread quickly are required to study online (Abidin, 2020).

The 21st century learning paradigm suggests that a teacher must use digital technology, a means of communication or an appropriate network to access, manage,

integrate, evaluate and create information to function in learning. This is in accordance with Permendikbud Nb. 22 of 2016 concerning the standard process of primary and secondary education. One of the contents of the process standard is the use of information and communication technology to increase the efficiency and effectiveness of learning. Based on the above, it is hoped that teachers will be able to apply information and communication technology in an integrated, systematic, and effective manner in accordance with the situation and conditions, including being able to use technology as a learning resource and learning media.

The main problem in learning in formal education at this time is the lack of supervision of students by teachers due to changes in the learning process from face-to-face learning to online learning due to the current Covid-19 pandemic situation. With the school learning situation using an online system, in addition to the teachers who must be able to use technology as a learning resource and learning media, and the students must also be able to do this. In the current condition, the teaching materials for students in schools are very necessary to be accessible by students for independent learning from home so that it can support the achievement of the learning objectives that have been set.

The innovation in the learning process is very needed, one of which is by adjusting the material to be delivered by making the teaching materials to be used. The availability of teaching materials that will be used by students is a major component of learning. While the teaching materials used today are monotonous and directly expose the lesson through, this causes students to feel bored and there is no reciprocity of students in the learning process. The teaching materials used should have a unique and interesting form, material content, and method of delivering lessons in order to motivate students in the learning process of the teaching material (Haryanti, 2016).

One of the teaching materials that can be developed by delivering simple learning materials and activities and attracting students' interest in learning is a module. The module is an independent learning package that includes a series of learning experiences that are planned and systematically designed to help students achieve learning goals (Budiono, 2006). The advantages of modules as teaching materials include that they can be studied in

various places, independently or do not have to be studied in groups, and can be studied flexibly (Sungkono, 2003). The teaching materials developed are not only able to attract reading interest in learning, but also contain activities that are able to develop students' high order thinking skills (HOTS).

High Order Thinking Skills (HOTS) is a thought process that is not just memorizing and relaying known information. HOTS is the ability to connect, manipulate, and transform existing knowledge to think critically and creatively in an effort to make decisions and solve problems in new situations, in the context of learning high order thinking occurs when students are able to connect and transform knowledge. Which is they already have with things or problems that have never been taught in learning. Thinking skills at a higher level cannot be obtained directly so they need to be trained through learning activities (Rofiah, 2018). HOTS which is to familiarize students with analysis, evaluation, and creation based on educational needs by always based on the content standards and competency standards of existing graduates.

Based on the results of the researcher interview with Mrs. Ederiana Br. Sidebang, S.Pd., M.Si, as the physics teacher grade X at SMA Negeri 11 Medan, said that there are several problems in the current online learning system, including teachers unable to control the students properly. For example, when the learning process was begun, the teacher did not know whether students really followed the lesson well at home and whether students did the assignments that the teacher had given them by personally. In addition, there are also problems with unstable internet network access and also problems with limited internet quota.

Mrs. Ederiana Br. Sidebang S.Pd., M.Si, also revealed that so far the learning process has only been memorized and remembered because she rarely applies High Order Thinking Skills (HOTS) learning. Especially during this pandemic, this was because teachers also had difficulty in developing teaching materials and questions based on HOTS.

The teaching materials used are only textbooks provided by the school, so it does not encourage students to think at higher levels.

The interview process is not only carried out on teacher, but also to student. The results of the interview obtained information that during online learning activities, students only received information from the teacher and textbooks provided by the school. The use of electronic media has not been maximized, it is only limited to the exposure using Ms. Powerpoint by the teacher and information search via internet by students. Even though most students have laptops and are proficient enough to use them. This sometimes makes students bored and uninterested in the learning being carried out.

The limited creative skill of educators in presenting learning material can be a factor in the reduced interest of students in learning physics which has an impact on the understanding possessed by students. Seen from the teaching materials used during learning carried out online, namely in the form of videos, textbooks provided by the school, and ordinary practice questions. Not equipped with a level of questions that can increase the HOTS of students, so the teaching materials used by students are not HOTS based in training students' high order thinking skills. Students are only required to write down the material provided by the teacher, then work on practice questions that are not yet based on HOTS. Even though the available media and learning facilities are sufficient in learning activities to increase students' HOTS. Therefore, educators are required to be able to present interesting material so that it can motivate students in learning.

Based on this, the solution that researchers can provide to increase efficiency and effectiveness in the learning process requires the development of module teaching materials that can contain concept/theory material, detailed explanations, and other interesting content that can build imaginative thinking, material and questions. Questions that can train and improve the HOTS of students, and have a very important function in learning. With this module the researcher tries to change the learning process from passive to active and can increase the HOTS of students. As we know, module is a teaching materials that have advantages, namely, being able to stand on their own, can increase student motivation

because both teachers and students can measure unsuccessful abilities so that learning becomes more focused, students can also achieve results according to their abilities (Oktaria, 2016).

High Order Thinking Skills (HOTS) with its ability indicators, namely: analyzing, concluding and creating (Rofiah, 2018). In accordance with the opinion of Winarno, Sunarno &, Sarwanto (2015) that HOTS based modules help teachers train students to think at higher levels, namely: analyzing, evaluating, and creating according to school needs. The development of teaching materials that will be designed is a hypercontent module based on High Order Thinking Skills (HOTS).

The term of a hypercontent used in this module is adopted from the hypercontent learning design. According to Simonson (2002) learning designed with hypercontent has modules, topics, and concepts. The topics are presented in the module use text, audio, graphics, images and videos. Students have their own control to determine the topics to be studied randomly first by using hypercontent. This hypercontent is linked and virtual world. In simple terms, hypercontent can be understood as a concept that connects one material and another simultaneously in a particular digital technology program.

The concept of the material in this hypercontent module is enriched with supporting material which is linked to various interesting content on Youtube, GoogleWeb or Wikipedia and Wiki-tech. The content in cyberspace that has been provided can be accessed using a device or cell-phone via a Scan of a Quick Response Code (QR Code). In order to enter the network or by online, and the device too must be connected to the internet. (Prawiradilaga, et al. 2017).

It is hoped that the development of the hypercontent module based on High Order Thinking Skills (HOTS) can increase student motivation to learn, can improve students' critical and creative thinking skills, help in overcoming student learning difficulties independently, and help create a reading culture during the current pandemic. And it can be used as a teacher as a material for consideration in conducting learning by applying HOTS based hypercontent modules as student teaching materials, as well as interesting

independent learning media to understand a material. The material used in this development research is work and energy. In which the basic competence requires students to analyze, where analyzing is an indicator in HOTS which is included in analyzing (C4). The material of Work and Energy are also concrete materials and has many applications in life everyday.

Based on the background description, the researcher wishes to conduct a research with the title **"Development of a Hypercontent Module Based on High Order Thinking Skills (HOTS) on Work and Energy Materials Grade X SMA Negeri 11 Medan".**

1.2   Problem Identification

Based on the background of the problems described above, the identification of the problems in this study is:

1. The need for additional teaching materials for online learning during the Covid-19 pandemic.
2. The exercises used by teacher were not based on HOTS.
3. Students tend to get bored with the methods used by the teacher to teach and the media used do not attract students' attention.
4. The limitations of students in implementing online learning so that they need independent teaching materials.

1.3   Problem Formulation

Based on the background of the problem that have been stated previously, the problem formulation in this study is:

1. How is the process of developing a hypercontent module based on High Order Thinking Skills (HOTS) on Work and Energy materials?
2. How do the material experts and media experts think about the feasibility of the hypercontent module based on High Order Thinking Skills (HOTS) on Work and Energy materials?

3. How do the teacher and students respond to the hypercontent module based on High Order Thinking Skills (HOTS) on Work and Energy materials?

1.4   Problem Limitation

Seeing the extent of the problems that can arise from this research, and considering the limited time and other supporting facilities, this research is limited to:

1. The object of the research is the students of class X IPA SMA Negeri 11 Medan in the academic year 2020/2021.
2. The material presented is only on Work and Energy materials.
3. Module development uses the 4-D development concept and only reaches the 3rd stage, namely define, design and development.

1.5   Research Objectives

The research objectives that are expected to be achieved in this study are as follows:

1. Develop a hypercontent module based on High Order Thinking Skills (HOTS) on Work and Energy materials.
2. Knowing the opinions of material experts and media experts on the feasibility of the hypercontent module based on High Order Thinking Skills (HOTS) on Work and Energy materials.
3. Knowing the response of teacher and students to the hypercontent module based on High Order Thinking Skills (HOTS) on Work and Energy materials.

1.6   Research Benefits

Based on the research objectives to be achieved, this research is expected to have benefits in education, either directly or indirectly. The benefits of this research are as follows:

1. For researchers and students, the results of this study are expected to add insight, ability, and experience in increasing their competence as prospective teachers.

2. For physics teachers, the results of the study are expected to provide input on the use of hypercontent modules to increase student HOTS, especially on the subject matter of Work and Energy.

3. For students, this research is expected to increase knowledge and experience of student learning.

4. For schools, this research is expected to contribute to improving student achievement in schools so as to improve the quality of learning physics at SMA Negeri 11 Medan.

5. For future researchers, this research can be used as material for further research.

1.7   Operational Definition

To avoid different interpretations in understanding each variable in this study, it is necessary to provide an operational definition to clarify this matter. The operational definition of the researcher is:

1. Teaching material is all materials that are arranged systematically which displays a complete figure of the competencies that will be mastered by students and used in the learning process with the aim of planning and studying the implementation of learning and emphasizing the activities of students (Setyowati, 2013).

2. Research and development (R&D) is a type of research that aims to produce a product, concept, method, tool, program or method to simplify and solve problems faced by humans (Prasetyo, 2015).

3. Module is a teaching material that can be used by students to learn independently with the minimum possible assistance from the teacher, which is arranged systematically and consists of a series of learning activities (Bakri, 2015).

4. Hypercontent is a concept that intertwines one material and other materials simultaneously in one particular digital technology program (Prawiradilaga, et al. 2017).

5. High Order Thinking Skills (HOTS) including the ability to solve problems (problem solving), creative thinking, the ability to argue (reasoning), and make decisions (decision making) and the ability to solve problems containing C4, C5, and C6.