CHAPTER I
INTRODUCTION

1.1. Background

Education is a part of a process that is desired to achieve goals that are educational and can encourage and motivate students to do something good and beneficial (Susanti, 2017). In education itself, in the learning process there are teaching and learning activities between students and educators. In learning and teaching activities there are learning materials to support learning activities in the classroom. Learning materials also known as teaching materials. Where teaching materials are materials that are systematically arranged and used by teachers and students in the learning process, which are known as teaching materials (Magdalena *et al*., 2020). This definition explains that teaching materials must be designed and written with instructional principles because it will be used by teacher to assist and support the learning process.

Teaching materials that are basically the "content" of the curriculum, namely in the form of subjects or materials with topics/subtopics and details (Ruhimat, 2011). So it can be understood that the role of a teacher in designing or compiling teaching materials greatly determines the success of the teaching and learning process is through a teaching materials. Teaching materials are also arranged systematically so as to enable students to learn independently and are designed in accordance with the applicable curriculum. One of the teaching materials that are independent and capable of being a learning resource is a module.

The module is defined as a complete unit, stands alone, and consists of a series of learning in achieving a number of objectives that are formulated specifically and clearly. Modules are also called independent teaching materials, because they are equipped with instructions for learning independently (self-study). Module are teaching materials that are specifically designed, systematic,

and equipped with instructions that contain learning experiences by organizing subject matter that allows it to be studied independently or guided (Susanti, 2017).

Module is essential for presence as a teaching material in the learning process of today's generation of students. The change in generational patterns to become a digital generation. The young generation currently lives in the digital era where digital influence cannot be separated from their daily lives. Conditions like this are called digital natives. In line with that, especially high school students, are very dependent on information search engines such as Google, website and the like that without paying attention to the reading sources they access (Pratiwi and Indana, 2022).

Therefore, it is essential to improve the quality of education with the existence and development of this module which is very important in line with there is a new curriculum to align and support progress in the education in Indonesia which causes learning to be prioritized with using technology for independent learning, anywhere and at any time, as well as independent learning, stand alone, to increase literacy, digital literacy, train independent and critical thinking, makes the presence of develop of module as a teaching materials very necessary to support and achievement of student learning outcomes success today.

Based on the results of observations at the school and interviews with the physics teacher of the class XI MAN 1 Medan, namely with Mrs. Dewi Arisanti, M.Pd., stated that there were some problems that have been found after the changes that occurred in the world of education today, there are presence of curriculum changes that applies in schools. In implementing the new curriculum, that is becoming one of the driving schools, only a few of the teachers trained to be driving force teachers, not all teachers are skilled in providing teaching materials according to existing curricula where teachers must be able to develop more creative teaching material to achieve the desired and predetermined learning outcomes.

The researchers also observations during the learning and teaching process the use of electronic intermediaries is also not optimal. The student's limited learning resources, at the time of learning, it is very rare for teachers to use digital systems or other learning resources, they are used to conventional textbooks. The

researchers observed directly the content of the book as the main teaching material that used where the textbook is less attractive to students because of the full of writing, lack of suitability of the character needs of students who are already part of the digital native.

Facilities in the school are speakers, laptops, television that connected can display a smartphone or personal computer (laptop) screen, in focus and all forms of digital it is rarely used making the learning process by focusing on the students are not achieved that to become independent in learning. Accordance to interview result and observing result that is undeniable that conventional books are still considered effective in the learning process, because some students have a visual learning style. But in reality, students also need interesting learning resources that are in accordance with now generation habits of high school students as digital native.

From the issues, it is necessary to present a teaching materials in the form of module developed that is suitable for teachers and students by combining digital and conventional systems with printed modules. The only way to do is to design a hypercontent module. According to Prawiradilaga *et al*. (2017), hypercontent is a concept for connecting a material with another material simultaneously and presented in a particular digital program. Hypercontent is linked virtually by combining two dementia like the virtual world with the real world, using a cloud computing pattern like a Google drive or a data center that can be accessed using QR code either online or offline (Amin *et al*., 2020).

This hypercontent module has the advantage that it can be read by anyone who has an interest in the material presented and the use of QR code on the module can make it easier for students to access the website through the learning resource they use without having to type the address of the website (Anisa *et al.,* 2021). Quick Response (QR) code is an evolution of the one-dimensional bar-code, which originally became a two-dimensional one. QR is an abbreviation of quick response because it is intended to translate the content quickly. QR code is a development of the single-dimensive bar-code, QR code is one of the types of bar codes that can be read using a smartphone camera (Musthofa *et al.,* 2016).

Based on the study Amin *et al.* (2020), the study successfully showed that students need modules as teaching materials independently, and the study results also showed students' learning styles are visually inclined as many as 34 people out of 50 people, where it is compatible with the hypercontent module that can present the teaching material visually accessible using QR code. Another study carried out by Marta *et al*. (2022), the research showed the results that e-hypercontent modules help students learn independently and can be done anytime and anywhere, and can relieve the student's learning burden. The statement is supported by the complex content of the module, because the features in it are as complete as in the case of moving images, videos, and other articles. All of that can be accessed online by scanning QR code through the smartphone app.

Based on the description, this research aims to develop hypercontent modules on Momentum and Impulse materials. This is done, because in the learning process the student's information source is only from books provided by the school and delivered by the teacher. Therefore, this hypercontent module is can learn independently and the content of the hypercontent module itself is equipped with a number of learning resources such as video, images, and other that can be accessed by scanning the existing QR code. This development is expected to improve student learning outcomes. Therefore, the researcher wants to undertake a research with the title **"The Development of a Hypercontent Module Based on QR Code on Momentum and Impulse Materials"**.

1.2.   Problem Identification

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

1. The need of the development appropriate teaching materials by developing hypercontent modules based on QR code.

2. The need of the development teaching materials to improve student learning outcomes by developing hypercontent modules based on QR code.

3. The teaching materials that are not in accordance with student needs.

4. The teaching materials used it is not attract the interest of students.

1.3. The Scope

Based on the problem identification, the scope of this research focused on:

1. The process of developing a hypercontent module based on QR code on momentum and impulse materials.

2. Finding out the feasibility of a hypercontent module based on QR code on momentum and impulse materials.

3. Finding out the responses of educators and students to the hypercontent module based on QR code on momentum and impulse materials.

4. Finding out the improvement of student learning outcomes of a hypercontent module based on QR code on momentum and impulse materials

1.4. Problem Formulation

Based on the background of the problem along with the identification of problems that have been stated, the researcher formulates the problems in this research is as follows:

1. How is the feasibility of hypercontent module based on QR code on momentum and impulse materials?

2. How are the responses of educators and students to the hypercontent module based on QR code on momentum and impulse materials?

3. How is the improvement of student learning outcomes of hypercontent module based on QR code on momentum and impulse materials?

1.5. Problem Limitation

Based on problem identification and problem formulation, it is necessary to limit the problem so that the research will be clearer and more measurable. The problem limitations of this research are as follows:

1. The subject of the research is the students of class XI MIPA MAN 1 Medan in the academic year 2024/2025.

2. The material focused is only on momentum and impulse materials.

3. Module development uses the 4-D development concept and only reaches the 3rd stage, namely define, design and develop.

1.6.   Research Objectives

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

1. Knowing the expert's opinion about the feasibility of hypercontent module based on QR code on momentum and impulse materials.
2. Knowing the responses of educators and students to the hypercontent module based QR code on momentum and impulse materials.
3. Knowing the improvement of student learning outcomes of hypercontent module based on QR code on momentum and impulse materials.

1.7.   Research Benefit

This research is expected to have benefits in education. The benefits of this research are as follows:

1. For researcher and collegers, researcher's hope that the results of this study can increase insight, expertise, and experience to improve their abilities as prospective educators.
2. For physics teachers, researcher's hope that the results of the study can share information related to the use of hypercontent modules based on QR code in improving of student learning outcomes, especially on momentum and impulse materials.
3. For students, researcher's hope that this research can increase knowledge and learning experiences for students.
4. For schools, researchers' expect this research to contribute to the improvement of students' learning achievement. This will improve the quality of physics learning at MAN 1 Medan.
5. For the next researchers, the researcher's expects that this research can be used as material for the next research.

1.8.   Operational Definition

To avoid different interpretations in understanding each variable in this study, it is necessary to provide an operational definition to clarify this. The researcher's operational definitions are:

1. Teaching materials are materials that are systematically arranged and used by teachers and students in the learning process, which are known as teaching materials (Magdalena *et al.*, 2020).

2. Module is a teaching material that is specifically designed, systematic, and equipped with instructions that contain learning experiences by organizing subject matter that allows it to be studied independently or guided (Susanti, 2017).

3. Hypercontent is a concept that connects one material with other materials simultaneously in one particular digital technology program (Prawiradilaga *et al.*, 2017).

4. Quick Response (QR) Code is an evolution of the one-dimensional bar-code, which originally became a two-dimensional one. QR is an abbreviation of Quick Response because it is intended to translate the content quickly. QR code is a development of the single-dimensive bar-code, QR code is one of the types of bar codes that can be read using a smartphone camera (Musthofa *et al.*, 2016).