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NEED ANALYSIS OF CASE-BASED (CREATIVE, ACTIVE, SYSTEMATIC, EFFECTIVE) TEACHING MATERIALS TO IMPROVE STUDENTS' PROBLEM SOLVING AND CREATIVE THINKING ABILITY

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ABSTRACT

The development of open materials is necessary to improve their The Development of teaching materials is necessary to improve student understanding. However, the existing teaching materials still have shortcomings, meaning they do not fully support the learning process in learning media courses. These weaknesses can be in the form of learning information presented that is not detailed, both in terms of material and visualization, or that some teaching materials are presented in a foreign language and are difficult to understand. Seeing these problems, the aim of this research is to analyze the needs for CASE-based teaching materials (Creative, Active, Systematic and Effective) in improving students' problem-solving and creative abilities in learning media courses. CASE (Creative, Active, Systematic and Effective) is intended to help students creatively, actively, systematically and effectively, resulting in successful achievement of learning objectives. In this situation, creativity refers to the ability to develop unique teaching materials that can motivate students to learn. The definition of creative thinking is the ability to create new correlations between various aspects, analyze them, and use conclusions to solve problems in certain learning. The subjects of this research are students of the Biology Education study program, Department of Biology, Medan State University class of 2020. The sample was randomly selected as many as 30 students. This research is a qualitative descriptive research oriented towards the development of a product. Data collection was carried out using interview sheets, observation sheets and questionnaires.

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INTRODUCTION

Teaching materials are learning tools which serve an important function for educators and students in terms of helping and supporting the learning process. They include several components such as learning materials, learning methods, boundaries, and evaluation that are designed systematically to ensure learning objectives are well achieved in accordance with competencies that have been established (Magdalena et al., 2020; Yulandari & Mustika, 2021). Teaching materials must be designed in such a way that they are appealing to students. The development of teaching materials is regarded crucial from the perspective of students; educators are expected to be able to produce teaching materials that suit students' needs in order for the material delivered to be properly received (Yuliastuti & Soebagyo, 2021). According(Supardi, 2020) they are classified into two categories: printed teaching materials, which include handouts, modules, textbooks, and student worksheets (LKPD), and non-printed teaching materials, which include still and display teaching materials, videos, audio, and overhead transparency (OHT). dan *overhead transparencies* (OHT).

Textbooks are frequently utilized as the primary study guide for students at all levels of education. Textbooks are written methodically by professionals in their disciplines who give learning resources, including learning tools such as practice questions and pictures, to aid the teaching and learning process and improve student learning outcomes(Halim, 2018). Effective textbooks serve not only to improve learning outcomes, but also encourage problem-solving and creative thinking abilities.

Creative thinking refers to an individual's ability to seek out new ideas or solutions in order to solve a problem. Everyone has the ability to think creatively, although the degree to which this occurs varies (Ningsih et al., 2021). Individual sensitivity to situations identifies difficulties that must be resolved, which is the foundation of creative thinking. The ability to think creatively is a vital skill at all stages of schooling, particularly at the postsecondary level (Nugroho & Dwijayanti, 2022). Problem solving is directly tied to the creative thinking process; an issue is resolved from a person's mental process of thinking critically and creatively in order to uncover alternative ideas and precise procedures in overcoming any existing shortcomings or hurdles (Laili Octadianti et al., 2023). Various subjects at different levels of education require instructional materials that promote problem-solving and creative thinking skills (Moma, 2017).

CASE-based teaching materials are a model for making learning content more entertaining, active, and creative (Rosnaningsih & Puspita, 2023). Teaching materials prepared in a CASE (Creative, Active, Systematic, and Effective) way are intended to assist students to learn creatively, actively, systematically, and effectively, resulting in successful achievement of learning objectives (Abidin, Zainal & Walida, 2017). In this situation, creativity refers to the ability to develop unique instructional materials that can motivate students to study (Zuriah et al., 2016). Ananda (2019) defines creative thinking as the ability to create new correlations between diverse aspects, analyze them, and use the conclusions to solve issues in specific lessons.

Active indicates that the teaching materials used can inspire students to be more active in the learning process, that students never get bored while studying, and that students quickly absorb the learning content (Magdalena et al., 2020). Systematic means that the educational materials created are consistent, systematic, and logical (Rosnaningsih & Puspita, 2023).Finally, an effective instructional material is one that may assist students in achieving learning objectives, allowing them to obtain new experiences, and providing learning facilities (Melindawati, 2016).

All explanations that include CASE (Creative, Active, Systematic, and Effective) can be a benchmark that the teaching materials produced can support students' problem solving and creative thinking abilities. This is also supported by several previous studies, such as research conducted very highly in improving by Putri & Puspasari (2022), which states that teaching materials that have been developed based on CASE have a high percentage of students' skills and understanding. (Destri et al., 2023) found that the produced e-module was effective for usage in the learning process.

The study of learning media courses is fairly extensive and in-depth; it is one of the required courses for various majors, particularly education majors. The main points of study on learning media must be thoroughly understood so that students can develop and apply learning media in the world of education effectively based on their needs, create creative learning media, and minimize problems that arise during the learning process due to the delivery of less interesting material (Setiyanto, 2023). Teaching resources about learning media for students are critical to their understanding. Existing teaching materials still have flaws, which means they do not fully assist the learning process in learning media courses.

Educational materials about learning media for students are critical to their understanding. Existing teaching materials still have flaws, which means they do not fully support the learning process in learning media courses. These weaknesses can take the shape of learning information that is not offered in detail, either in terms of material or visualization, or some teaching materials that are delivered in a foreign language and are difficult to understand (W. Kurniawan et al., 2018). In light of this issue, the purpose of this study to analysis of teaching material case-based (Creative, Active, Systematic, and Effective) in increasing students' problem-solving and creative ability in learning media courses.

RESEARCH METHOD

This research is a qualitative descriptive research oriented towards the development of a product. Data collection was carried out using interview sheets, observation sheets and questionnaires. Interviews were conducted with course lecturers regarding the curriculum and teaching materials. Observation sheets are used to obtain data about learning activities in biology learning media courses. An open questionnaire was used to obtain data about the learning resources currently used by students, student obstacles in the lecture process, as well as the teaching material needs that students desire.

The research population was all students taking learning media courses in semester 7 of the 2023/2024 academic year, Medan State University's biology education study program, totaling 42 students. The research sample used was 30 students, as well as 1 lecturer teaching the course.

The needs analysis questionnaire uses the Guttman scale which is a scalogram scale which is very good for ensuring research results. The student's answer "yes" is worth "1" and "no" is worth "0", for alternative answers in the questionnaire. This research is in the form of a checklist using the Guttman scale. Next, the results are analyzed quantitatively in the form of percentages. The following is the formula for calculating the percentage of needs analysis data.

$$P = \frac{\sum}{N} \times 100\%$$

P = Percentage
f = Frequency of answers
P = 100
n = Number of answers

RESULT AND DISCUSSION

The interviews results with lecturers of the learning media course, the curriculum implemented has led to Outcome Based Education (OBE). In this curriculum, the educational process focuses on achieving concrete outcomes and knowledge that leads to skills and behaviors (Setiono et al., 2023). In the Outcome Based Education (OBE) curriculum, the achievement of competence and ability emphasizes students to be able to complete measurable tasks, understand the material more deeply, and complete tasks independently (Saepudin et al., 2024). In contrast to traditional education, OBE emphasizes a student-centered learning process and is actively managed by the students themselves, while lecturers only act as facilitators (Muzakir & Susanto, 2023).

The Outcome Based Education (OBE) curriculum emphasizes learning that can present learning outcomes that describe students understanding, knowledge and are capable of doing, provide learning to support the expected learning outcomes and evaluate learning outcomes by conducting assessments (Prihantoro, 2020).

By prioritizing the purposes of the OBE, it is necessary to revise learning outcomes that are not fully in accordance with the OBE curriculum. The overall interview results are presented in Table 1.

Table 1. Interviews results with lecturers of learning media course

Aspects	Information
Curriculum applied	It has moved towards the Outcome Based Education curriculum, but it needs to be revised in the learning outcomes section of the course which must be adjusted to the OBE curriculum.
Learning methods applied	The most commonly applied methods are group discussion methods and group assignments to create course projects.
Teaching materials availability	The teaching materials available are only from PPT, students are more looking for their own sources of teaching materials.
Development of desired teaching materials	Complete and innovative teaching materials, so that students can develop their thinking to create learning media.
Elements that are desired as completeness of teaching materials	Teaching materials should consist of evaluations, video tutorials, project-based student worksheets, material reinforcement, and images relevant to the material.

The use of group discussion methods and group assignments makes some students less active and the evaluations carried out are based on group results rather than individual performance, this creates a missynchronization between the achievements of the Outcome Based Education (OBE) curriculum and the learning process carried out. In addition, the teaching materials in the learning media course have not been developed optimally, the available teaching materials are only in the form of PowerPoint, the limited information on PowerPoint makes students have to find teaching materials that support the concept of learning materials.

The teaching materials sought by students are sometimes irrelevant and less effective which can cause students to get inappropriate or in-depth information, so the development of complete and innovative teaching materials is highly expected. Innovative teaching materials are teaching materials that consist the criteria of being attractive, effective, varied, contextual, and in accordance with the level of student needs, and the availability of teaching materials can help in improving the success and quality of learning (Inawati et al., 2021).

The teaching materials developed usually include material content, good illustrations and layouts, integrating audio, video, and image media, and there is evaluation and assessment (P. Y. Kurniawan, 2021).

Observations are also carried out in the classroom, during the learning process of the biology learning media course, students often have difficulty focusing and being actively involved because they do not have the right reference book or handbook. The process of teaching and learning activities implemented in the classroom currently only includes presentations and questions and answers. This activity has an effect on learning activities, namely only a small number of students are actively involved in discussions during the learning process. Most students tend to wait for instructions or simply follow the learning flow without high initiative. The results of learning observation in the classroom are shown in table 2.

Table 2. Learning Observation results of biology learning media course

Assessed aspects	Infromation
Situation of Learning Implementation	Students have not focused on the learning process because they do not have a reference book used in the learning process. Some students are not too active in the learning process, still tend to be passive.
Learning Activity Process	The activities carried out were only class presentations, and questions and answers. So that learning activities still tend to be passive.
Student Activities in Lectures	Some students are not too active in the learning process, still tend to be passive.
Teaching Materials Used	The teaching materials used are only presentations with PowerPoint, the learning resources used by students come from the internet, students do not have a handbook that can be used as teaching materials in the learning process.

In addition to the less innovative learning process, the teaching materials used in learning today are also less supportive, namely only in the form of presentations with PowerPoint. The main source of learning for students is information from the internet, because they do not have official handbooks or references that can be used as complete and in-depth teaching materials. This makes the learning process less directed, and students may get information that is not always relevant or appropriate.

This shows that the current learning process faces several obstacles. The absence of reference books and the limited variety of learning methods cause students to tend to be passive and less actively involved in learning.

The use of more diverse teaching materials and the existence of official handbooks or references are expected to increase student focus and participation and improve the overall quality of learning. Teaching materials have a very important role in the learning process, which has a function as a guideline for educators and students, as a guideline in directing learning activities, and as an assessment tool to see the results of learning outcomes (Magdalena et al., 2021; Wahyudi, 2022).

As for other obstacles, based on the questionnaire given to students, it is shown in table 3.

Table 3. Student Obstacles in the Learning Process of Learning Media Course

Assessed aspects	Percentage
The implementation of lecturer lectures uses conventional methods	53,3%
Lecturers use teaching materials that increase students creative thinking	20%
The use of teaching materials used can improve problem-solving skills	23,3%
Lectures use methods that make students active in learning	20%
Lecture materials are arranged systematically	6,7%
Biology learning media lectures are in accordance with learning outcomes	13,4%
The availability of facilities and infrastructure in the classroom is adequate	40%

Based on the data analysis of student constraints in the learning process of learning media courses in table 3, it shows that as many as 53,3% of students stated that lecturers still use conventional learning methods, this shows that lecturers tend to apply traditional approaches and do not adopt interactive or innovative methods. This approach can reduce students interest and students tend to be less interested, thus potentially limiting their understanding of the material being taught. 20% of students feel that the teaching materials used by lecturers are able to encourage them to think creatively. This shows that most of the existing teaching materials have not been effective in developing student creativity, which should be one of the main goals of learning media courses. As many as 23,3% of students assessed that the teaching materials used helped

them in improving their problem-solving skills. This relatively low percentage indicates that most teaching materials have not been designed to train students to face and solve complex problems, even though these skills are important in developing their competencies. Only 20% of students feel that the lecture methods applied by lecturers make them active in the learning process. This shows that the majority of students have not had enough opportunities to actively participate during lectures, so learning tends to be passive and has minimal interaction. Only 6,7% of students stated that the lecture material was prepared systematically. This very low percentage indicates that many students feel that the material presented is not well structured, which can make it difficult to understand and relate to the topics. As many as 13,4% of students felt that the biology learning media lectures were in accordance with the set learning outcomes. This percentage indicates that there is a gap between the material delivered in lectures and the learning achievement targets, which may make learning less effective in achieving the expected educational goals. As many as 40% of students feel that the facilities and infrastructure in the classroom are adequate. This shows that, although some facilities are available, there are still shortcomings that can affect the comfort and effectiveness of the learning process.

The results of the obstacles student analysis in the learning process reflect several challenges in the learning process of learning media courses. The high percentage of conventional learning methods and the low use of teaching materials that support creativity and problem-solving indicate the urgent need to update learning methods and teaching materials. In addition, improvements in the preparation of systematic materials, adjustments to learning outcomes, and improvement of facilities and infrastructure are also priorities so that learning objectives can be achieved optimally.

From the responses of 30 students, data on learning resources that are often used during lectures, learning media are shown in figure 1.

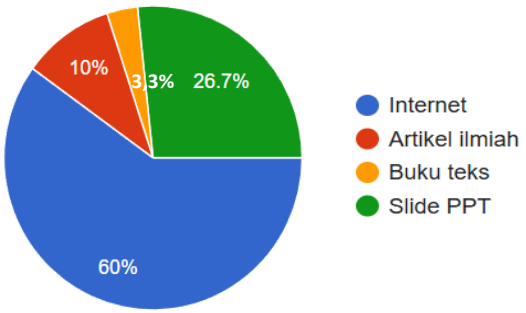

Figure 1. Frequently Used Learning Resource

The learning resources used by students are the basis for the development of teaching materials later. The most frequently used learning resource is the internet with a percentage of 60%, followed by PowerPoint slides at 26,7%. This is also in line with the observation results, that during learning activities, many students still use learning resources from the internet, and intensively only in the form of PowerPoint as a learning resource. In addition, lecturers only use media that are easily accessible to teachers, such as LCD and computer devices to display pictures or learning videos.

The use of this textbook is at least 3,3%, according to existing observations, students also do not have course textbooks, and also they do not have the initiative to find relevant books. Meanwhile, the response of the teaching materials desired by students is in figure 2.

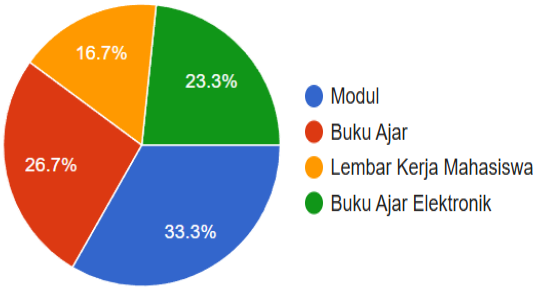

Figure 2. Type of Teaching Materials Analysis

From the results of the types of teaching materials analysis contained in Figure 2, it was obtained that the use of modules obtained the highest percentage value of 33,3%, while textbooks were second with students choice of 26,7%. However, in this research will be chosen to develop textbooks, because textbooks are one of the learning resources of a course that helps students understand the material. The role of

textbooks lies in the learning process experienced by students.

From the selection of teaching materials above, it is necessary to analyze the needs of CASE-based textbooks (Creative, Active, Systematic, Effective) which are taken from several observations, questionnaires filled out by students, and literature studies. The following table 4 is an analysis of the needs of textbooks.

Table 4. Needs Analysis of CASE-based textbooks (Creative, Active, Systematic, Effective)

CASE Aspects	Components of textbooks to be developed
Creative	The chapter section in the book, there is the development of learning media that will be made by students. and included a special chapter on the project of making learning media.
Active	Tutorial on making ICT-based learning media and added a barcode linked to a video of making learning media so that students are active in developing appropriate learning media. At the end of each chapter, an evaluation is included that can be done by students.
Systematic	It is compiled from the scope of the material in the RPS, starting from the introduction to the project of making learning media.
Effective	The compiled textbooks can be used anytime and anywhere.

The use of textbooks is not only a learning resource for students, but also makes it easier for educators to be more directed in providing explanations in relation to lecture materials (Safitri & Purbaningrum, 2020). Then the CASE (Creative, Active, Systematic, Effective) teaching method is designed to help students learn how to be creative, active, systematic, and effective to gain additional knowledge and understanding of the material during the learning process (Putri & Puspasari, 2022).

Creative means a series of teaching materials that are developed to direct students to be able to develop ideas and also think creatively in disseminating information on questions included in the teaching materials (Rosnaningsih & Puspita, 2023). Active means that the content of the teaching materials trains students to be proactive in identifying and overcoming problems that arise in the field of education. In learning, there needs to be an active thinking process for students by means of the teacher creating a learning activity process where students can link the material in the lessons that have been obtained in learning with real life. Systematic is teaching materials created using analytical and logical methods, which results in the creation of systematic teaching materials (Destri et al., 2023). Effective means that in terms of teaching materials, the description is structured effectively so that students can more easily understand and solve problems. The effectiveness of teaching materials can also be used or accessed from any location and at any time (Abidin, Zainal & Walida, 2017). Thus, case-based interactive teaching materials are designed to be used to help students become more creative, active and effective in the learning process. It also helps educators be more effective in their teaching by making the process more interactive, fun, and effective.

CONCLUSION

Based on the results of the analysis, it can be concluded that the limited teaching materials in learning media courses in the outcome-based education curriculum cause the learning process to be less than optimal in directing students to link the material with practice. In accordance with the objectives of the OBE curriculum, it is hoped that students can achieve competency and the ability to emphasize students being able to complete measurable tasks, understand the material more deeply and complete assignments independently. To achieve this goal, students need creative thinking and problem solving skills. Based on the analysis of textbook needs, CASE (Creative, Active, Systematic and Effective) based textbooks will be developed which consist of evaluations, video tutorials, project-based student worksheets, material reinforcement and images relevant to the material.

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