

Investigating EFL Students' Higher Order Thinking Skills (HOTS) via E-Learning During The Covid-19 Pandemic

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ABSTRACT

The world is currently confronted with a new paradigm for dealing with the COVID-19 virus. Consequently, more online learning activities are implemented. Therefore, the researchers employed the Higher Order Thinking Skills method to help students better comprehend the variety of questions and materials used by teachers during online learning. The capacity for critical, logical, reflective, metacognitive, and creative thought is referred to as Higher Order Thinking Skills (HOTS). This study's objective is to investigate English as a Foreign language (EFL) students' ability to think critically using the theory of higher order thinking skills via e-learning during the Covid-19 pandemic. Along with observing students' thought patterns, researchers examined students' growth in managing their way of thinking through reading text provided during online learning. a qualitative approach was chosen for the research design. 43 respondents were chosen using purposive sampling from seventh grade junior high school students in Merauke, Papua, Indonesia. The data for this study were collected using a modified test of higher order thinking skills. It consisted of twenty multiple-choice questions. Quizizz was used to distribute the test. The result indicates that the EFL students' higher order thinking skills were still inadequate.

Keywords: *efl, higher order thinking skills (hots), e-learning, covid-19, pandemic*

1. INTRODUCTION

This study's objective is to investigate English as a Foreign language (EFL) students' ability to think critically using the theory of higher order thinking skills via e-learning during the Covid-19 pandemic. Along with observing students' thought patterns, researchers examined students' growth in managing their way of thinking through reading text provided during online learning. Brookhart [1] argued that teachers who design tests quickly or use readymade tests without thoroughly examining them to ascertain the necessary thinking abilities are more likely to ask fewer questions requiring higher-order thinking than intended. In this case, researchers and readers should understand that providing HOTS-based questions can be done without re-checking the questions provided, as the teacher is only interested in assessing students' ability to think critically and in determining what students require when learning. As a result, fewer HOTS questions would be delivered.

The world is currently confronted with a new paradigm for dealing with the COVID-19 virus. Consequently, more online learning activities are implemented. Therefore, the researchers employed the HOTS method to help students better comprehend the variety of questions and materials used by teachers during online learning. The capacity for critical, logical, reflective, metacognitive, and creative thought is referred to as Higher Order Thinking Skills (HOTS). The ability to think at a high level is a thinking ability that requires not only the capacity for memory, but also other higher abilities, such as the capacity for creative and critical thinking. It is a method of working with an unusual mindset because students are taught to think practically while remaining critical, which prepares them to deal with online learning effectively. Norris and Ennis [2] noted that critical thinking is rational, reflective thought that is directed toward determining what to believe or do.

Online learning in schools is quite challenging not only for students, but also for teachers, as teachers must be able to establish practical and easily understandable

learning strategies for students during e-learning. Bach et al [3] emphasized that the learning materials and technology-enhanced learning should be constructed to be accessible for all of the students, rather than an privileged minority group with access to abundant resources. Because e-learning is required for all students during the Covid-19 pandemic, the need for technology-based learning will be carried out with great care and with a lot of preparation.

In practice, teachers face significant challenges when implementing HOTS learning. Apart from truly mastering the material and instructional strategies, the teacher faces additional challenges related to the environment and the intake of the students they teach. The following are the characteristics of learning HOTS (Higher Order of Thinking Skill):

- a) Focus on questions
- b) Analyse / assess arguments and data
- c) Define a concept
- d) Determine the conclusion.
- e) employing logical analysis
- f) Information processing and application
- g) Utilize information to solve problems.[4]

It should be understood that not all students in class used the HOTS method successfully in E-learning during this pandemic, in part due to students' lack of interest in understanding and developing their thinking during online learning, as well as the process of adapting to the online learning setting.

A. Higher-Order Thinking Skills

Brookhart [1] categorizes Higher Order Thinking Skills into three subcategories: (1) HOTS as transfer, (2) HOTS as critical thinking, and (3) HOTS as problem solving.

1) Higher-Order Thinking as Transfer

High-order thinking skills as transfer is method of learning that uses teacher creation in order to convey information that is simple to comprehend while learning or that results in success at the end of the learning process. For instance, in this theory, many teachers use phrases such as "what are you going to do if I'm not here?[1]". The question implies that the teacher is responsible for student preparation even if the teacher is not physically present in the learning system. Two of the most important educational objectives, according to Brookhart [1] are retention and transfer. When both of these factors (retention and transfer) are present, learning becomes meaningful. While retention entails students remembering what they learned, transfer entails students not only remembering what they learned, but also comprehending and applying what they have learned; which when it occurs, indicates significant learning [4].

Salomon & Perkins [5] divide learning transfer into two categories: low transfer and high transfer. Low road transfer refers to the automation of certain knowledge or skills. Generally, extensive practice in a variety of settings is required. Tying shoelaces, driving a car, and memorizing single-digit arithmetic facts are all examples of areas where automation is both possible and beneficial. Cognitive understanding; conscious and purposeful analysis; awareness; and the application of strategies across multiple disciplines are all required for high-road transfer. In high transfer, deliberate thought is directed toward transferrable ideas, which are then applied consciously and deliberately when confronted with a problem.

2) Higher- Order Thinking as Critical Thinking

Higher-Order Thinking as Critical Thinking is a way of thinking using a method of focusing on what is the goal of thinking based on what has been learned without any additional thoughts from other theories [1].

3) Higher-Order Thinking as Problem Solving

Higher Order Thinking as Problem Solving is a theory about how students identify and solve problems in their own thinking difficulties. While critical thinking problems are easily encountered in the twenty-first century of education, there are numerous new concepts and methods that students must learn through various learning media. Thus, problem solving theory aides in resolving the task at hand. Brook stated that every time teachers create a lesson plan, they offer a solution to a complex problem; how a specific learning objective can be effectively taught to the particular group of students in a given time period and with available materials [1]. By providing solutions and strategies, it can assist students in meeting their learning objectives, one of which is to provide an adequate amount of time from the available material to allow students to complete their learning appropriately.

B. Fundamental Assessment Principles for Higher-Order Thinking Skills

To conduct and create a higher-order thinking assessment, three fundamental principles must be followed. These principles will assist teachers in assessing high-order thinking skills [1]

1) Using the introductory material as a guide

Students are permitted to use material resources that aid in their thinking. Additionally, teachers can provide stimuli that aid students in problem solving, such as pictures or tables.

2) Making use of novel materials

The novelty material refers to the fact that the students' test materials have not been revised during classroom instruction. Utilizing novel materials requires

students to think critically, rather than simply recall previously completed materials.

Present cognitive complexity and difficulties separately

- 3) A test that assesses higher order cognitive processes does not imply that the test is difficult. The integrity of the cognitive process indicates the extent to which students' thought processes are coherent. The challenging test can be implemented by using unfamiliar questions to assess students' insights.

C. The Advantages of Higher-Order Thinking

Teachers who regularly use higher-order thinking skills in their instruction and assessment will see their students' benefits in the future. Research has demonstrated that higher-order thinking skills have a significant positive effect on the learning process. The following benefits of higher order thinking skills are listed [1]

- 1) Improve student's academic performance

Students' achievement progress is associated with the use of tasks and judgments that require intellectual and critical thinking abilities. Progress is indicated by a variety of learning outcomes, such as standard test scores. Research conducted by Wenglinsky [6] on the ability relationships of students using large-scale measurements and teaching methods that emphasize higher-order thinking skills, projects, and problem solving revealed that instruction that emphasizes reasoning is associated with increasing scores on all tests across all grade levels. Furthermore, students who receive instruction in higher order thinking skills are better equipped to solve problems by organizing their knowledge and experience, elaborating their statements or opinions, and completing unfamiliar tasks [7].

- 2) Boost motivation among students

Numerous studies have demonstrated that teachers are responsible for the development of higher order thinking skills through the use of tasks and judgments. These concepts require comprehension and critical thinking in order to boost student motivation and achievement. Abstract material and abstract teaching will not pique students' interest or motivation. Students will be engaged in thinking about specific or minute details, which will motivate them to learn. Their interest in mastering their ideas increases as their higher order thinking abilities improve. Students will consider more than simply remembering[1].

D. E- Learning

E-learning is a form of learning that emphasizes the use of electronic tools. E-learning (electronic learning)

is a term that refers to education delivered via a digital medium, most commonly computers and mobile devices connected to the Internet. In the case of distance education, learners and tutors may be located anywhere in the world apart from each other, either in the same time zone or at a different time. In a traditional sense, one would use the term "on-line learning" to describe the activity of learning on a computer, as well as learning via the Internet. Due to the prohibition of face-to-face learning during the Covid-19 pandemic, teachers frequently found e-learning to be beneficial. The researchers collected data for this study by utilizing Quizizz media. In which the media is most effective in utilizing the fact that students are given tests and assignments online.

Various educational institutions have used e-learning media as a resource to help students learn digitally without having to communicate with teachers in person. According to the study, many universities have attempted to incorporate a virtual learning environment (VLE) or managed learning environment (MLE) as a unified technology framework for integrating ICT into learning and teaching [3]. The online teaching process will run smoothly if the media network is properly managed during online learning.

Premsky [8] asserted that students of today will not experience living in a world where changes take place gradually, but in one where things are changing incredibly fast on a daily and exponential basis. Thus, today's teachers must ensure that, regardless of the subject they teach, they do so with that future in mind. Utilizing online learning strategies is important because it may serve as the main reference point for investigating the development of HOTS application. According to research, higher thinking (HOTS) is essential for the second language learning process. [9]. Simultaneously, previous research suggests that evaluation tasks frequently emphasize lower order thinking skills in online courses. There is still a dearth of knowledge regarding the assessment of thinking abilities in online EFL courses.

Due to the fact that e-learning has established itself as a viable alternative to the conventional modes of instruction, the possibility of developing and accessing HOTS in an e-learning environment has piqued the interest of researchers. Research indicates that the e-learning environment may benefit students' ability to develop higher order thinking skills. According to research, the collaborative elements that are frequently incorporated into assessment tasks aid in the development of HOTS.

In the twenty-first century, e-learning has advanced due to the advancement of technology via the internet, which enables the operation of e-learning tools. According to Bach et al. [3], technological change and the online environment are not only drivers of change in

higher education; they are also responses to other changes. Technological advancements that are occurring rapidly in the environment are undoubtedly beneficial in encouraging changes in the education world toward more effective teaching and learning.

2. RESEARCH METHODS

The purpose of this study was to examine students' higher order thinking skills in learning English via E-learning. Because this was a preliminary study, a qualitative approach was chosen for the research design. 43 respondents were chosen using purposive sampling from seventh grade junior high school students in Merauke, Papua, Indonesia. The samples were chosen because one of their subjects is English which is typically delivered in the English language.

The data for this study were collected using a modified test of higher order thinking skills. It consisted of twenty multiple-choice questions. Quizizz was used to distribute the test. This study was conducted during the academic year 2020/2021

3. RESEARCH RESULT

Assessment should be done in three ways: 1) assessment of learning), 2) assessment for learning), and 3) assessment as learning [8]. This study employs assessment for learning approaches.

The following data are taken from the test which have been administered to forty-three (43) students from Merauke's junior high school who participated in e-learning during Covid-19 disease outbreak. Students received a maximum score of 100 and a minimum score of 20. Figure 1 below illustrates the data pertaining to the students' grades.

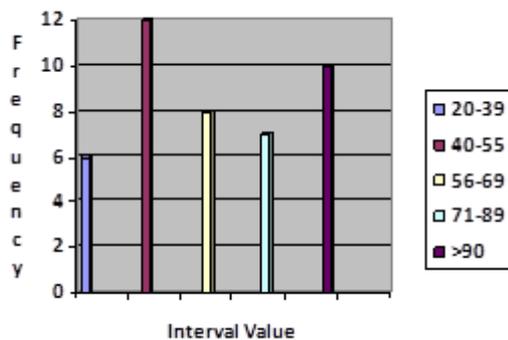


Figure 1. students' test score

According to the data gathered, there are 26 students with scores below 70, and 17 students with scores above 70. The majority of students that managed to take the Quizizz test of Higher Order Thinking Skills scored lower than the Minimum Mastery Criteria. This

demonstrates that the e-learning implementation has been unable to enhance Higher Order Thinking Skills for half of the total students.

Instruments of assessment or queries used to evaluate that requiring high-level thinking skills, such as analytical, evaluative, and creative abilities, are referred to as Higher Order Thinking Skills questions [10]. From the result, it can be seen that these questions are proving difficult for the majority of students to answer, and during e-learning, participants' High Order Thinking Skills were not developed. The teachers play important role in preparing students for active learning, even in the context of e-learning [11].

In the assessment context, high order thinking skill questions assess the capability for: 1) concept transfer; 2) information processing and application, 3) make connections between disparate pieces of information, 4) applying the information in problem solving, and 5) examine key information and ideas [12]. The Quizizz test consists of 20 items multiple choices. The table below describes the characteristics of each question.

Table 1. HOTS questions indicator

Characteristic of HOTS questions	Question number
transfer one concept to another	1, 2, 3,4,5, 14, 16, 17
process and apply information	1,2,3,4,5, 15
find links from a variety of different information	5, 7, 8, 9, 10
use information to solve problems	7, 9, 10, 11
examine critical ideas and information	6, 8, 9, 11, 12, 13, 18, 19, 20

The figure 2 of data below, explain the students' answer of each question for the highest true and false answer.

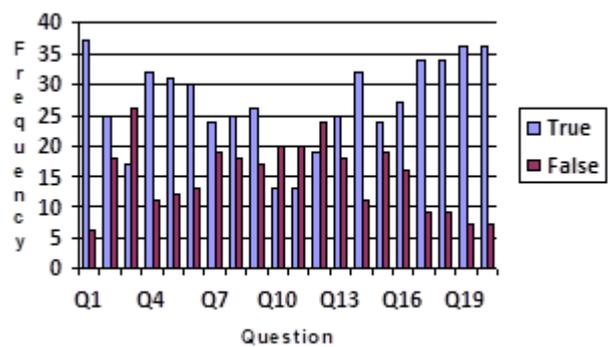


Figure 2. Questions distribution

According to the data collected, the question with the highest true answer is question number (1). A total of 37 students chose the correct answer. The question with the falsest answers is question number (3); a total of 26 students chose the incorrect answer.

According to table 1 HOTS question indicator and figure 2 questions distribution above, the majority of students can correctly answer questions 1, 4, 5, 17, 18, 19, 20, with more than 30 students answering correctly. It means that students can correctly answer questions with indicators: transfer one concept to another, process and apply information, and find links from various sources. Meanwhile, students are having difficulty correctly answering questions about transferring one concept to another, processing and applying information, and using information to solve problems.

4. CONCLUSIONS

E-learning has become indispensable in the midst of the Covid -19 pandemic. The outcomes of this phenomenon should be taken into account during the learning process. The findings of this study indicate that e-learning has not improved EFL students' higher order thinking skills. According to the Quizizz high order thinking skills test score, the majority of students scored below the Minimum Mastery Criteria. Students struggle to correctly answer questions that assess their ability to transfer concepts, information processing and application, applying the information in problem solving, and examine key information and ideas.

Furthermore, the researcher discovered that some of the students were unable to use their device optimally during the Quizizz high order thinking skills test. During this pandemic, e-learning is the only way to learn; therefore, the ability to use technology is required. English teachers are expected to understand and empower assessment instruments or questions requiring High Order Thinking Skills. Students are expected to improve their skills, particularly in High Order Thinking Skills. Higher-order thinking skills have a significant positive impact on students' learning processes and future prospects. Students are also expected to have a better understanding of technology. There are numerous technology tools available to support student activities in the learning process in order to achieve 21st century skills such as creativity and innovation.

ACKNOWLEDGMENT

This work was supported by Universitas Musamus Merauke. Therefore, the researchers wish to express their gratitude to Musamus University's Rector and Dean of Teacher Training and Education Faculty of Musamus University for their assistance and facilities during the study.

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