ONLINE LEARNING BASED ON HIGHER ORDER THINKING SKILLS IN ELEMENTARY SCHOOL: A CASE STUDY

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DOI : http://dx.doi.org/10.30829/tar.v31i2.3856

ABSTRACT

21st century learning is ideally designed with learning categorized as higher order thinking skills (HOTS). This study specifically aims to describe the implementation of online learning in the HOTS category in elementary schools. This research will be conducted on fifth grade students in elementary school in Surakarta. This research uses a qualitative approach with a case study method. Analysis of learning implementation is carried out at the stages of learning planning, learning implementation, and learning assessment. The results showed that at the planning stage, the teacher analyzed the syllabus and content as well as selecting materials, developing teaching materials. At the implementation stage, the teacher uses a whatsapp group and google meet. The technique used is a mixture of synchronous and asynchronous. Students document learning activities such as presentations or simple experiments and upload them via the google classroom link with the design referring to levels C4, C5, and C6. The teacher's analysis and responses are given after the students have collected their exam answers. The results of this study are expected to be a reference source for teachers to make adjustments to the implementation of online learning that allows for stimulating HOTS of students in elementary schools.

ABSTRAK

Pembelajaran abad 21 idealnya didesain dengan pembelajaran yang berkategori higher order thinking skills (HOTS). Penelitian ini secara khusus bertujuan untuk mendeskripsikan implementasi pembelajaran daring berkategori HOTS di sekolah dasar. Penelitian ini akan dilaksanakan pada siswa kelas V di SD di Kota Surakarta. Penelitian ini menggunakan pendekatan kualitatif dengan metode studi kasus. Analisis implementasi pembelajaran dilakukan pada tahapan perencanaan pembelajaran, pelaksanaan pembelajaran, dan penilaian pembelajaran. Hasil penelitian menunjukkan pada tahap perencanaan, guru menganalisis silabus dan muatan serta menyeleksi materi, mengembangkan bahan ajar. Pada tahap pelaksanaan, guru menggunakan whatsap group dan google meet. Teknik yang

digunakan adalah campuran antara sinkronus dan asinkronus. Siswa mendokumentasikan aktivitas belajar seperti presentasi atau eksperimen sederhana dan menguploadnya melalui link google classroom dengan rancangan mengacu pada level C4, C5, dan C6. Analisis dan respon guru diberikan setelah siswa mengumpulkan jawaban ujiannya. Hasil penelitian ini diharapkan dapat menjadi sumber rujukan bagi para guru untuk melakukan penyesuaian dari implementasi pembelajaran daring yang memungkinkan untuk menstimulasi HOTS siswa di sekolah dasar.

Introduction

The outbreak of the Covid-19 virus in Indonesia, the government has taken many ways to prevent its spread. One of them is through a circular letter from the Ministry of Education and Culture (Kemendikbud) Directorate of Higher Education No. 1 of 2020 regarding the prevention of the spread of Corona Virus Disease (Covid-19) in every education unit. Through this circular, the Ministry of Education and Culture provides instructions within the education unit to conduct distance learning and advises students to study from their homes (Kemendikbud, 2020). The impact of the COVID-19 outbreak has not subsided, learning will continue to be carried out from their respective homes (study from home) online.

The online learning system is a learning system without face to face directly between teachers and students, but online using the internet network with connectivity, accessibility, flexibility, and the ability to bring up various types of learning interactions (Asmuni, 2020; Firman and Sari, 2020). Online learning is a learning system that is carried out not face to face, but uses a platform that can help the teaching and learning process that is carried out even though it is far away. The purpose of online learning is to provide quality learning services in a massive and open network to reach more and wider interest in learning spaces (Sofyana & Abdul, 2019:82). It is very important to explore current situations and problems with online learning in order to keep improving students' experience and knowledge (Dumford & Miller, 2018). In the midst of the COVID-19 pandemic, schools are implementing online learning through various available application platforms such as Zoom, Google Meet, Google Classroom, which are media that can be optimized. Through these electronic application media, educators can transfer knowledge and skills in learning (Andriana et al., 2020).

Implementation of distance learning, of course, students and educators are required to have access to a good internet network. In fact, many areas do not have sufficient internet access so that it becomes one of the obstacles experienced by educators and students. Furthermore, students do not understand how to operate several learning applications such as zoom, google meet, google classroom (Andriana et al., 2020). Thus, the teacher can ensure that students take part in learning at the same time, even though in different places. This online learning condition makes learning not optimal, due to several contributing factors including inadequate facilities and infrastructure in online learning such as cellphones which not all students have, and sometimes from unsupportive family factors. Sometimes students do not obey their parents when asked to study. In addition, parental assistance in student learning activities is also lacking. This online learning makes students feel bored studying at home, they have to work on the questions given by the teacher every day. This makes students' learning motivation tends to be low (Khusna et al., 2020).

Based on the findings in the field, the platform used in online learning in elementary schools is only the Whatsapp group. The teacher only provides material and assignments in the Whatsapp group so that only one-way relationships occur. The limited interaction between teachers and students, causing students not to be active in learning. With this lack of interaction, it can hinder the realization of learning outcomes in the teaching and learning process. In

addition, the involvement of parents who do their children's assignments to get good grades makes online learning even more ineffective. To overcome the problem of ineffective online learning, the right strategy is needed. The strategy that can be used is to choose an appropriate learning model for online learning. the problems faced in online learning, it is necessary to have a learning model that can be used to increase student motivation and learning outcomes.

One of the 21st century skills that students need is High Order Thinking Skill (HOTS). HOTS is an important thing in learning, students are able to change and create the knowledge they know so as to produce or create something new. Because in this case, students already know the difference in concrete ideas, how to argue well, able to solve problems, build exposure construction well, able to hypothesize and understand in depth complex problems, and demonstrate their ability to reason (Dini, 2018). Natural Sciences (IPA) is the study of natural phenomena and everything that exists in nature. Science as an investigation process includes ways of thinking, attitudes and steps for scientific activities to obtain science products, such as observation, measurement, formulating, testing hypotheses, collecting data, experimenting and predicting. Science learning is fun learning because students can learn through the natural surroundings which of course are familiar to them. Students are invited to have direct contact and get to know learning objects around students, symptoms, problems (the application of the scientific process), examine them and find conclusions or concepts about something they are learning.

Science learning developed in the 2013 Curriculum is science as an integrative science subject, not as an educational discipline. Integrated science learning is essentially a learning approach that can familiarize students individually or in groups by actively exploring, elaborating, confirming, and communicating the results (Lukum, 2015). The three models are (1) a learning model through discovery (Discovery Learning), (2) a problem-based learning model (PBL), (3) a project-based learning model (PJBL). One of the models that can be developed in science learning is the online-based Problem based Learning (PBL) model. With the application of this model, it is expected that students' motivation and learning outcomes can increase. The application of this learning model is also adapted to online learning that is currently being implemented.

Method
Research Design

This study uses a qualitative research approach. The type of this research is a case study. This research focuses on one object and studies it as a case. Case study data can be obtained from all parties concerned, in other words in this study collected from various sources (Nawawi, 2003). The focus of this research is on the implementation of online learning in the HOTS category in elementary schools during the Covid-19 pandemic. Analysis of learning implementation is carried out at the stages of learning planning, learning implementation, and learning assessment.

Participants

The subjects of this study were fifth grade students at Cemara Dua Elementary School, Surakarta. The number of fifth grade students who became the subject of this study were 37 people. The selection of this research subject is purposive, taking into account that class V has been able to convey ideas and ideas in which the information data is very useful for answering research problems.

Data Collection and Analysis

Data collection techniques using tests, observations, and documentation. The validity of this research data using triangulation technique, which is comparing the data with various data collection techniques. The triangulation for the validity of this research data uses triangulation techniques. The data analysis technique that will be used in this study is an analytical technique using the Miles and Huberman (1994) Interactive Analysis Model. Activities in data analysis, namely (1) data reduction, (2) data display, (3) drawing conclusions.

Results and Discussion

The results and discussion of this study include three discussions: (1) explaining online learning planning in the category of higher order thinking skills (HOTS) for fifth grade elementary school students; (2) explaining the implementation of online learning in the category of higher order thinking skills (HOTS) for fifth grade elementary school students; (3) explaining the evaluation of online learning in the category of higher order thinking skills (HOTS) for fifth grade elementary school students.

Online Learning Based on HOTS Plan in Elementary School

The results of the study show that at the planning stage, the teacher analyzes the syllabus and content and selects the material so that it does not become a heavy learning burden for students. The teacher collects teaching materials and develops them according to the material in the current semester. The teacher also arranges worksheets that allow students to do high-level reasoning. Online learning process planning is prepared for each sub-theme and presented in an online learning implementation plan (RPP).

Online learning is designed by combining synchronous and asynchronous methods. Overall, asynchronous learning provides advantages such as convenience, flexibility, more interaction and to continue responsibilities (Kurniasari, et al., 2020). Selecting and determining synchronous and asynchronous learning activities is an effort to determine whether certain achievements and subjects or sub-topics will and can be achieved through asynchronous or synchronous learning strategies (Darma et al., 2020). Considering the condition of the students are elementary school students and have limitations in technology readiness, so the teacher chooses to design asynchronously, but some meetings use synchronous.

The teacher develops lesson plans and teaching materials. The spread of the corona virus pandemic has caused a change in the learning process from face-to-face learning in class to online learning. To optimize online learning, innovations are needed, such as the use of online media for the learning process (Khusniyah & Hakim, 2019). Teachers use various online media, such as whatsapp groups, google meet, google classroom, and google forms, teaching materials and digital worksheets. In the aspect of assessment, the teacher designs using indicators C4, C5 and C6 which are implemented into the google form system. This is in line with previous research that mostly uses google form media as an online assessment medium (Hadianti et al., 2021; Thohir & Muslimah, 2020).

Implementation of Online Learning Based on HOTS in Elementary School

Online learning is learning that is able to bring together students and teachers to carry out learning interactions with the help of the internet (Kuntarto, 2017; Sadikin & Hamidah, 2020). Online learning is basically learning that is done virtually through available virtual applications, such as websites, social media, video conferencing media. Online learning is a form of learning that is able to make students independent and not dependent on others (Syarifudin, 2020). Online learning in elementary schools is carried out in accordance with the availability of online learning support media, such as whatsapp groups and google classroom.

Higher order thinking skills (HOTS) are identified in learning activities that involve various levels of thinking processes. Level thinking ability (HOTS) involves a high hierarchical cognitive level from Bloom's thinking taxonomy consisting of six levels (Bloom, 1956) where indicators to measure HOTS include skills to analyze (C4), evaluate (C5), and create (C6) (Anderson & Krathwohl, 2001). This higher order thinking ability requires a person to apply new information or prior knowledge and manipulate information to reach possible answers in new situations. With this explanation, Afandi & Sajidan (2017) summarizes that: (1) HOTS includes a transfer of knowledge that refers to Bloom's taxonomy and Anderson & Krathwhol's taxonomy; (2) HOTS as critical thinking ability which refers to Ennis, and Facione; (3) HOTS as problem solving refers to Polya.

In the implementation of online learning which is categorized as hots, it can be seen in the HOTS aspects that appear in learning activities. Learning activities are presented in Table 1.

Tabel 1. Student Activities in Online Learning Design Category HOTS

No.	Aspect	Activities
1	Transfer of Knowledge	Learning unites the ability to think according to the cognitive, affective, and psychomotor domains.
2	Critical Thinking and Creative Thinking	Students experience a process where all knowledge and skills are mobilized in solving problems that arise.
3	Problem Solving	Students use all the knowledge gained to deal with new situations or solve special problems that have to do with the material being studied. Students become skilled at selecting relevant information, then analyzing it and finally reexamining the results.

Based on student activities during online learning, it can be seen that online learning with the HOTS category is a series of planning, implementation, and evaluation in online media that stimulates students to solve problems through the stages of critical-analytic thinking, evaluation, and creativity. HOTS learning in elementary schools can be seen from learning that emphasizes student learning activities in problem solving. Learning in online and offline designs allows for the HOTS category depending on the ability and willingness of the teacher.

Online Learning Assessment Based on HOTS in Elementary School

In line with learning that contains HOTS, teachers must also be able to create assessments because HOTS-based learning will be achieved only if teachers plan, implement, and evaluate learning that focuses on students' higher order thinking skills (Sudjiono, 2013). But in reality, primary school teachers feel that designing HOTS-based assessments is difficult and they also do not understand how to apply these assessments to their students (Okayana et al., 2019; Suratmi et al., 2020). In fact, the assessment is designed so that students can be actively involved and engaged in the learning process. For this reason, teachers increasingly have strong reasons to be able to develop HOTS-based assessments that can be implemented on students, especially during the Covid-19 pandemic which forces them to study from home. Steps for assessing online learning in the HOTS category consist of: (1) compose a grid of HOTS questions; (2) HOTS Question Development; and (3) HOTS-Based Learning Evaluation in Online Learning.

The steps for compiling the HOTS question grid are as follows: (1) Analyzing Basic Competencies that can be made HOTS questions. First of all, the teacher must choose a KD that can be made HOTS questions. Teachers can do this step independently or through the

MGMP forum. Sometimes not all KD can be made HOTS questions. Therefore, foresight and thoroughness are needed; (2) Arrange a grid of questions. The HOTS question grid aims to assist teachers in writing questions. The HOTS question grid is important to assist and direct the teacher in choosing KD which can be made HOTS questions, choosing the main material related to KD to be tested, formulating question indicators, and determining cognitive level.

The next stage is to develop a HOTS-based question instrument is choose an interesting and contextual stimulus. Stimulus used in the preparation of HOTS questions must be interesting and contextual. An interesting stimulus will make students want to read the stimulus carefully. While contextual means in accordance with the reality in everyday life. After teacher find out stimulus, write the question items according to the question grid. The writing of question items must be in accordance with the rules of writing HOTS items. The rules for writing HOTS items are slightly different from the rules for writing items in general. The difference lies only in the material aspect. Meanwhile, the construction and language aspects are relatively the same.

In last, create a rubric HOTS instrument. Each HOTS question item that is written must be accompanied by a rubric or scoring guideline. The rubric is made for HOTS questions in the form of descriptions. While the HOTS questions are in the form of multiple choice, complex multiple choice (true/false, yes/no), and short entries, the Smart Teacher must write down the answer key. Online learning assessment and various applications that can be used to conduct online assessments, such as Google Form, Kahoot, Quizizz, Quizlab, Mentimeter Educandy, Worldwall and so on. In the evaluation of online learning, it is designed to include elements of competition and cooperation in solving cases in each stage of the problem being worked on. As well as the speed with which results are obtained in the evaluation process, the teacher will more quickly provide feedback on the results of the learning evaluation.

Online learning in elementary schools is carried out in accordance with the availability of online learning support media, such as whatsapp groups and google classroom. In the implementation of online learning which is categorized as hots, it can be seen in the HOTS aspects that appear in learning activities including transfer of knowledge, critical and creative thinking, and problem solving. HOTS learning in elementary schools can be seen from learning that emphasizes student learning activities in problem solving. Learning in online and offline designs allows for the HOTS category depending on the ability and willingness of the teacher. Teachers must be able to create assessments that because HOTS-based learning will be achieved only if teachers plan, implement, and evaluate learning that focuses on students' higher order thinking skills. The steps for assessing online learning in the HOTS category include: (1) compiling a HOTS question grid; (2) developing HOTS questions; (3) evaluation of HOTS questions.

Conclusion

Based on student activities during online learning, it can be seen that online learning with the HOTS category is a series of planning, implementation, and evaluation in online media that stimulates students to solve problems through the stages of critical-analytic thinking, evaluation, and creativity. At the planning stage, the teacher analyzes the syllabus and content and selects the material so that it does not become a heavy learning burden for students. The teacher collects teaching materials and compiles worksheets that allow students to perform high-level reasoning. Online learning process planning is prepared for each sub-theme and presented in an online learning implementation plan (RPP). Online learning is designed by combining synchronous and asynchronous methods. In the aspect of assessment, the teacher designs using indicators C4, C5 and C6 which are implemented into the google form system.

Acknowledge

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