

Internet -Based Concept of High Order Thinking Skills and Social Inclusive of Things in Thematic Learning in Elementary Schools

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Abstract: One of the elements of the transformation of the independent curriculum at the elementary school level is strengthening the learning process, applying integrated thematics using a scientific approach, and familiarizing the development of higher-order thinking skills (HOTS) for students. So the results of this study found that there were five important points in integrating the Higher Order Of Thinking Skill (HOTS) concept in thematic learning in elementary schools and integrating with the Internet of Things, namely in 5M; a) Integrating HOTS and IOT into Learning Implementation Plans (RPP), b) Integrating HOTS and IOT into thematic learning models, c) Integrating HOTS and IOT into developing various learning media, d) Integrating HOTS and IOT into themes or sub-themes.

Keywords: HOTS, Internet of Things, Thematic Learning, Social Inclusion

1 Introduction

The Covid 19 pandemic has changed many things, both an economic, political, sociocultural, and educational perspective. This, of course, requires many parties to be able to adapt to this condition quickly so as not to continue to be affected by the harmful adverse of the covid 19 pandemic. More than 91% of the world's student population cannot typically study due to the covid 19 pandemic; students are asked to learn from home (work from home) directed by the teacher and guided by parents/guardians of students. The education aspect is one of the things that must work and maintain its quality, even though the Covid 19 pandemic has disrupted the learning process.

The survey that has been carried out shows that the learning activities of Elementary Schools (SD) in Aceh Province during the Covid 19 pandemic did not go well; several factors, namely caused this: the unpreparedness of teachers and students to carry out online learning and the facilities and infrastructure were not available to carry out learning online.

In addition, the learning that has been carried out so far has only been in the form of assignments in the WhatsApp Group, students are asked to do a large number of assignments from several teachers based on the subjects given, so students feel burdened with this way of learning. Teachers have difficulty conducting assessments of students because they have to check repeatedly and record them manually so that learning is felt to be less effective. Even

though the thematic learning model is part of the 2013 curriculum, teachers have not implemented thematic learning optimally; the learning used is conventional learning models.

Social exclusion is a condition where a community or society is unable to unite all groups into a unified whole. There is a separation that is carried out in society, whether seen from differences in views, social status, gender, or whatever, so that, in the end, it causes groups to be marginalized and marginalized. So it can be concluded that social inclusion is a condition in which society can unite all components without distinguishing any one thing. All the same and joined in one unit. Several types of library users are often excluded, for example, ethnic minorities, refugees, users with special needs, and people who don't leave the house because of their conditions. So from these criteria, someone can become excluded because of the conditions they experience. For example, people who cannot leave the house to go to the regional library for various reasons, such as illness so they cannot leave the house, people who have difficulty because of their busy lives, and several conditions that prevent these people from going to the regional library. So because of this condition, in the end, this person became an excluded library user.

As in many other disciplines, the digital revolution has had a significant impact on education. Additionally, this influence had a profound impact on the way that teaching and learning were approached. The qualities of today's students are substantially different from those of their predecessors. Therefore, it is difficult to pique the interest and curiosity of today's pupils for learning activities using conventional teaching methods. Additionally, using this antiquated methodology makes it difficult to solve several issues with teaching and learning. According to the aforementioned justification, the internet-based learning approach is more suited to the circumstances at hand. to continue the exchange of knowledge between students and teachers. Indirectly teaching students to take an active part is one of the goals of theme learning, along with process effectiveness and learning outcomes. In addition to being imparted and work together to produce future generations that are prepared for ever-more complex technology challenges, education and learning goals are intended to reflect the wishes of educators, student guardians, and students themselves.

Today's educators are showing great interest in innovative teaching approaches that respond to the needs of the times [1]. In today's digital era, technology is a learning approach that greatly aids learning. With the development of technology, such as internet access and other accompanying applications, this learning technique has expanded. Traditional education involves teachers presenting content, followed by homework and in-class activities to help pupils better understand it. In the era of digital learning, students get ready for class by viewing videos, grasping PowerPoint, and using learning materials that teachers make available through e-learning or other channels. Students will be able to solve problems (problem-solving) in class once they have finished their home preparation.

The use of the Internet as a support for learning in the digital era has begun to be widely used in developed regions; even in developed countries, they have been doing this innovation for a long time. This is obtained from several leading international journal literature. Millennials taught with IoT-based learning understand material faster than conventionally trained material [2]. Introducing digital literacy in primary education positively impacts students so that students are more literate in technology through strict supervision from parents and teachers [3].

Student activity development is referred to as 21st-century learning. Student activity that is accompanied by contextual understanding based on ethnoscience, which has an impact on student learning activities, is one of the initiatives to increase it. It should be obvious how important cognitive abilities are in content-based classes. The following cognitive abilities

must be developed in order for us to focus on content in a meaningful way and enable our pupils to produce meaningful content. With the use of Bloom's Taxonomy, teachers may assess students' learning more accurately and encourage them to pursue deeper understanding. Deeper.

Various recent studies regarding the use of computer applications associated with learning models can create student collaboration skills with friends. They can minimize bullying in elementary school students [4]. In addition, using IoT in the learning process can make it easier for teachers to evaluate learning [5].

Even though several researchers have developed innovative learning models for elementary schools, so far, no learning model has been designed to train students' high-level thinking skills and understand social inclusion and can be applied to the Internet so that it can be used by teachers/students, especially during the Covid 19 era [6]. As a solution, Moodle was created, which contains HOTS iHOTS-integrated learning models and social inclusion that can be used by teachers/students in a practical, efficient manner and can be used as a distance learning tool in the era of the Covid-19 pandemic for elementary schools in the red zone.

2 Research Method

This research uses *research and development (R & D)* research methods according to Plom, p which is adapted to the Dick & Carrey development model as a grand design. This research focuses more on the needs analysis (need assessment) on the importance of developing a thematic learning model based on HOTS and IoT Integrated Social Inclusion. The needs analysis was carried out through data exploration of the existence of HOTS-based thematic learning models. HOTS integrated IoT Integrated Social Inclusion, Learning Implementation Plans (RPP), Student Work Sheets (LKS), assessment of learning processes and products, perceptions and expectations of principals and teachers towards efforts to develop HOTS-based thematic learning models and HOTS integrated IoT Integrated Social Inclusion.

The subjects of this study were elementary school students, elementary school teachers (the following are the rpp products, LKS, and assessments used), and the head of elementary schools in the South Aceh district. Stratified random sampling techniques determined research sampling. A sample of teachers was taken from 18 from 9 schools.

The object of this study is a thematic learning model and its existing tools and is used by teachers in the South Aceh district. The instruments used to collect data are interview guidelines for principals, questionnaires for teachers, procedures for observing learning models used so far, tests for student reasoning, and HOTS questionnaires. To analyze research data, descriptive analysis techniques are used.

3 Discussion

Education is the process by which students' abilities grow as a result of their learning. A change in behavior is highly dependent on the accumulation of experience because learning is a mental process. Learning involves challenging not only what students already know, but also what they are capable of (content and performance)[7].

Education should make humans more democratic and concerned with everything that happens around them so that they can be problem-solving existing problems. In addition, education should teach someone so that he can live together with society [8].

The development of a person with character should begin at a young age, especially in elementary schools (SD), the most fundamental institution that can serve as the first significant turning point in the development of students' personalities. Early character development tries to ensure that children have a solid memory of the character values they are to develop. [9].

In order to accomplish certain learning objectives, learning is an interaction activity involving students, teachers, and the surrounding environment. Additionally, interaction between teachers and students is a key component of learning. This engagement can be direct, like in face-to-face activities, or indirect, such in the use of different learning mediums. Teachers make an effort to ensure that pupils engage in learning activities. Students, not machines, carry out learning.

The use of the Internet in education has been around for a long time, even abroad (developed countries) have implemented it long before Indonesia. However, in Indonesia there are not many schools that implement Internet of things (IoT) based learning. This is of course caused by many factors including the limited facilities and infrastructure as well as human resources in the form of teacher competence in applying the Internet as a means of supporting learning [10].

Study rooms with IoT technology can provide added value for students, with an internet connection, it can make it easier for students to study with various references obtained from the Internet, even the knowledge provided can be further developed. When it has been accepted and a comparative study is carried out on an implementative study [11]. An educator is expected to be creative and innovative in managing learning, the use of the Internet of Things (IoT) is able to make learning more efficient, not spending a lot of time and effort, so that learning and assessment can be carried out in a systematic, accountable and reliable manner [12].

Thematic learning is more recommended for elementary school students, this is because thematic learning models make students understand various subjects more quickly [13]. Through thematic learning students are more enthusiastic in learning because they can communicate in real situations, to develop an ability in one subject while studying other subjects. In addition, thematic learning can foster social skills, such as the nature of mutual cooperation, deliberation, and responsiveness to responses given by others [14]. The thematic learning model is the best learning model when compared to conventional learning models, learning through thematic will bring problems into the classroom to be solved together in groups [15].

The learning steps are explained simply so that students may easily implement the thematic learning approach, which has been devised to be practical to use by all primary school teachers. The idea of thematic learning can be understood as a method of instruction that integrates a variety of subjects to give pupils rich learning opportunities. Because students will understand the concepts they learn through first-hand experience and relate them to other concepts they already understand, thematic learning is said to be meaningful. An strategy known as thematic learning is focused on teaching methods that meet children's developmental needs.

There are many learning models found in the field that are very difficult for teachers and students to understand, even though in theory they say the learning model is effective, valid and practical, the implementation is so complicated and long-winded [15]. Thematic-

integrative learning starts from combining several fields of knowledge or fields of study that have similar concepts and skills that are drawn into a theme as the center of learning attention. The theme is used to facilitate mastery of the concepts and skills learned. Thematic-integrative as the adoption of the integrated learning model (integrated model). The integrative model describes a cross-disciplinary approach. Integrated learning combines four main fields of knowledge where learning is prioritized on complementary skills, concepts, and attitudes. In the learning process carried out, the learning must be meaningful and emphasize the importance of learning programs that are oriented to the developmental needs of children.

Practical thematic learning is intended in the form of a thematic learning model that is easy to apply for teachers, in accordance with the mental and cognitive development of students and the cultural environment of students [15].

The covid 19 pandemic requires policy makers to continue to seek solutions so that learning in schools can take place optimally, face-to-face learning is not recommended for red zones, through this IoT-based learning learning can run well, without having to go through face-to-face[16].

Software The method used in this research is e-learning moodle software. Moodle is an Open Source Course Management System (CMC) as a place for dynamic learning using an object-oriented model, usually also called a Learning Management System (LMS) or Virtual Learning Environment (VLE). Moodle is an application that can change learning media into web form (Internet). The use of LMS using Moodle online is very important, namely to overcome the limited face-to-face frequency between students and teachers[17].

By offering online learning tools, it is possible to use the Internet as a learning medium. Online learning is defined as a method of education that enables the delivery of instructional materials to students over the internet or other computer network media. By offering LMS (Learning Management System) software with capabilities that assist learning activities, online learning can be accomplished. [18]. E-learning that uses internet technology to deliver a series of solutions can increase students' knowledge and skills [19].

For teachers the Internet offers several opportunities to be achieved, including:

- a. Professional development
 - 1) Increase knowledge
 - 2) Sharing resources among colleagues/departments
 - 3) Collaborate with teachers from abroad
 - 4) Opportunity to directly publish/announce research results
 - 5) Arrange regular communication
 - 6) Participate in forums with both local and international colleagues.
- b. Sources of teaching materials
 - 1) Access to new teaching and learning plans and methodologies
 - 2) Raw materials and finished materials for all fields of study
 - 3) Announce and share resources
 - 4) Very high interest to increase students' more focused learning.
- c. For students the Internet offers the opportunity to; Learn on your own quickly:
 - 1) Increase knowledge
 - 2) Learn to be interactive
 - 3) Develop skills in the field of research Enrich yourself

In many ways, internet technology is a progression of earlier communication technologies. Radio, television, video, multimedia, and other forms of media have all been employed and have the potential to raise educational standards. Additionally, because internet media is interactive, can be used for both mass and individual communication, and is a

repository for information from around the globe, it has a strong chance of becoming a superior educational medium to that employed in the past.

One area that has had a significant impact on the development of this technology is the field of education. Various methods have been introduced and used in the teaching and learning process (PBM) in the hope that the teacher's teaching will be more memorable and learning for students will be more meaningful. Information and communication technology has been widely used in the teaching and learning process so that the quality of education is in line with technological developments. The development of multimedia technology has promised great potential in changing the way a person learns, obtains information, adapts information and so on. The development of information communication technology must be recognized as providing a new paradigm that changes our entire perspective on various problems and issues that exist on this earth, including the perspective on the use of new media in the learning process. This paradigm shift also affects learning media, namely the use of internet technology. New media is described as media that is capable of displaying content or information interactively, the audience is enabled to respond to any information easily, readers can act actively conveying information, and readers can communicate and collaborate with other readers or members.

Higher Order Thinking Skill (HOTS), also known as skill ability or higher order thinking concept, is a taxonomy-based educational reform idea that first emerged at the beginning of the twenty-first century. In order to prepare human resources for the industrial revolution, this idea is introduced into schooling. Human resources are expected to possess 21st century abilities in addition to becoming employees who work for the government.

Higher order thinking processes, often known as HOTS skills (Higher Order Thinking Skills), call for pupils to develop ideas in a certain way that provides them new meanings and implications. Higher-order thinking, including critical and creative thinking that is driven by true concepts that individually have a purpose, is described by the spleen. Criteria and ideals, reason and emotion, as well as critical and creative thinking, all depend on one another. Cognitive operations known as higher-order thinking skills are very important in thought processes that rely on short-term memory. Higher order thinking comprises analysis, synthesis, and evaluation when it fits into Bloom's taxonomy. Beyond that.

The teacher designs and has an overview of suitable methods for developing HOTS learning according to the students they will face so that learning can run optimally and in accordance with learning objectives. The teacher designs the HOTS Integrated Thematic Learning Model and IoT-based Social Inclusion in this way students will get used to thinking HOTS. All students must actively think in the implementation of the learning process and it is expected that the role of students is more dominant than that of the teacher. The teacher is only a facilitator to facilitate and direct the course of the learning process in this way students more easily develop creative, innovative, active thinking skills in accordance with teacher-directed learning. And the teacher gives more opportunities for students to seek, formulate and discover for themselves what will be learned. It can be concluded that critical thinking is a cognitive skill of students in solving a problem through processes and efforts to dig up information and theories needed, look for appropriate ways to solve problems, create new ideas as formulas to solve a problem faced, and filter the ideas and opinions of others for consideration. Which will result in responsible decisions. Looking for appropriate ways to solve problems, creating new ideas as a formula for solving a problem at hand, and filtering ideas from other people for consideration. Which will result in responsible decisions. Looking for appropriate ways to solve problems, creating new ideas as a formula for solving a problem at hand, and filtering ideas from other people for consideration. Which will result in responsible decisions.

Moodle developed contains the stages (syntax) of HOTS integrated thematic learning models and social inclusion, equipped with guides, materials, Student Worksheets (LKS) and practice questions to make it easier for students and teachers to apply them.

The developed learning model contains syntax, materials (teacher and student books), social systems, management reaction principles, support systems, instructional impacts and senders and worksheets, each component of the model is integrated according to HOTS and social inclusion, then incorporated into the Moodle application (e learning) which can be accessed online by students, teachers can monitor the learning process carried out by students and connected to parents to control their children's learning outcomes. This application can be accessed via a computer or via a smartphone (android).

The content contained in the IoT-based learning model contains material for class IV SD which is adapted to the theme (thematic learning) from the government, the material contained in learning tools is material which contains elements to train students' high-level thinking skills, through worksheets, materials and exercise.

This learning model contains social systems that are studied and standardized through theoretical studies and expert validation. The social system in this learning model is integrated with the values of social inclusion, which aims to make student can respect differences in ethnicity and race and physical limitations between one another, through this social system students will get used to being able to work together (work together) without differentiating ethnicity, excluding ethnic minorities, and bullying students with disabilities.

This learning model is an interactive media dissertation, which can make it easier for students to solve the given problems, in the media there are examples of how to respect ethnic minorities and people with disabilities.

The learning outcomes that a person obtains after experiencing a learning process within a certain period of time [2]. This is in line with what was stated by Abidin which states that "a learning model is presented as naturally as possible and then students work with problems that require students to apply their knowledge and abilities according to their level of psychological maturity and learning abilities [3]. Arends in argues that a learning approach in which students work on authentic problems with the intention of constructing their own knowledge, developing inquiry and higher-order thinking skills, developing independence and confidence [4].

4 Conclusion

Based on the conclusions from the results of the analysis of the instrument trial data, it can be concluded that the instruments (observation sheets for the implementation of the MT-LEARNING Model, assessment sheets for teachers' ability to manage learning, and learning achievement tests have good instrument characteristics in terms of reliability, validity, and sensitivity. With Thus the data from trial 1 results can be analyzed to determine the level of implementation and effectiveness of the MT-LEARNING Model.

The development of the MT-LEARNING model is adapted to the principles and characteristics of learning in elementary schools. Based on the validity test, the MT-LEARNING model was obtained, which met the validity criteria. These results are in accordance with the opinion of Nieven (1999) which states that a learning material (in this case the MT-LEARNING model) is said to be valid, if it fulfills: (1) learning material that is developed based on strong theoretical rationale; and there is consistency internally between

the components of the learning materials developed. Thus, the developed MT-LEARNING model can be used to determine students' abilities in learning, because the model was developed theoretically rationally and there is internal consistency in the learning material components with the MT-LEARNING model.

The digital revolution is having an important impact on education as it has on many other fields. This influence also led to radical changes in the field of education, such as in terms of teaching and learning approaches. The use of the Internet as a support for learning in the digital era has begun to be widely used in developed regions, even in developed countries they have been doing this innovation for a long time. This is obtained from several leading international journal literature. Millennials who are taught with IoT-based learning understand material faster than conventionally taught material. So the results of this study found that there were five important points in integrating the Higher Order Of Thinking Skill (HOTS) concept in thematic learning in elementary schools and integrating with the Internet of Things, namely in 5M; a) Integrating HOTS and IOT into Learning Implementation Plans (RPP), b) Integrating HOTS and IOT into thematic learning models, c) Integrating HOTS and IOT into developing various learning media, d) Integrating HOTS and IOT into themes or sub-themes, and e) Integrating HOTS and IOT into assessment instruments. HOTS (Higher Order Thinking Skill) or what is often referred to as skill ability or higher order thinking concept is a concept of educational reform based on taxonomy bloom which began in the early 21st century. This concept is incorporated into education aimed at preparing human resources in the face of the industrial revolution. In the 21st century, human resources are expected not only to become workers who follow the government, but also have 21st century skills.

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