DEVELOPING STRATEGIES AND EVALUATION OF HOTS-BASED LEARNING ON THEMATIC LEARNING IN ELEMENTARY SCHOOL

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Abstract: Education is an important component of a nation. Developed nations must have a good education system. The purpose of this research is to find out how to develop strategies and evaluation of hots-based learning in thematic learning in elementary schools. The method used is the approach of library research through library sources related to learning strategies and evaluations in thematic learning as well as various other literature sources. Then analyzed and presented the findings of the data objectively. The results showed that higher order thinking skills (HOTS) learning carried out by teachers in improving the quality of learning, teachers must design scenarios of the learning process. To support this, it is administratively stated in the Learning Implementation Plan (RPP). A teacher must prepare teaching materials, learning resources, learning media/props, and test instruments to measure students' learning outcomes. The spirit of a HOTS learning is in the core activities. At this stage teachers practice design, models, strategies, and learning methods. There are several learning models that are recommended to be implemented by teachers in the learning process, such as: project-based learning, problem-based learning, problem solving, and inquiry/discovery. In the assessment process must be adjusted to the competency achievement indicators that will be measured using relevant instruments and able to stimulate students' critical thinking ability.

Keywords: Learning Strategies and Evaluations, Hots, Thematic Learning.

INTRODUCTION

The quality of teachers is a very important part of a country's progress. Finland is a country that has gone from a traditional agrarian industrial country to a developed country whose economy is underpinned by science-based technological innovation. This progress is due to the quality factor of teachers who have been prepared as well as possible before they teach. Noah stated that teachers who have been certified have not been able to show their competence in terms of pedagogy, professional, social and personality. The activeness of

teachers is seen only ahead of certification while after, the quality decreases. Assessment of teacher quality in developed countries since the last 20 years has made the Indonesian National Qualification Framework (KKNI) as the standard.[1]

Then, the education curriculum used in Indonesia within 17 years has undergone 4 changes. Starting from the implementation of Competency Based Curriculum in 2004, KTSP curriculum in 2006, curriculum 2013 in 2013 and the latest curriculum that is the National curriculum that has been introduced and started to be applied in 2016. Curriculum changes in the education system in Indonesia are implemented with the aim of producing productive human resources facing global developments in various fields. In line with the presentation, Mukminan explained that the urgency of developing the education curriculum in Indonesia is to produce graduates (human resources) who have high level of thinking ability, Indonesian personality, uphold the nation's culture, have socio-cultural abilities and have global awareness.[2]

One element of the changes in the 2013 curriculum at the elementary school level is the strengthening of the learning process. Through strengthening the learning process is expected to improve the quality of learning more effectively, efficiently, stifle, and meaningful, so as to improve the quality of achievement of learning outcomes and put forward students critical thinking (not just conveying factual). In reality there are still many teachers who do not understand about HOTS. This can be seen in the formulation of indicators, objectives, and learning activities and their assessment in the lesson design made and the implementation of the learning process. Teachers must be able to develop and convert from lower order thinking skills (LOTS) to Higher Order Thinking Skills (HOTS), and this must have been started since designing the Learning Implementation Plan (RPP).[3]

One of the characteristics of graduates that are expected to be formed is the ability to think at a high level. Heong et al,[4] explaining the ability to think at a high level, that "It requires someone to apply new information or prior knowledge and manipulate the information to reach possible answer in new situation.". It means "a high level of thinking ability requires a person to apply

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[1] Moh. Zainal Fanani, "Strategi Pengembangan Soal Hots Pada Kurikulum 2013, *edudeena: Journal of Islamic Religious Education,*", 67.

[2] Desi Fitriani, Yusuf Suryana, dan Ghullam Hamdu, "Pengembangan Instrumen Tes Higher-Order Thinking Skill pada Pembelajaran Tematik Berbasis Outdoor Learning di Sekolah Dasar Kelas IV,*" Indonesian Journal of Primary Education* 2, no. 1 (28 Juni 2018), 88.

[3] Ahmad Fanani dan Dian Kusmaharti, "Pengembangan Pembelajaran Berbasis Hots (Higher Order Thinking Skill) Di Sekolah Dasar Kelas V," *Jurnal Pendidikan Dasar* 9, no. 1 (31 Mei 2018), 2.

[4] Yee Mei Heong dkk., "The Level of Marzano Higher Order Thinking Skillsamong Technical Education Students," *International Journal of Social Science and Humanity*, 2011, 121.

new information or prior knowledge and manipulate information to reach possible answers in new situations." Furthermore, the high level of thinking ability conveyed by Yuniar, explained that HOTS (High Order Thinking Skills) is a thinking ability that tests at a higher level, in the sense that it not only tests on aspects of memory or memorization, but tests up to aspects of analysis, synthesis, and evaluation.[5]

High levels of thinking ability received special attention from one of the international study institutions that examines students' cognitive abilities in mathematics and science. The institute is called TIMMS (The Trends For International Mathematics and Science Study).[6] The results of international studies for reading and literacy (PIRLS) showed that more than 95% of Indonesian students in elementary school grade IV were only able to reach the middle level, while more than 50% of Taiwanese students were able to reach high and advanced levels. PISA research in literacy, mathematics, and science shows that they can only rank in the bottom 10 of 65 countries, and TIMSS (Trends in International Mathematics and Science Study) shows Indonesian students are ranked very low in ability (1) to understand complex information, (2) theory, analysis and problem solving, (3) the use of tools, procedures and problem solving and (4) conducting investigations.[7]

Learning is an effort made by a person to achieve a goal, the effort directs a person from the circumstances can not be able to be, and from not knowing to know that is inseparable from internal and external factors that affect the process and its results. Learning is a system or process of teaching learners that is designed, implemented, and evaluated systematically so that learners can achieve the expected learning goals. Learning has several components, including learning objectives, learning materials, learning strategies and methods, learning media, and learning evaluation. Learning processes inputs to produce the desired output.[8]

As with most learning activities, should be in carrying out learning activities then it is best to plan the learning strategy in advance, so that the learning can

[5] Yuniar, Analisis Hots (High Order Thinking Skills) Pada Soal Objektif Tes Dalam Mata Pelajaran Ilmu Pengetahuan Sosial (IPS) Kelas V SD Negeri 7 Ciamis, *pedadidaktika: Jurna*l *Ilmiah Pendidikan Guru Sekolah Dasar.*

[6] Fitriani, Suryana, dan Hamdu, "Pengembangan Instrumen Tes Higher-Order Thinking Skill pada Pembelajaran Tematik Berbasis Outdoor Learning di Sekolah Dasar Kelas IV," 88.

[7] Kementerian Pendidikan dan Kebudayaan, "Badan Penelitian Dan Pengembangan Dan Perbukuan, 2018.

[8] Fanani dan Kusmaharti, "Pengembangan Pembelajaran Berbasis Hots (Higher Order Thinking Skill) Di Sekolah Dasar Kelas V," 31 Mei 2018, 2.

run smoothly in accordance with what is expected. Referring to the information is still low ability of students in doing high-level thinking ability, there is a need for the development of strategies in learning that can measure or assess high-level thinking ability. Osborne and Millar's presentation , cited by avargil , states that "in the past, the most common way of assesing students was the traditional form of summative test. This sort of test usually examined content knowledge and did not assess higher order thinking skills."[9] This means that in the past the most common way to assess students was traditionally done through summative tests. This type of question usually does not assess students' knowledge ability in thinking at a high level. The same thing was also conveyed by Herawati and Lestari who found a lack of development of Higher-Order Thinking Skill assessment instruments in elementary schools.[10] Therefore, based on the above exposure, the researchers wanted to conduct a study titled "Developing Strategies and Evaluation of Hots-Based Learning in Thematic Learning in Elementary Schools".

RESEARCH METHODS

This research uses qualitative research type. The method used is the library research method.[11] Namely by combining data from various sources of literature by including books, journals, proceedings of national seminars, and scientific articles related to learning strategies and evaluations on thematic learning. Then, analyze and study related theories. The author presents the findings of the data objectively and systematically through descriptive data analysis techniques.

FIND AND DISCUSSION

Learning Strategies

According to Miarso, learning strategies are a holistic approach to learning in a learning system, in the form of general guidelines and frameworks of activities to achieve the general objectives of learning, which are described from a philosophical view and or a particular theory of learning.[12] Then according to Seels and Richey stated that the learning strategy is a detail of the selection of

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[9] Shirly Avargil, Orit Herscovitz, dan Yehudit Judy Dori, "Teaching Thinking Skills in Context-Based Learning: Teachers' Challenges and Assessment Knowledge," *Journal of Science Education and Technology* 21, no. 2 (1 April 2012), 207–25.

[10] Fitriani, Suryana, dan Hamdu, "Pengembangan Instrumen Tes Higher-Order Thinking Skill pada Pembelajaran Tematik Berbasis Outdoor Learning di Sekolah Dasar Kelas IV,", 89.

[11] Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktis* (Jakarta: Rineka Cipta, 2013), 172.

[12] Yusuf hadi Miarso, *Menyemai Benih Teknologi Pendidikan* (Jakarta: Kencana Prenada Media Group, 2007), 530.

sorting events and activities in learning, consisting of methods, techniques and procedures that allow learners to achieve goals.[13]

Learning strategies can also be interpreted as patterns of learning activities selected and used by teachers contextually, in accordance with the characteristics of learners, school conditions, surrounding environment and learning objectives that have been formulated. The learning strategy consists of methods, techniques, and procedures that will ensure that learners will actually achieve the learning objectives obtained effective and efficient learning activities steps.

Higher Order Thinking Skill (HOTS)

Higher Order Thinking Skills (HOTS) is a type of high-level thinking that demands critical, creative, analytical thinking of the information and data it understands in solving problems. According to Yvone, high-level thinking is thinking that tries to explore more knowledge and about the concept of understanding that cannot be interpreted clearly and does not have a definitive answer.[14] According to Arifin Nugroho HOTS aims so that students can reflect, and make the right decisions.[15]

According to gunawan cited by zainal fanani, Higher Order Thinking Skill (HOTS) or high-level thinking ability is a thought process that requires students to manipulate existing information and ideas in a certain way that gives them new understanding and implications.[16] For example, when students combine facts and ideas in the process of synthesizing, generalizing, explaining, hypothesizing and analyzing, until the student comes to a conclusion. Then Rosnawati also explained the ability to think a high level can occur when someone associates newly received information with information that has been stored in his memory, then connects it or rearranges it and develops the information so that it achieves a goal or a solution of a difficult situation to solve.[17]

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[13] Wahyudin Nur Nasution, *Strategi Pembelajaran* (Medan: Perdana Publishing, 2017), 3.

[14] Ahmad Fanani dan Dian Kusmaharti, "Pengembangan Pembelajaran Berbasis Hots (Higher Order Thinking Skill) Di Sekolah Dasar Kelas V," *Jurnal Pendidikan Dasar* 9, no. 1 (31 Mei 2018), 6.

[15] Arifin Nugroho, *HOTS: Kemampuan Berfikir Tingkat Tinggi: Konsep, Pembelajaran, Penilaian, Dan Soal-Soal* (Jakarta: Gramedia Pustaka Utama, 2018), 16.

[16] Moh Zainal Fanani, "Strategi Pengembangan Soal Hots Pada Kurikulum 2013," *Edudeena: Journal Of Islamic Religious Education* 2, No. 1 (17 Agustus 2018), 60.

[17] R Rosnawati, "Enam Tahapan Aktivitas Dalam Pembelajaran Matematika Untuk Mendayagunakan Berpikir Tingkat Tinggi Siswa 1)," *Prosiding Seminar Nasional Penelitian* (507-512). Yogyakarta: Pendidikan dan Penerapan MIPA Fakultas MIPA, Universitas Negeri Yogyakarta, 2009, 12.

Thematic Learning

Starting in 2013/2014, the Government enacted a new curriculum called curriculum 2013. The implementation of the curriculum is regulated in Permendikbud No. 81 A Year 2013. The successful implementation of the 2013 curriculum in elementary school classroom learning activities as expected by the government and the community, is highly determined by stakeholders, especially teachers. Elementary teachers must have understanding, awareness, ability, creativity, patience, and tenacity. In accordance with the 2013 SD curriculum, the implementation of thematic learning is integrated and the process is with a scientific approach. The application of integrated thematic learning with scientific short-lived has implications for change in learning in elementary school. The change resulted in changes in student books, teacher books, assessment systems, implementation of remedial programs and enrichment, and so on. In order for all primary education stakeholders to have the same perception in the implementation of the 2013 elementary school curriculum, technical guidelines are needed.[18]

Curriculum 2013 is a competency-based curriculum. Where in it is formulated in an integrated competency attitude, knowledge, skills that must be mastered by learners. As for the easier achievement of competencies that are dirmuskan, thematic learning is chosen as the basis in learning. Thematic learning is a learning approach based on the selection of themes that suit the child's world so that it attracts his/her learning interests. The suitability of learning materials with the real world and children's learning interests can encourage children to be actively involved and involve meaning in the learning process.

Thematic learning is integrated learning that uses themes to connect multiple subjects so as to provide meaningful experiences to students. Thematic learning is one of the integrated intruction models which is one of the learning systems that enable students, both individually and in groups to actively explore and discover concepts and scientific principles holistically, meaningfully and authentically.[19]

Strategy Analysis and Evaluation of HOTS-based Learning in Thematic Learning

Elementary School (grade I to VI) is the beginning of elementary education. The primary school curriculum has special characteristics, namely thematic-

[18] Kemendikbud, Panduan Teknis Pembelajaran Tematik Terpadu Dengan Pendekatan Saintifik Di Sekolah Dasar, 2013, 1.

[19] Abdul Majid, *Pembelajaran Tematik Terpadu.* (Bandung: Remaja Rosdakarya, 2014), 80.

integrated, which is combining several subject content into one particular theme. Thematic learning is a learning strategy that involves several subjects to provide meaningful experiences to learners. The integration in this learning can be seen from the aspects of process or time, aspects of the curriculum, and aspects of teaching and learning. The theme is a subject matter. A learning theme can be created by the government, curriculum development team, teachers, or based on an agreement between teachers and students. Consideration of a theme is based on the interests, needs, and environment of the student. Themes are made simple, contextual, actual, and close to students' daily lives.

Thematic learning characteristics include: (1) student center, (2) providing direct experiences, for example through field observation, (3) the separation of subjects is not so clear, (4) presenting concepts of various subjects, (5) being flexible, meaning that teachers can associate teaching materials from one subject with teaching materials from other subjects, even associating them with the state of the school environment or students , and (6) use the principle of learning while playing and fun.[20]

In crafting a theme, it is necessary to analyze the analytical power and creativity of teachers. In general, elementary school teachers are class teachers or wholesale teachers. Therefore, a basic teacher must understand in analyzing Core Competencies (KI), Basic Competencies (KD), mapping themes and describing them into subthemes, syllabuses, and Learning Implementation Plans (RPP). If KD-KD can be combined into one theme, then KD-KD can be combined into one particular theme, while KD-KD that can not be put together, become a separate theme or separate. In determining the theme it is necessary to pay attention to the following: (1) pay attention to the environment closest to the student, (2) from the easiest to the difficult, (3) from simple to complex, (4) from concrete to abstract, (5) the theme chosen should allow the occurrence of thought processes in the student, and (6) the scope of the theme is adjusted to the age and development of the student, including interest needs, and abilities.[21]

In carrying out learning in elementary school, teachers must know the characteristics of elementary school age children. Intellectual development of elementary school age children at the concrete operational stage (7-11 years old) characterized by the ability to think concretely and deeply, able to classify and control their perception. At this stage, the development of students' thinking

[20] Ibid., 89–90.
[21] Ibid., 103.

ability is appropriate, the ability of the assimilation scheme is higher in conducting a consistent coordination between schemes.[22]

Characteristics of children's development in elementary school age usually their physical growth has reached maturity. They've controlled the body and the balance. They have been able to jump with their feet alternately, can ride two-wheeled bikes, and can catch balls, and have developed hand and eye coordination to hold pencils and as well as hold scissors. In addition, the social development of children who are in the early age of elementary school, among others; they have shown their meathing about their gender, have friends, have been able to share, and are independent.

In line with higher order thinking skills (HOTS) that are currently emphasized to be implemented by teachers to improve the quality of learning, teachers must design a supportive learning scenario for that which is administratively stated in the Learning Implementation Plan (RPP). Teachers must prepare teaching materials, learning resources, learning media / props, and test instruments to measure student learning outcomes. HOTS learning aims to encourage students to have critical thinking skills, creative, innovative, and capable of solving problems. Nowadays, creativity and innovation become important capital in the success of a nation. Creativity and innovation also make a nation has competitiveness compared to other nations.

The realm of thinking according to Bloom Taxonomy the latest revision by Krathwohl consists of remembering (C1), understanding (C2), applying (C3), analyzing (C4), assessing (C5), creating (C6). Hots problem material in learning usually consists of the level of analyzing (C4), assessing (C5), and creating (C6).[23]

HOTS learning focuses on the realms of C-4 (analyzing), C-5 (evaluating), and C-6 (creating/ creating). This implies the approaches, models, strategies, learning methods used by teachers in learning. Why are teachers encouraged to implement HOTS learning? Because so far the learning used is considered still focused on the ability to think low level (Lower Order Thinking Skills / LOTS) namely: C-1 (knowing), C-2 (understanding), and C-3 (applying) so that students just memorize or understand facts, concepts, or procedures only, but are less able to apply it in everyday life.

The spirit of a HOTS learning is in the core activities. It is at this stage that teachers practice design, models, strategies, and learning methods. There are

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[22] Ibid., 8.

[23] Purnaida Purnaida, "Pengembangan Subject Specific Pedagogy Tematik Untuk Meningkatkan Hasil Belajar Hots Pada Peserta Didik Kelas IV MI Tema 3 Peduli Terhadap Makhluk Hidup," A*l-Bidayah: Jurnal Pendidikan Dasar Islam* 10, no. 2 (2018), 199.

several learning models that are currently recommended to be implemented by teachers, such as: project-based learning, problem-based learning, problem solving, and inquiry/discovery. HOTS learning is illustrated in the application of scientific approaches that include 5M, namely: observing, questioning, gathering information, reasoning / associating, and communicating. Therefore, teachers must be able to optimize the stages of scientific approach in learning so that the objectives of HOTS learning can be achieved.

Model Discovery/Inquiry Learning

The discovery or inquiry learning model is to understand concepts, meanings, and relationships through intuitive processes to finally come to a conclusion. Discovery occurs when an individual is involved primarily in the use of his or her mental processes to discover some concepts and principles. The working steps (synths) of the disclosure/discovery learning model are as follows: (1) Discovery Learning model synths; (2) Stimulation; (3) Problem Statement; (4) Data Collection. (5) Data Processing; (6) Verification, and (7) Generalization.

Problem-based Learning (PBL) Model

Problem-based learning models are learning that uses a variety of thinking abilities from individual and group learners as well as real environments to solve problems so that they are meaningful, relevant, and contextual. The purpose of PBL is to improve the ability to apply concepts to new/real problems, integrate the concept of Higher Order Thinking Skills (HOTS), desire to learn, direct self-learning and skills. On PBL teachers act as guides on the side rather than sage on the stage. This underscores the importance of learning assistance in the early stages of learning. Learners identify what they know or do not yet know based on information from textbooks or other sources of information. Problem-based model synths as follows: (1) Student orientation on the problem; (2) Organizing learners to learn; (3) Guiding the investigation of individuals and groups; (4) Develop and present the work; (5) Analyze and evaluate the troubleshooting process.

Project-Based Learning Models

Project-based Learning model is a learning model that involves the activeness of learners in solving problems, carried out in groups / independently through scientific stages with certain time constraints set forth in a product to be further presented to others. Project-based learning implementation is as follows:

1. Topics / materials learned by learners is a topic that is contextual and easily designed into a project / work of interest.
2. Learners are not led to produce only one project, (one student produces one project).
3. The project does not have to be completed in 1 meeting (completed 3-4 meetings).
4. Project is a form of problem solving so that from the creation of the project boils down to improving learning outcomes.
5. Materials, tools, and media needed to make the project available in the surrounding environment and directed to utilize used materials/unused waste in order to be valuable.
6. Authentic assessment emphasizes the ability to design, apply, find and deliver its products to others.

The thinking ability of elementary school students will affect all learning activities organized by the teacher. Therefore, the learning activities of science education, Bahasa Indonesia, and Ethics, as well as other subjects are directed at meaningful learning approaches based on the development of thinking skills adapted to the biopsychological of students that should be used as a benchmark for teachers, both in material development, teaching strategies, approaches, media, and in evaluating learning outcomes. Meaningful learning is a process of associating new information in relevant concepts contained in a person's cognitive structure. Children will learn better in the natural environment. Learning will be more meaningful if the child experiences what he/she learns, not just knowing it.

HOTS learning is followed up with HOTS assessment. At the beginning of curriculum implementation 2013 (K-13) echoed the importance of authentic assessment by teachers on aspects of knowledge, attitude, and skills. Authentic assessment is an objective assessment, as it is, measuring the achievement of student competence by using appropriate and relevant test instruments. Assessment on aspects of knowledge can use several types of instruments such as oral tests, written tests, and assignments. Attitude assessment using observation sheets, self-assessment, peer assessment, and parental assessment. And aspects of skills using practical tests, performance, projects, and portfolios.

Especially for HOTS assessment, more focused on knowledge aspects. The most widely used types of questions such as Multiple Choice (PG) and description. The problem is arranged based on the indicators that have been set in the RPP. It is not easy to write about HOTS. The ability of teachers in analyzing and determining Operational Verbs (KKO) becomes very important.

There are so many KKO to choose from at every level of the thought process. Characteristics about HOTS include; (1) measuring learning outcomes at levels C-4, C-5, and C-6, (2) beginning with stimulus as an introduction for students in answering questions, and (3) contextual problem-based. A question called HOTS if it is only given by students, but if the question has ever been given to students, then the question no longer belongs to the hots category. Therefore, teachers have to be creative in doing a variety of questions and pretty much have a problem bank.

What needs to be underlined is that hots is not a long and convoluted problem, it tends to be long-winded, but the stimulus provided is relevant, precise, and as short as possible. Stimulus can be in the form of descriptions, information, news, tables, images, photos, schemes, and so on. In addition, the question must also be relevant to the indicators that will be measured its atteenability.

Based on the description above, hots learning in elementary school needs to be adjusted to the age and level of development of thinking. Teachers need to develop exciting and fun HOTS learning strategies so that they can be meaningful to students. The assessment is also adjusted to the competency achievement indicators that will be measured using relevant instruments and able to stimulate students' critical thinking ability.

CONCLUSION

Based on the description above, it can be concluded that HOTS learning in elementary school needs to be adjusted to the age and level of development of thinking. The spirit of a HOTS learning is in the core activities. It is at this stage that teachers practice interesting and fun designs, models, strategies, and learning methods so that they can be meaningful to students. There are several learning models to be implemented by teachers, such as: project-based learning, problem-based learning, problem solving, and inquiry/discovery. In the assessment process must be adjusted to the competency achievement indicators that will be measured using relevant instruments and able to stimulate students' critical thinking ability.

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