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The Implementation of Higher Order Thinking Skills (HOTS) in English Language Teaching: A Case of Indonesian Senior High School EFL Teachers

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Abstract

This research explored Indonesian EFL teachers' perceptions of implementing higher-order thinking Skills (HOTS) in English language classrooms. Specifically, it attempted to explore (1) teachers' understanding of HOTS, (2) teachers' perceptions of the implementation of HOTS in their EFL classrooms, and (3) teachers' perceived obstacles in the implementation of HOTS. The research employed a qualitative approach with a case study design. Five English language teachers at a senior high school in Serang Banten Province, Indonesia, participated in this research. The data were collected using semi-structured interviews and were analyzed following Miles and Huberman's (1994) qualitative data analysis procedures. The results revealed that all participants had a good understanding of the concept of HOTS, in which the definitions of HOTS given by all the participants were related to the sub-skills of Bloom's Taxonomy. All the participants also claimed they had implemented HOTS in English language teaching and learning. However, the implementation has yet to be effective due to some obstacles, which include students' low English proficiency, teachers' lack of competencies, and limited supporting facilities such as internet access, learning media, and learning sources.

Keywords: *Higher Order Thinking Skills (HOTS), teachers' perceptions, implementation, obstacles.*

Introduction

The first quarter of the 21st century has witnessed dramatic advancements in many aspects of life. Consequently, the educational sector worldwide is faced with the demands to prepare students for the diverse challenges the modern era has created. Considering the global challenges, the Indonesian educational system has adjusted its curriculum from conventional teaching that emphasizes low-order thinking skills (LOTS) to teaching that stresses higher-order thinking skills (HOTS).

In the revised Bloom's Taxonomy (Anderson et al., 2001), human thinking skills are grouped into two main dimensions, i.e., low-order thinking skills (LOTS) and higher-order thinking skills (HOTS). LOTS constitute the first three of the six cognitive facets of the taxonomy, which entail remembering, understanding, and applying while HOTS are the last three features, which comprise analyzing, evaluating, and creating. According to Brookhart (2010), the goal of instruction behind any of the cognitive aspects is to prepare students to have the ability to apply the knowledge and competencies they established throughout their learning to new circumstances. In other words, HOTS is envisioned as students' ability to associate their learning with other aspects outside those they were taught.

HOTS has been theorized since many years ago but continuously defined until recent times. The former inceptions of HOTS were proposed by Bloom et al. (1956) in Bloom's Taxonomy of Educational Objectives, in which the higher-order thinking of the cognitive realm includes

application, analysis, synthesis, and evaluation. According to McDavitt (1993), HOTS consists of analysis, synthesis, and evaluation, necessitating mastery of preceding levels, such as applying routine rules to known or new problems. Underbakke, Borg, and Peterson (1993) associated HOTS with critical or strategic thinking, i.e., the capacity to use the information to resolve problems, negotiate issues, analyze arguments, or make predictions. McDade (1995) defined HOTS as the knowledgeably well-organized process of active and skillful conceptualization, application, analysis, synthesis, and evaluation of information generated by observation, experience, reasoning, reflection, or communication used as a rubric to belief and action. Haladyna (1997) described HOTS as understanding facts, concepts, principles, and procedures. Petress (2005) stated that HOTS involves the examination of assumptions and values, evaluating evidence, and assessing conclusions. Mainaili (2012) associates HOTS with the teacher's classroom setting, which covers student arrangement and teaching strategies for effective learning.

The literature highlights that HOTS is significant for the educational process, particularly in teaching and learning. It has been suggested that learners' thinking ability can affect learning effectiveness. The competencies required for learning involve all types of abstract capabilities, including critical thinking and problem-solving skills (Nourdad, Masoudi, & Rahimali, 2018). The students who are trained to develop creative visions to solve problems have a better ability to solve more intricate problems compared to those who are not (Rajendran & Idris, 2008). Besides, HOTS is important in effectively implementing, associating, or manipulating previous knowledge to solve new problems (Thomas & Thorne, 2009). According to Fisher (1999), promoting students' HOTS is integral to the indoctrination of lifelong learning. Thus, 'thinking' learners who can continually fulfill the demands of the real world are needed (Vijayaratnam, 2012).

In the Indonesian context, developing students' HOTS has long become a national education goal. In the Law of the Republic of Indonesia Number 20, the year 2003 on the National Education System, it is stated that national education aims to develop students' potential to become well-informed, competent, creative, autonomous, and responsible citizens. Furthermore, the Regulation of the Indonesian Minister of Education and Culture Number 22 the Year 2016 on the Process Standard for Elementary and Secondary Education states that knowledge is attained by "remembering, understanding, applying, analyzing, evaluating and creating" (Kemendikbud, 2016a). In response to this goal, efforts to promote students' HOTS have been made in the last few years, including implementing the 2013 Curriculum. Besides pursuing students' understanding of the materials, the 2013 Curriculum also stresses other skills, such as thinking and creative acting, productive and critical skills (Kemendikbud, 2016b). Despite the efforts, however, the Organization for Economic Cooperation and Development (OECD) reported that Indonesia's Program for International Student Assessment (PISA) ranking, based on the 2018 survey, was still at the bottom of the list in all the areas tested: reading, mathematics, and science. Out of 77 countries, Indonesia is ranked 72 for Reading scores, and out of 78 countries, Indonesia is ranked 72 for Mathematics scores and 70 for Science scores (Kasih, 2020). Mullis et al. (2008) stated that one factor contributing to Indonesia's low ranking is that Indonesian students are not adequately trained to solve contextual questions, which require reasoning, argumentation, and creativity.

Yee et al. (2011) assert that although HOTS is teachable, it cannot be directly taught to students in the classroom instruction process. Rather, HOTS can be developed through active learning and student-centered learning (Akyol & Garrison, 2011; Limbach & Waugh, 2010) such as project-based learning (Vidergor & Krupnik-Gottlieb, 2015) or by the teachers' active role in planning, implementing, and evaluating HOTS-oriented learning (Bartell, 2012). In other words,

to develop HOTS, students should be actively involved in the learning activities that support the development of HOTS (Retnawati et al., 2018). It also suggests is t the teacher's role is significant the developing

Several previous studies (e.g., Hashim et al., 2015; Khrisnan, 2014; Seman, Yusoff, & Embong, 2017), however, suggest that teachers had their understanding of HOTS and faced challenges in its implementation in their classroom. Ivie (1998) suggested that teachers pay little or no attention to HOTS development, and they infrequently make an effort to withstand students' flow of higher-level thoughts that take place in the classroom, which may be due to their lack of ability or disinterest in attaining learning goals other than content-specific objectives (Ivie, 1998).

To date, several studies on the issue of the implementation of HOTS in the classroom have been done. Seman, Yusoff, and Embong (2017), for example, explored teachers' challenges in implementing HOTS in a primary school in Malaysia. The study involved nine teachers and employed a qualitative research method using interviews to collect the data. The interview transcripts were analyzed using thematic analysis to discover the emerging themes. The results revealed that teachers faced several challenges in implementing HOTS, which include the aspects of teachers, teaching and learning preparations and processes, and students.

Similarly, Yusoff and Seman (2018) explored teachers' understanding of higher-order thinking and questioning skills. The study involved nine primary school teachers, and the data were collected through interviews and observations. The results showed that the teachers had a limited understanding of thinking processes. Although most of the teachers could not adequately describe HOTS as critical and creative thinking, half of them could identify the sub-skills of HOTS based on Bloom's Taxonomy.

Mursyid and Kurniawati (2019) explored the practice of HOTS by English teachers in the EFL classroom in the Indonesian context. The focus of the study was teachers' perspectives towards HOTS, its application, assessment of HOTS, and the constraints in the EFL classroom. Six senior high school English teachers from three generations who have entered the workforce as English teachers were recruited as the study participants. The data were collected using a questionnaire, document analysis, and classroom observation. The results revealed that teachers from the three generations were cognizant of HOTS and applied it in their instruction. However, the teachers faced some obstacles in incorporating HOTS into their classrooms.

Similarly, Fakhomah and Utami (2019) investigate the perceptions and difficulties pre-service teachers face in implementing HOTS in English language teaching. The data were collected from 5 pre-service English teachers of the Professional Teacher Program from different universities using a sequential explanatory mixed-methods design. The study results indicated that although the participants had positive perceptions of HOTS implementation in the classroom, they had several problems, especially those related to time management and students' abilities. Armala, Fauzia, and Asib (2019) conducted a study with 15 pre-service English teachers to investigate their perceptions of HOTS in English language teaching. Using questionnaires to collect the data, the findigs demonstrated that the participants had their perspectives and were aware of HOTS in their teaching, and have also applied several activities to develop students' critical thinking.

Considering many secondary school institutions in Indonesia, the studies mentioned above in the Indonesian context embody relatively few studies. Moreover, the studies that have been undertaken have some differences from the present studies, either in terms of the method or focus of the study. While Mursyid and Kurniawati (2019) employed an open-ended questionnaire, classroom observation, and document analysis, the present study used interviews to collect the data. Fakhomah and Utami (2019) and Armala et al. (2019) recruited

pre-service teachers as the study participants. Meanwhile, the present study involved senior high school

teachers with teaching experience that ranges from 9 to 29 years. Thus, the following research questions were formulated to guide the present study:

1. What is Indonesian EFL teachers' understanding of HOTS?
2. What are the teachers' perceptions of implementing HOTS in EFL classrooms?
3. What are the teachers' perceived obstacles and problems in the implementation of HOTS?.

Method

This research employed a qualitative approach with a case study design. According to Creswell (2009), qualitative research is a process of understanding that explores a social problem, builds a complex, analyzes words, and reports detailed views of an informant in natural form. Patton (1999) suggested that one of the aspects of qualitative research is focusing on what people experience and how they interpret it. Additionally, Creswell (2009) also defined a case study as developing an in-depth analysis of a case or some cases and one of the approaches mostly used by people in qualitative research.

The present study's participants were five English language teachers at Senior High School 3 of Sungai Penuh City, Jambi Province, Indonesia. The participants consisted of three males and two females. Each participant was given a pseudonym with codes T1, T2, T3, T4, and T5. They were considered appropriate to be selected as the participants because they are certified English language teachers responsible for twenty-four hours of teaching per week. The rationale for conducting this study at Senior High School 3 of Sungai Penuh City was that the school had implemented HOTS as prescribed in the new revised edition of the 2013 curriculum. Also, based on preliminary observation, the teachers rarely used HOTS in the classroom, both in the learning process and tests. The profiles of the participants are shown in Table 1. To answer the research questions, purposive sampling was employed to select the participants. According to Creswell (2009), purposive sampling is the method a researcher uses in qualitative research.

Table 1. Participants Profiles

Code	Gender	Educational Background	Teaching Experience
T1	Male	Master's degree	29 years
T2	Male	Bachelor's degree	20 years
T3	Female	Masters' degree	Nine years
T4	Female	Bachelor's degree	Ten year
T5	Male	Bachelor's degree	22 years

To collect the data, interviews were used. According to Wilkison and Birmingham (2003), an interview is a way of obtaining detailed information about a topic or subject. Additionally, Koshy (2005) stated that obtaining interview responses will provide richer and more informative data than the data obtained through questionnaires. The type of interview used in this research is semi-structured. The questions have been pre-determined in this type of interview, but they remain flexible, where the researcher can ask follow-up questions (Wilkinson & Birmingham, 2003). Before the interviews were conducted, the interview protocol was made to facilitate the interviews. To ensure its face and content validity, two professionals in English language teaching checked and proofread the interview protocol. Before the interview, the interviewees

were shown the interview protocol so that they read and understood the questions. They were allowed to ask if questions in the interview protocol were unclear to them.

Miles, Huberman, and Saldaña's (2014) data analysis procedures were employed in the present study. The data analysis consists of three simultaneous flows of activity. They are data condensation, data display, and drawing and verifying conclusions. Data condensation is "the process of selecting, focusing, simplifying, abstracting, and/or transforming the data that appear in the full corpus (body) of written-up field notes, interview transcripts, documents, and other empirical materials." In this step, the interview records are listened to carefully and repeatedly to get clear information. After that, the records were transcribed and read repeatedly to ensure the origin of the data.

The second step is data display. According to Miles et al. (2014), data display is an organized, compressed group of information that allows conclusion drawing and action. In this phase, all the data are designed to accumulate organized information into an instantly accessible, condensed form, allowing the analyst to see what is taking place and either justify conclusions or move on to the next-phase analysis (Miles & Huberman, 1994, p. 11). After finishing data reduction and data display, the last step in the analysis is concluding. In this step, a conclusion of the results was drawn based on the research problems. The results of the interview data were compiled using themes and sub-themes.

Results

Teachers' Understanding of HOTS

The first question asked the teachers what is their understanding of HOTS. Based on the results of the interviews, the participants expressed that HOTS are thinking skills that require students to analyze, evaluate, and create some of the terms. T1 mentioned it:

> There are some characteristics of high-order thinking skills. The first one is analyzing, and students should have a good ability to analyze. The second one is evaluating. Students should also be able to make any conclusion and decide on the problems they are facing.

Similar statements were also stated by T2, T4, and T5:

> We can refer to Bloom's Taxonomy to test the validation of HOTS. Several operational verbs are starting from C1 to C6. HOTS usually applies the last three aspects, namely C4, C5, and C6, which are analyzing, evaluating, and creating. (T2)
>
> Higher-order thinking skills (HOTS) are a form of the high-level thinking process. For example, in questions, HOTS usually requires students to evaluate, analyze, and create or produce. (T4)
>
> HOTS is complex high-level thinking skills in explaining materials, making conclusions, building representations, analyzing, and building relationships by involving the most basic mental activities. Higher-order thinking skills (HOTS) are skills of analyzing, evaluating, and creating. (T5)

Adding his statement, T2 commented that HOTS is viewed as a skill that requires the students to be able to think critically. He said, 'The characteristics of HOTS are more one how students can think critically.'

According to T3, HOTS could also mean that students can think creatively and innovatively in reasoning and bring up ideas to the problems or issues given by the

teachers. He said, 'HOTS usually refers to how the students reasoning and bring up ideas and creativity of the students themselves. HOTS requires students to think creatively, critically, and innovatively.'

Based on the results of the interviews, it can be concluded that the participants had a good understanding of HOTS, which HOTS relates to complex thinking skills that require students to have the ability to think critically and have a good ability to analyze, evaluate, reason, and create or solve problems.

Teachers' Perceptions of the Implementation of HOTS

The participants were also asked about their views on the implementation in their schools. Based on the results of the interviews, each participant had their perceptions of this matter. T1, for example, commented that implementing HOTS depends upon teachers' competencies to prepare HOTS in the teaching and learning process. He stated, '... depend on teachers' understanding of HOTS because not all teachers have a good understanding of HOTS, some of the teachers have attended the training but some have got nothing from the training.'

According to T2, HOTS has been implemented in the school but has not worked effectively because of some obstacles. He said, 'HOTS has been implemented in the school but has not worked as we wished because we encounter several obstacles.' For T3, implementing HOTS in the school was quite difficult. It was because HOTS had just been implemented for about one year and the students had low ability in English. She commented, 'HOTS has been implemented for about one year. In my opinion, the implementation in the school so far has been quite difficult because the ability of students in English lessons is still very low.' A similar opinion was given by T5, saying,

The implementation of high-order thinking skills (HOTS) in this school has just started this year and has various obstacles, especially the low ability of the students to accept the methods of HOTS learning itself when the material is presented in class.

On the other hand, T4 commented that HOTS should be implemented in the school from Year 10 because the students will need it when they take the national exam in Year 12, in which some of the questions are HOTS questions.

Implementing HOTS in this school is appropriate from the beginning of the 10th grade to the 11th grade and the 12th grade because students will face national exams in which some are HOTS questions. I teach 11th-grade students who are new to HOTS. Maybe they did not yet know about HOTS when they were in 10th grade because the application of HOTS has been started this year. HOTS has also just been introduced.

Based on the statements above, it can be concluded that HOTS has already been implemented in the school. Its implementation depends on the teachers' understanding of the concept. In the school, the teachers still have obstacles in its implementation because HOTS has just been implemented starting this year.

The Obstacles to the Implementation of HOTS

The results of the interviews showed that the teachers faced some obstacles in implementing HOTS. The first obstacle was the low ability of the students in English. T2 said, 'The biggest obstacle faced is the low ability of the students in English lessons.' Similarly, T3 commented, 'The main obstacle in implementing HOTS is the low ability of students in English.' A similar opinion was expressed by T4, saying, 'We have some

obstacles in implementing HOTS. One of them is the low ability of the students in English.' This obstacle was also confirmed by T5, who said: 'Well, there are several obstacles in implementing HOTS, as I have already mentioned, that is the low ability of the students.' This statement was supported by T1. He said, 'The students should know about the characteristics of HOTS… They should have a good ability to analyze problems. The students should also have a good background or experience of the materials the teachers have taught them.' T1 added that another obstacle is teachers' lack of competencies in designing HOTS questions; he said, 'There are so many obstacles in implementing HOTS. For example, the teachers should know how to design HOTS questions.'

Besides, T2 and T5 stated that the lack of learning tools or supporting media for the effectiveness of HOTS implementation is another obstacle. T2 affirmed, 'There are other problems such as supporting facilities or infrastructures that are very influential on implementing HOTS.' Similarly, T5 commented, 'The lack of facilities and infrastructure is also an obstacle in implementing HOTS, such as limited learning media and internet access.'

Based on the results of the interviews above, there were three obstacles the teachers faced in implementing HOTS in the English teaching and learning process, i.e., the low ability of the students in English, teachers' lack of competencies in designing HOTS questions, and lack of learning tools and facilities to support the implementation of HOTS.

Discussion

The interview results indicate that most teachers have a good understanding of the concept or definition of HOTS. The participants gave their opinions about the characteristics of HOTS related to the sub-skills of Bloom's Taxonomy. For example, T5 stated in the interview that HOTS is complex thinking skills in explaining materials, building representation, and analyzing, which involve the basic mental activities applied to HOTS, i.e., the skills to analyze, evaluate, and create.

In the cognitive domain of Bloom's Taxonomy, Knowledge and Comprehension are parts of lower-order thinking, and Application, Analysis, Synthesis, and Evaluation belong to higher-order thinking. In the revised Bloom's Taxonomy, HOTS refers to an incision among the three top ranks of capacity in the cognitive aspect (analyzing, evaluating, creating) and three ranks of knowledge aspect (conceptual, procedural, metacognitive) (Anderson et al. 2001; Thompson, 2008). Therefore, HOTS is assessed through tasks that include analyzing, evaluating, and creating conceptual and procedural knowledge, or metacognition. It means that acquainting students with HOTS activities is important to help them get ready for solving new issues, familiarizing themselves with a new situation, and making decisions about a specific problem.

Regarding the teachers' perceptions of the implementation of HOTS, two main results were revealed in the interviews. One of the participants stated that implementing HOTS depends on teachers' skills in understanding and delivering HOTS in the classroom. This statement is supported by Ivie (1998), stating that "...even when HOTS does occur in the classroom, teachers rarely make an effort to sustain students' flow of higher-level thoughts, perhaps due to teachers' incompetency or disinterest in pursuing learning

outcomes other than learning content-specific goals." It can be said that teachers' understanding of HOTS impacts its implementation. In this regard, one of the teachers' efforts to find a solution is by having discussions with colleagues to understand how to promote HOTS effectively and attending training on the concept of HOTS.

The participants also said that the implementation of HOTS in the school has just started and has not worked as they wanted due to some problems. It may result from the low ability of the students in English, as revealed in the interviews, which impacts their ability to accept HOTS learning.

Although all participants have implemented HOTS in the English classroom, they faced some obstacles. The obstacles include the low ability of students in English, teachers' lack of competencies in preparing HOTS questions, and the lack of facilities and infrastructure to support the effective implementation of HOTS. The first two of the obstacles were similar to those faced by teachers as revealed in Seman, Yusoff, and Embong's (2017) study in the Malaysian context.

Conclusion

The main purpose of the research was to explore Indonesian English language teachers' perceptions of implementing HOTS in English language classrooms. The results revealed that all the participants had a good understanding of the concepts of HOTS. Based on the interview data, the definitions of HOTS given by all the participants were related to the sub-skills of Bloom's Taxonomy. The results also showed that all the participants had implemented HOTS in English teaching and learning classrooms. However, the implementation has not been effective due to several obstacles, including the low ability of students in English, teachers' lack of competencies in preparing HOTS questions, and the lack of facilities and infrastructure to support the effective implementation of HOTS.

Although this study is rather limited in scope, the results have provided enough evidence to make some recommendations for pedagogical implications. First, the teachers should develop their knowledge of HOTS through training programs that the school organizes. Second, the teachers should be more creative and innovative in their teaching. They should prepare interesting teaching media, provide the students with appropriate learning resources, and use suitable teaching strategies. Third, the teachers should always familiarize the students with HOTS by giving them opportunities in the classroom to analyze (describe a problem), synthesize (infer some information), evaluate (give an evaluation), and create products. Lastly, the schools should provide facilities and infrastructure that support the effective implementation of HOTS.

As with any research, this study has some limitations. First, this study only used interviews as the instrument of data collection. Future research should use additional instruments, such as classroom observation, to provide richer information on implementing HOTS. Second, the present study involved a few participants from one high school. Future research should recruit a bigger number of participants from different geographical areas. Also, this study focused only on teachers' perceptions of HOTS implementation. Further research should also involve students investigating their competence in solving HOTS problems.

References

Akyol, Z., & Garrison, D. R. (2011). Understanding cognitive presence in an online and blended com¬munity of inquiry: Assessing outcomes and processes for deep approaches to learning. British Journal of Educational Technology, 42(2), 233-250. https://doi.org/10.1111/j.1467-8535.2009.01029.x

Anderson, L. W., Krathwohl, D. R., Airasian, P. W., Cruikshank, K. A., Mayer, R. E., Pintrich, P. R., & Wittrock, M. C. (2001). A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives, abridged edition. White Plains, NY: Longman.

Armala, I., Fauzia, A., and Asib, A. (2019). Pre-Service English teachers' perception on Higher Order Thinking Skills (HOTS) in English language teaching. JLIC: Journal of Language Intelligence and Culture, 1(1), 11-122.

Bartell, T. G. (2012). Learning to teach mathematics for social justice: Negotiating social justice and mathematical goals. National Council of Teachers of Mathematics, 44(1), 129-163. Retrieved from: https://www.nctm.org.

Bloom, B., Englehart, M., Furst, E., Hill, W., & Krathwohl, D. (1956). Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain. New York: Longmans Green.

Brookhart, S. M. (2010). How to access higher-order thinking skills in your classroom. Alexandria, VA: ASCD.

Creswell, J.W. (2009). Research design: qualitative, quantitative, and mixed methods approaches, (3rd edition). Thousand Oaks, CA: Sage Publications.

Fakhomah, D. N., & Utami, M. S. (2019). Pre-service English teacher perception about Higher Order Thinking Skills (HOTS) in the 21st century learning. International Journal of Indonesian Education and Teaching, 3(1), 41-49.

Fisher, R. (1999). Thinking skills to thinking schools: Ways to develop children's thinking and learning. Early Child Development and Care, 53, 51-63. https://doi.org/10.1080/0300443991530104

Forehand, M. (2010). Bloom's taxonomy. In M. Orey (Ed.), Emerging perspectives on learning, teaching, and technology (pp. 41-47). Retrieved from https://textbookequity.org/Textbooks/Orey_Emergin_Perspectives_Learning.pdf

Haladyna, T. M. (1997). Writing test items to evaluate higher order thinking. Boston, MA: Allyn and Bacon.

Hashim, A. T., Osman, R., Arifin, A., Abdullah, N., & Noh, N. M. (2015). Teachers' perception on higher order thinking skills as an innovation and its implementation in history teaching. Australian Journal of Basic and Applied Sciences, 9(32), 215-221.

Ivie, S. D. (1998). Ausubel's learning theory: An approach to teaching higher order thinking skills. The High School Journal, 35-42.

Kasih, A. P. (2020). Nilai PISA Siswa Indonesia Rendah, Nadiem Siapkan 5 Strategi Ini. Kompas.com. Retrieved from: https://edukasi.kompas.com/read/2020/04/05/154418571/nilai-pisa-siswa-indonesia-rendah-nadiem-siapkan-5-strategi-ini?page=all

Kemendikbud. (2016a). Peraturan Menteri Pendidikan dan Kebudayaan Nomor 22 Tahun 2016 tentang Standar Proses Pendidikan Dasar dan Menengah.

Kemendikbud. (2016b). Peraturan Menteri Pendidikan dan Kebudayaan Nomor 20 Tahun 2016 tentang Standar Kompetensi Lulusan Pendidikan Dasar dan Menengah.

Law of the Republic of Indonesia Number 20 the year 2003 on the National Education System (Undang-Undang Republik Indonesia Nomor 20 Tahun 2003 tentang Sistem Pendidikan Nasional).

Limbach, B., & Waugh, W. (2010). Developing higher level thinking. Journal of Instructional Pedagogies, 3, 1-9.

Liu, X. (2010). Essentials of sciences classroom assessment. Thousand Oaks, CA: SAGE Publication.

Mainali, B. P. (2012). Higher order thinking in education. Academic Voices: A Multidisciplinary Journal, 2(1), 5-10.

McDade, S. A. (1995). Case Study Pedagogy to Advance Critical Thinking. Teaching Psychology, 22(1), 9-10.

McDavitt, D. S. (1993). Teaching for understanding: Attaining higher order learning and increased achievement through experiential instruction. (ERIC Document Reproduction Service No. ED 374 093)

Miles, M. B., & Huberman, A. M. (1994). Qualitative data analysis: An expanded source book, 2nd ed. Thousand Oaks, CA: Sage Publication.

Miles, M. B., Huberman, A.M., & Saldaña's, J. (2014). Qualitative data analysis: A methods source book, 3rd ed. Thousand Oaks, CA: Sage Publication.

Mullis, I.V.S., Martin, M.O., & Foy, P. (with Olson, J.F., Preuschoff, C., Erberber, E., Arora, A., & Galia, J.). (2008). TIMSS 2007 international mathematics report: Findings from IEA's trends in international mathematics and science study at the. fourth and eighth grades. Chestnut Hill, MA: TI MSS & PIRLS International Study Center, Boston College.

Mursyid, M., & Kurniawati, N. (2019). Higher order thinking skills among English teachers across generation in EFL classroom. English Review: Journal of English Education, 7(2), 119-124. https://doi.org/10.25134/erjee.v7i2.1775

Nourdad, N., Masoudi, S., & Rahimali, P. (2018). The effect of higher order thinking skill instruction on EFL reading ability. International Journal of Applied Linguistics and English Literature, 7(3), 231-237. https://doi.org/10.7575/aiac.ijalel.v.7n.3p.231

Patton, M. Q. (1999). Enhancing the quality and credibility of qualitative analysis. Health Services Research, 34(5), 1189-1208.

Petress, K. (2005). Questions and answers: The substance of knowledge and relationship. College Student Journal, 374-376.

Rajendran, N., & Idris, P. U. P. S. (2008). Teaching & acquiring higher-order thinking skills: Theory & practice. Penerbit Universiti Pendidikan Sultan Idris.

Retnawati, H., Djidu, H., Kartianom, Apino, E., & Anazifa, R. D. (2018). Teacher's knowledge about higher-orderthinking skills and its learning strategy. Problems of Education in the 21st century, 76(2), 215-230.

Seman, S. C., Yusoff, W. M. W., & Embong, R. (2017). Teachers' challenges in teaching and learning for Higher Order Thinking Skills (HOTS) in primary school. International Journal of Asian Social Science, 7(7), 534-545.

Thompson, T. (2008). Mathematics teachers' interpretation of higher-order thinking in Bloom's taxonomy. International Electronic Journal of Mathematics Education, 3(2), 1-14.

Thomas, A., & Thorne, G. (2009). How to increase higher order thinking. Retrieved from https://www.readingrockets.org/article/how-increase-higher-order-thinking

Underbakke, M., Borg, J. M., & Peterson, D. (1993). Researching and developing the knowledge base for teaching higher order thinking. Theory into Practice, 32(3). 138-146. Retrieved from http://ezproxy.um.edu.my:2057/stable/pdfplus/1476694.pdf

Vidergor, H. E., & Krupnik-Gottlieb, M. (2015). High order thinking, problem based and project-based learning in blended learning environments. In H. E. Vidergor & C. R. Harris (Eds.), Applied Practice for Educators of Gifted and Able Learners (pp. 217– 232). Rotterdam: Sense Publishers. doi:10.1007/978-94-6300-004-8_11.

Vijayaratnam, P. (2012). Developing higher order thinking skills and team commitment via group problem solving: A bridge to the real world. Paper presented at the 8th International Language for Specific Purposes (LSP) Seminar: Aligning Theoretical Knowledge with Professional Practice.

Weay, A. L., Masood, M., & Abdullah, S. H. (2016). Systematic review of revised Bloom Taxonomy, SOLO Taxonomy and Webb's Depth of Knowledge (DOK) in assessing students' historical understanding in learning history. Malaysian Journal of Higher Order Thinking Skills in Education, 1-27.

Wilkinson, D., & Birmingham, P. (2003). Using research instruments: A guide for researchers. London: Routledge Falmer.

Yee, M. H., Widad, O., Jailani, M. Y., Tee, T. K., Razali, H., & Mimi Mohaffyza, M. (2011). The level of marzano higher order thinking skills among technical education students. International Journal of Social Science and Humanity, 1(2), 121-125.

Yusoff, W. M. W., & Seman, S. C. (2018). Teachers' knowledge of higher order thinking and questioning Skills: A case study at a primary school in Terengganu, Malaysia. Development, 7(2).

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