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The Higher Order Thinking Skills (HOTS) in Activities of theLesson Plan by in Service Teachers of the Teacher Certification Program

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Abstract The aim of this research was to find out the obstacles faced by teachers in implementing Higher Order Thinking Skill in activities of the lesson plan by inservice teachers of the teacher certification program. This mixed method research used a checklist, and interview as the instruments. This research includes 40 lesson plans that consist of 20 lesson plans for action 1 and 20 lesson plans for action 2. The results of this research revealed that Most HOTS were found with the highest frequency in the core activities and close activities, whereas HOTS were found with the lowest frequency in the preliminary activities. It implied that teachers emphasized the well-distribution of HOTS just in the core and close activities. The interview results revealed that teachers' challenges encompassed constraints related to time, facilities, teacher competence, student abilities, and student motivation. Additionally, some teachers faced challenges in both preliminary and close activities.

> Keywords: HOTS; Learning Activities; In-Service Teachers; Lesson Plan; Teacher Certification Program.

Abstrak Tujuan penelitian ini adalah untuk mengidentifikasi kendala-kendala yang dihadapi guru dalam menerapkan Keterampilan Berpikir Tingkat Tinggi dalam kegiatan RPP oleh guru dalam jabatan program sertifikasi guru. Metode penelitian campuran ini menggunakan checklist dan wawancara sebagai instrumennya. Penelitian ini mencakup 40 RPP yang terdiri dari 20 RPP tindakan 1 dan 20 RPP tindakan 2. Hasil penelitian menunjukkan bahwa HOTS terbanyak ditemukan dengan frekuensi tertinggi pada kegiatan inti dan kegiatan tertutup, sedangkan HOTS ditemukan dengan frekuensi terendah pada kegiatan pendahuluan. Artinya guru menekankan pada pemerataan HOTS dengan baik hanya pada kegiatan inti dan penutup. Hasil wawancara menunjukkan bahwa tantangan guru meliputi kendala terkait waktu, fasilitas, kompetensi guru, kemampuan siswa, dan motivasi siswa. Selain itu, beberapa guru menghadapi tantangan baik dalam kegiatan pendahuluan maupun kegiatan penutup.

Kata Kunci: HOTS; Kegiatan Pembelajaran; Guru Dalam JABATAN; RPP; Program Pendidikan Sertifikasi Guru.

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INTRODUCTION

There are some activities that can help students learn languages and develop their English skills. One of the ways to develop their English skills is through HOTS activities and assessments. Pakpahan et al. (2021) stated that students have the capability to analyze a passage or text without checking the dictionary to gain some difficult words by using critical thinking. Higher-order thinking skills (HOTS) are one way to stimulate students to think critically and increase their English skills. It can be used to encourage students to think critically. The students will apply what they have learned to perform some critical thinking.

Moreover, Agustina et al. (2021) stated in their research that the result of PISA (Program for International Students Assessment), Indonesia is ranked 71 out of 79 countries. It showed that Indonesia is still at a low level of thinking. Therefore, the school needs more qualified English teachers to provide better English instruction. The teacher plays an important role in encouraging students to develop their higher-order thinking skills. The improvement of teacher competency with the latest knowledge provides access to competent teachers. Teacher quality has a direct influence on the learning process and student achievement.

The efforts to improve teacher competency in Indonesia have been carried out to produce professional teachers. Lie et al. (2022) stated that professional education, as formal education, can transmit the latest knowledge and learning processes in tertiary institutions. Situmorang et al. (2021) claimed that the in-service teacher certification program in Indonesia is a formal education program to prepare professional teachers. The in-service teacher certification is implemented in stages to produce professional teachers and certified educators. It is a good collaboration between universities and local governments to support a successful effort in enhancing teacher quality and professionalism through certification. The certificate for teachers can be used as formal evidence of the quality and feasibility of teachers in teaching and managing classrooms. The in-service teacher of the teacher program is expected to create better learning innovation. It must also be a skill for them so that they can serve and increase the level of student development, especially in high-order thinking skills.

Furthermore, a professional teacher will need to design a lesson plan, which is a crucial part of the learning and teaching process. A teacher can map and share competencies into a lesson plan. Effective planning has become the key to the successful implementation of learning. Nurtanto et al. (2021) stated that a lesson plan is interpreted as a guide for the teacher during the learning process, and the learning scenario cannot be separated from the context that has been prepared. In implementing and encouraging a better education system, teachers face the need to enhance administrative tasks that require more than just teaching. Alanazi

(2019) said that effective teaching needs good planning, preparation, interest, and also that teachers need to know what the students need. Senemoglu in Sural (2019) claimed that a lesson plan has three functions such as self-confidence; arranging the instructional elements that will be used in learning; and enabling the instructor to monitor, evaluate, and fix the teachers' teaching activities in order to minimize the issues of class management.

In addition, Mujayanah (2022) stated in the revised curriculum 2013, there are four main integrated aspects that must be increased in the lesson plan, such as character building, literacy, 4C (creative, critical thinking, communication, and collaboration), and (HOTS) higher order thinking skills. HOTS is very crucial in influencing the ability to learn effectively. A teacher must prepare a good lesson plan to increase students' achievement, including in HOTS activities.

Moreover, learning activities are included in this lesson plan as a crucial part. Therefore, a teacher needs good teaching planning to transfer the meaning and teaching materials. Ministerial Regulation Number 22 in 2016 (11-12) stated that there are three parts to learning activities: preliminary activities, core activities, and close activities. Preliminary activity is the first activity in the learning process that has some activities such as preparing students, motivating students, building background knowledge through some questions, explaining the purpose of the study, and telling and explaining about material based on the syllabus. The second part of learning activities is the core activity. The core activity is a part of the learning activities to reach the goal in the learning process, where it will use learning models, methods, media, and sources. The core activity is divided into five parts: observe, ask, explore, associate, and communicate. Then, as the last part of the learning activity, there is the close activity. It is an activity where the teacher and students conduct reflection to evaluate the learning activities and learning outcomes, give feedback, make a planning activity through an assignment individually or in groups, and inform each other about the next material. Learning activities will represent the lesson plan's element because they relate to how the learning objective will be achieved. Teachers also demand to be more creative with the curriculum.

Furthermore, the curriculum demand in this era must construct activities to implement and develop HOTS for students. It emphasizes that students develop their thinking habits as the center of attention and think more critically to overcome the challenges with the passage of time. In addition, teachers are also expected to help students acquire and use their own knowledge, skills, and attention to complete high-level tasks. Therefore, the quality of these learning activities seriously depends on how the materials are developed, and they must reflect all the skills that students need. It will also help students recognize the limitations of their current thinking and learning. Moreover, Laila & Fitriyah (2022) stated that there are

several ways in learning activities to implement HOTS, such as giving high questions to the students during reading lessons, asking students to conclude about what they have read, and the last is the role of the teacher.

The previous studies in various fields of study have given some different points of view regarding HOTS in the learning and teaching process. However, most of those previous studies just focused on investigating HOTS in the textbook and paid less attention to investigating HOTS in the lesson plan especially HOTS in learning activities. Moreover, the researchers revealed the Higher Order Thinking Skill in the learning activities of the lesson plan. The researchers investigated two kinds of lesson plans that lesson plan action 1 is a lesson plan created during The Teacher's Certification Training Program (PPG) before undergoing instruction in the PPG class, while lesson plan action 2 is the second lesson plan created by the teacher after completing the PPG class. Researchers is also interviewed nine of those teachers to enrich their knowledge of the obstacles to implementing HOTS in the learning activities of their lesson plans. Therefore, the research uncovers research entitled "The Higher Order Thinking Skills (HOTS) in Activities of the Lesson Plan by In-Service Teachers of the Teacher Certification Program."

METHOD

The method used in this research was a quantitative and qualitative approach. Cresswell (2014) stated that the mixed method is an approach that mixes quantitative and qualitative data and combines two types of data using various designs, including philosophical presumptions and theoretical frameworks.

This research includes 40 lesson plans for in-service teachers in the teacher certification program for the year 2022. Thus, the researchers used their lesson plans as documents to investigate and found HOTS in the activities. This research also conducted an interview with nine in-service teachers of the teacher certification program in 2022 to investigate teachers' obstacles in implementing the Higher Order Thinking Skill in activities of the lesson plan designed by the In-Service Teacher of the Teacher Certification Program. Then, the researchers used SPSS 16 to get the Cohen Kappa value, and the reliability of the data was calculated and analyzed.

RESULT AND DISCUSSION

The Kappa's calculation data was 0.854. with a minimum value of 0.75–1.00, referring back to Table 3.3 about the interpretation of Cohen's Kappa statistic in the previous chapter.

It indicates that the reliability and accuracy of the data between the researchers and co-rater were strong and confirms a "strong" level of agreement.

HOTS in Learning Activities of the Lesson Plan

The result of the research is divided into two parts, namely the document analysis of the lesson plan by the in-service teacher of the teacher certification using the classification framework in the revised Bloom Taxonomy. They were investigated in three sections of the learning activities of a lesson plan: preliminary activities, core activities (observe, ask, explore, associate, and communicate), and close activities. The second result of this research is a form of interview about the obstacles faced by in-service teachers of teacher certification in implementing HOTS in the learning activities of the lesson plan. For more details, the result of this research can be described as follows:

Table 1. The composition of cognitive level (C1-C6) in learning activities of Lesson Plan

Cognitive Dimension		Preliminary Activities	Core activities					Close Activ ities	Total (f)	Total (%)
			Observe	Ask	Explore	Associate	Com muni cate	_		
Н	C6	6	12	22	74	88	92	3	297	30,4
Ο	C5	2	3	8	6	20	82	103	224	22,9
T	C4	2	2	0	7	16	2	0	29	3,0
\mathbf{s}										
L	C3	2	32	8	24	35	3	1	105	10,7
O	C2	12	6	4	27	6	3	1	59	6,0
T	C1	98	95	27	32	4	4	4	264	27,0
\mathbf{S}										
	Total								978	100

The cognitive level of *create* (*C6*) of the higher order thinking (HOTS) category in learning activities is the highest frequency of learning activities, especially in the core activities (*explore, associate, communicate*), and *evaluate* (*C5*) is found in the close activities as the highest frequency.

HOTS in Preliminary Activities of the Lesson Plan

Table 1 shows that the composition of cognitive level in preliminary activities of the lesson plan has the lowest frequency of HOTS, with a total of HOTS frequency of 10 items. The teacher used the sentence in the lesson plan that showed that activities distributed in one HOTS category are analyzed (C4), for instance:

[...Students have the ability to analyze tablet medicine labels by assessing the information provided on the labels..]

The teacher used the sentence in the lesson plan that showed that activities distributed in one HOTS category are Evaluate (C5); for instance:

[...Students have the capacity to compare two tablet medicine labels by evaluating the product's name and brand, product description, medicinal purpose, and expiration date through the analysis of text structure and linguistic elements..]

The last position is Create (C6) with total of HOTS frequency of 6 items, for instance:

[...The students have the opportunity to orally present the findings of their analysis of tablet drug labels in front of other groups...]

Moreover, the distribution of HOTS in the preliminary is not well distributed. The result showed that there were 11 lesson plans that consisted of two meetings and didn't distribute HOTS at all. 5 of the 11 lesson plans are used for teaching in the 7th grade of junior high school; 3 of them are used for teaching in the 8th grade of junior high school; and 3 of the 11 are used for teaching in the 9th grade of junior high school. In addition, the researchers also found that two of those lesson plans did not distribute any activity at all, either in LOTS or HOTS.

HOTS in the Core Activities of the Lesson Plan

Table 1 also revealed that the composition of cognitive level was dominant in the core activities of the lesson plan (C6). The second highest HOTS frequency in learning activities was Evaluate (C5), followed by Analyze (C4), which had the lowest frequency. Furthermore, the core activities in the lesson plan are divided into five sections: observe, ask, explore, associate, and communicate.

More detail about the distribution of HOTS in each part of the core activities can be seen below.

HOTS in the Close Activities of the Lesson Plan

On the other hand, the close activities in the learning activities of the lesson plan showed that *evaluate* (*C5*) has the highest frequency. The teacher used the sentence in the lesson plan that showed that activities distributed in one HOTS category are *evaluated* (*C5*), for instance

[...The teacher and students collectively wrap up the lesson by drawing conclusions about the covered material...]

The second position is *Create* (*C6*). The teacher used the sentence in the lesson plan that showed that activities distributed in one HOTS category are *created* (*C6*), for instance:

[...The teacher assigns homework focused on social functions, text structure and linguistic elements, and liquid medicine labels by distributing worksheets to the students...]

However, it's important to note that analyze (C4) is not associated with frequency in the core activity of communication.

The obstacles faced by teachers in implementing HOTS in activities of the lesson plan

There were nine of the 20 in-service teachers in the teacher certification training program who were willing to be interviewed after analyzing the document checklist for lesson plans.

The researchers found that some of them encountered obstacles in implementing HOTS in learning activities. From those researches' questions, the teachers stated that their challenges in implementing HOTS in learning activities were (1) students' understanding of material and (2) students' ability. 2) limited time, especially for preliminary activities and close activities; 3) students' motivation; 4) teachers' competence 5) facility.

Six out of nine teachers expressed that students' understanding and ability were their problems in implementing HOTS in learning activities. One of the problems expressed by respondent 1 below is:

[...In the core activity, there is an introduction stage, and some students may not understand the material we are going to teach. One of the obstacles I experienced may be in the form of vocabulary. So, for students who are not familiar with these two things, they will definitely be confused because it takes time to explain in detail for children who have difficulty understanding the material being taught...]

(respondent 1 (Hn), 5th January 2024)

Then, There were also six out of nine teachers who stated that their competence was the problem. One of the problems expressed by respondents 3 and 4 below:

[...Previously, I have never introduced questions about HOTS or HOTS activities in teaching. Meanwhile, in this PPG, we are required to introduce or include HOTS activities and questions in learning activities. The difficulty is choosing questions and activities related to HOTS, but also thinking about whether or not these students can answer these questions...]

(respondent 3 (RT), 13th of January 2024)

There were two teachers who mentioned this problem. Those problems expressed by respondents 5 and 6 below:

[....It's a bit overwhelming to direct students who are not in the mood to learn English to be motivated and more active in core activities...]

(respondent 5 (Fk), 5th of January 2024)

Then, there were 2 teachers expressed that their obstacle was facility:

[...HOTS doesn't mean that the questions have to be difficult, but how to stimulate students so that they can express their ideas, for example, through pictures or watching videos. So, there are also several obstacles because in the village there are some difficulties with facilities and infrastructure. Because students actually prefer to see things, they prefer to watch videos, and from watching them, we can raise lots of questions. So, we can actually show a video about it if there are facilities." So the problems are actually in the infrastructure, such as the use of infocus and internet interference...]

(respondent 7 (Sw), 3rd of January 2024)

Finally, the last obstacle found in implementing HOTS in learning activities by inservice teachers was time. One teacher stated that time was their obstacle, especially in preliminary activities and close activities. The problem expressed by one of the respondent below is:

[...The first time is shorter. The space for us to interact and discuss questions or raise HOTS questions is more limited than during the activity...]

(respondent 6 (IY), 3rd of January 2024)

Furthermore, the interview responses showed that most of them had obstacles in implementing HOTS in core activities, such as students' comprehension and ability, a lack of facilities like infocus or the internet, teachers' competence and creativity, and also students' motivation. Those teachers stated that the limited time as the other obstacle, especially in the preliminary activity and close activity, became their problem to discuss with students, especially to stimulate HOTS activities for students. Some teachers also expressed that their competence became a problem when they implemented HOTS in learning activities. It will be difficult to choose the proper question and activity in HOTS.

DISCUSSION

HOTS in learning activities of the lesson

The distribution of HOTS was found to have the lowest frequency in the preliminary activities of the lesson plan, and HOTS did not exist at all in most of the preliminary activities in the lesson plan. It can be implied that HOTS is not well distributed in this learning activity section and also that teachers only emphasize the student's ability to recognize and recall information from their long-term memory rather than train them to be critical thinkers, whereas HOTS can help students stimulate their creativity in the thinking process, especially at the beginning of the learning activity. Similar to Sari and Sakhiyya (2020), higher-order thinking skills are not distributed and treated well, so students will not be exposed to higher-order instructions that stimulate their critical thinking and holistic comprehension, whereas the ideal distribution of LOTS and HOTS levels is 50:50.

The insufficient distribution of Higher Order Thinking Skills (HOTS) in preliminary activities might be attributed to challenges faced by teachers in crafting HOTS activities within a restricted timeframe. Additionally, some instances suggest that incorporating HOTS into preliminary activities can be challenging since these activities primarily aim to encourage active communication among students at the outset of learning.

According to the research findings, there was a noticeable difference in the distribution of Higher Order Thinking Skills (HOTS) between Lesson Plan Action 1 and Action 2. It was observed that in Lesson Plan Action 1, the distribution of operational HOTS words was

significantly lower compared to Lesson Plan Action 2. This indicates a significant change before and after attending the PPG class. The findings are supported by interviews with several teachers who admitted to having insufficient knowledge on how to incorporate HOTS into their lesson plans and apply the operational words of HOTS.

These findings suggest that not all teachers effectively integrate HOTS into their lesson plans, and some are unfamiliar with using a variety of operational words related to HOTS. For instance, some lesson plans for two-part meetings did not include HOTS in initial activities, even though students would have acquired background knowledge by the second meeting. This indicates that some teachers may have limited competence in implementing HOTS in their teaching practices.

Furthermore, in the core activities, it was found that *Create (C6)* has the highest frequency of HOTS. It can be implied that core activities provide enough HOTS activities, and teachers also conducted a well-distributed HOTS in the core activity, where in this section students demanded to increase students' critical thinking, such as in creating an evaluation, providing personal responses, rearranging material, etc. It is also supported by Erdiana (2023), who stated that ensuring students can analyze, evaluate, and create solutions is one of the learning goals of enhancing students' HOTS.

In the other hand, the abundance of Higher Order Thinking Skills (HOTS) activities identified in core activities can likely be attributed to the crucial role of the core stage in the learning process. Naturally, during the core stage, teachers have more opportunities to incorporate activities related to HOTS, especially considering the longer allocated time for this stage.

Meanwhile, in the close activity, it was found that *evaluate* (*C5*) had the highest frequency of HOTS in these lesson plans. It means the teacher intended to develop the level of thinking more on the evaluating level because it involves a thinking process where students will be able to enhance their comprehension and expand their problem-solving skills in this learning activity section. The prevalence of evaluation (C5) in close activities may be attributed to the nature of this stage, where students engage in reflecting on the learning process. In close activities, students conclude the material, evaluate their understanding, and provide feedback. This stage serves as a platform for students to assess and reflect upon the series of learning experiences throughout the day. Febrina & Muslem (2019) revealed that HOTS is emphasized on level *5* (*C5*) in their research, which means it is expected that the students can think critically, creatively, and logically.

In addition, Most HOTS were found with the highest frequency in the core activities and close activities, whereas HOTS were found with the lowest frequency in the preliminary

activities. It implied that teachers emphasized the well-distribution of HOTS just in the core and close activities.

Morever, In the examination of the distribution of Higher Order Thinking Skills (HOTS) in the lesson plan, it was observed that a significant number of teachers tended to repeatedly employ a limited set of operational words associated with the HOTS cognitive level, as the table of Anderson & Krathwohl (2001). This is unfortunate as it indicates that teachers did not make an effort to diversify the use of operational words in their learning activities outlined in the lesson plan. Additionally, they highlighted limitations in comprehending all operational words associated with each cognitive level.

The obstacles faced by teachers in implementing HOTS in activities of the lesson plan

Based on the result of the interview about the teachers' obstacles in implementing HOTS in activities of the lesson plan, some of the teachers answers to this topic, such as teachers' competence, students' ability and motivation, limited time, and also facility.

Teachers' competence has become one of the teachers' obstacles in implementing HOTS. It means in implementing HOTS, especially in learning activities, teachers should be able to implement HOTS in their teaching, such as using appropriate activities to stimulate students thinking, which is a crucial skill because if the teacher is not able to master the knowledge of HOTS, then the students will fail to learn HOTS in the classroom.

In addition, the researchers also found the second obstacle from the interviewees, which is students' ability and students' motivation. In implementing HOTS, students actually demand to be more active and enthusiastic to increase their critical thinking and problem-solving skills. Mujayanah (2022) claimed that students must be able to comprehend facts, categorize them, draw conclusions, relate the material to other facts and concepts, make generalizations, and also apply them to find new answers to new issues.

Meanwhile, other teachers admitted that lack of facilities such as the internet, focus, and other education aids would have a significant influence on the learning process, especially in implementing HOTS in the learning activity. Through facility, teachers could be more creative to improve their strategy for using media in learning because facility also became one of the crucial things, to increase various learning activities that students need to increase their HOTS ability. Shanti (2022) expressed that the effectiveness of improving HOTS thinking ability is supported by strategies for using media in learning, methods in learning, and assessment strategies for students.

The next obstacle that the researchers obtained from the interviews with the teachers was limited time. Some teachers admitted that they need more time to implement HOTS,

especially for activities in the preliminary activity and the close activity, where they usually only have a few minutes or a short time. It indicates that time had a significant influence on teacher creativity and became an obstacle for teachers to improve and choose the kind of activity in the learning activity section.

However, many teachers still lack competence, particularly in implementing higherorder thinking skills (HOTS) in learning activities, due to various challenges in the field. It is essential for teachers to enhance their competency by attending workshops or engaging in independent study using online resources. Continuous self-reflection and professional development are key for teachers to enhance their competencies and effectively support their students' learning and development.

CONCLUSION

This research aimed to describe HOTS in the activities of the lesson plan by an in-service teacher of the teacher certification program (PPG). Furthermore, this research also aimed to find the teacher's obstacle to implementing HOTS in the learning activities of the lesson plan. Based on the result, the researchers concludes that the most frequent HOTS category found in these lesson plans was C6. From the learning activities section, most of the HOTS were obtained in the core activities, especially in explore, associate, and communicate. Whereas, in the core activities HOTS category, evaluation (C5) has the highest frequency. It means only in the preliminary and some of the sections in the core activity (observe and ask) had a low proportion of the HOTS category, and HOT is not well distributed in this learning activity section. It indicates that teachers implement HOTS in their learning activity with a high proportion just in the core activity and close activity but just use the HOTS category in the preliminary activity with a low proportion, whereas the ideal distribution of HOTS and LOTS is 50:50.

On the contrary, the interview results revealed that teachers encountered various challenges in integrating Higher Order Thinking Skills (HOTS) into learning activities. These challenges encompassed constraints related to time, facilities, teacher competence, student abilities, and student motivation. The majority of these obstacles were identified during the implementation of HOTS in core activities. Additionally, some teachers faced challenges in both preliminary and close activities.

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