Al-Ishlah: Jurnal Pendidikan
Vol.16, 3 (September, 2024), pp. 3670-3679
ISSN: 2087-9490 EISSN: 2597-940X, DOI: 10.35445/alishlah.v16i3.5679

Teachers' Self-Efficacy and Professional Competence in Writing HOTS Questions Through In-House Training

Lita Pujiastuti,[1] Shely Cathrin,[2] Unik Ambar Wati[3]

[1] Universitas Negeri Yogyakarta, Indonesia; litapujiastuti.2022@student.uny.ac.id
[2] Universitas Negeri Yogyakarta, Indonesia; Shelycathrin@uny.ac.id
[3] Universitas Negeri Yogyakarta, Indonesia; unikpgsd@gmail.com

ARTICLE INFORMATION

Keywords:

Higher Order Thinking Skills;
Teacher Competence;
Self-Efficacy

Article history:

Received 2024-07-15
Revised 2024-08-13
Accepted 2024-09-30

ABSTRACT

This study addresses the significance of Higher Order Thinking Skills (HOTS) in equipping students for the challenges of Society 5.0. It evaluates the effectiveness of In-House Training (IHT) in improving teachers' competence in designing HOTS-based questions. A School Action Research (SAR) design was employed, consisting of two cycles. The study involved eight teachers selected based on availability and specific study needs. Data were collected using observation and questionnaire methods. Observations assessed teachers' ability to develop HOTS questions, while questionnaires measured their self-efficacy. The findings demonstrated a notable improvement in teachers' ability to create HOTS questions. The average score increased from 68.75 in the first cycle to 86.25 in the second cycle. Similarly, teachers' self-efficacy showed improvement, with mean scores rising from 3.63 in cycle I to 3.96 in cycle II. The results suggest that IHT was effective in enhancing teachers' knowledge, skills, and confidence in developing HOTS-based questions. The significant increase in both HOTS question development and self-efficacy between cycles indicates the training's success in building teacher competence. In-House Training (IHT) is an effective strategy for improving teachers' ability to design HOTS questions, which are essential for preparing students to meet the demands of Society 5.0. Further research could explore the long-term impacts of IHT on teacher performance and student outcomes.

Corresponding Author :
Lita Pujiastuti
Universitas Negeri Yogyakarta, Indonesia; litapujiastuti.2022@student.uny.ac.id

1. INTRODUCTION

Education is a vital asset for the Indonesian nation, essential for empowering individuals and lifting them from a state of helplessness to one of self-sufficiency. It aims to produce high-quality human resources capable of contributing positively to Indonesia's growth. Education plays a critical role in shaping human character to meet global challenges. Critical thinking, which involves interpreting information and drawing conclusions, is a key component of this preparation (Alkhatib, 2019). As the 21st century progresses rapidly, education must adapt to these changes. To address the demands of this era, skills like effective communication are essential, helping individuals interact and compete successfully. Educators, in particular, must adapt to new learning requirements, emphasizing skills like complex critical thinking to analyze information, make inferences, and form connections. Improving the quality of education is crucial, and one effective strategy is to cultivate higher-order thinking skills (HOTS) among students, enabling them to engage with advanced problem-solving and analytical tasks.

Higher-order thinking Skills (HOTS) refer to the mental abilities that require students to engage in advanced levels of thinking, based on Bloom's cognitive taxonomy. Bloom's Taxonomy originally categorized thinking skills into two levels: LOTS (Lower Order Thinking Skills) and HOTS (Higher Order Thinking Skills). HOTS includes skills such as analysis, evaluation, and creation, which are critical for developing critical and creative thinking abilities necessary for success in the 21st century (Saputri et al., 2019). Unlike merely applying rules or memorizing information, HOTS emphasizes deeper cognitive processes like understanding, analyzing, and problem-solving (Andoko, 2020; Ishartono et al., 2021; Nurmala & Mucti, 2019). When students reach the higher levels of Bloom's revised taxonomy—analysis, evaluation, and creation—they demonstrate HOTS capabilities (Walid et al., 2019). Learning through a HOTS framework enhances the learning process by helping students retain information, understand it, analyze it, and apply it to solve problems (Oktaviana & Susiaty, 2020). Research has shown that developing HOTS can significantly improve a person's capacity for critical, creative, logical, and reflective thinking (Indah, 2020; Muhibbuddin et al., 2023; Yamin et al., 2021).

The challenge with HOTS in education is that students are required to think broadly in order to apply newly acquired facts or skills and apply this understanding to potentially solve problems in previously unimaginable circumstances that require creative problem-solving skills. The importance of higher order cognitive skills. It is imperative that HOTS are developed and used in the classroom. Higher order thinking skills enable students to approach problem solving in the classroom confidently and effectively (Tanudjaya & Doorman, 2020) . When learning activities focus on developing HOTS, this has a significant impact on more effective learning, improving the intellectual abilities of teachers and students. Teachers must creatively design HOTS questions that are in line with the curriculum and consider the characteristics of the subject. Teachers' awareness of global issues, skill in selecting question stimulus, and ability to select competencies to be tested are important aspects to consider in creating quality items (Hamzah et al., 2022) .

The context of student characteristics examined in this study, especially in elementary school children, is the characteristics of student thinking. The thinking of elementary school students is still in the formal stage, meaning that they still work with concrete objects that are easily perceived, felt, and understood (Anwariningsih & Ernawati, 2013; Cherry, 2020). Therefore, it is important to remember that HOTS questions should (1) use simple language; and (2) display images that are easy for students to see. The quality of the questions also needs to be considered. To develop well-structured questions, consider the following: (1) Important details that must match the indicators. Given that the content of the questions corresponds to the science curriculum for primary schools, the questions should be considered valid in this context. (2) Questions should be posed in a clear, straightforward, and unambiguous manner, and follow the rules of good and correct Indonesian language usage.

Educational stakeholders have expressed their opinions on the benefits and drawbacks of incorporating 21st-century skills, especially HOTS, into educational activities (Hashim et al., 2022) . To ensure successful learning, educational stakeholders must realize the importance of teaching HOTS. A teacher or school administrator will find it difficult to ignore the importance of teaching HOTS to prepare

students for the 21st century. The extent to which higher-order thinking skills are taught and evaluated is still a matter of debate, despite the importance of HOTS. There is still much uncertainty, especially during the implementation phase in the classroom. In addition to the need to be taught and evaluated in every topic taught in schools, a number of issues related to the field also contribute to misunderstandings around HOTS (Tyas et al., 2019) .

To develop effective HOTS questions, strong teacher competence is essential. Notanubun (2019) defines competence as the integration of knowledge, attitudes, and skills, which is demonstrated through practical work ability. This suggests that competence goes beyond theoretical understanding, encompassing both attitudes and hands-on skills. In this context, competence can be seen as the outcome of a learning process that combines the internalization of knowledge with the development of relevant skills and attitudes. This aligns with Mulyasa's (2022) perspective, which defines competence as the ability to apply what has been acquired through education. In other words, education plays a crucial role in shaping and enhancing an individual's competence.

There are ten fundamental pedagogical competencies, which are as follows: (1) understanding the physical, moral, social, cultural, emotional, and intellectual qualities of students; (2) understanding learning theories and educational learning principles; (3) understanding the curriculum relevant to the field of development taught; and (4) cleverly implementing educational development activities; (5) utilizing operational information and communication technology to plan activities related to educational development; (6) carry out the development of students' potential to realize their diverse potential; (7) talk with students efficiently, sympathetically, and kindly; (8) cleverly determine the value and assessment of the educational process and its conclusions; (9) use the findings of value and evaluation for educational purposes; (10) engage in reflective practice to improve the standard of teaching.

Teachers who excel in designing effective Higher-Order Thinking Skills (HOTS) questions play a crucial role in shaping how students learn and develop these advanced cognitive skills. Research, such as that by Black (2017) and Chocolate and Indonesian (2019), indicates that teachers proficient in crafting HOTS questions possess a deep understanding of their subject matter and can pinpoint the essential concepts that students need to master. These educators present material in a manner that encourages students to engage in critical, analytical, and creative thinking. Furthermore, a teacher's expertise in creating HOTS questions directly impacts student participation in the learning process. Teachers capable of formulating relevant and challenging HOTS questions foster a more engaging and meaningful learning environment. This is further supported by studies from Smith (2018) and Johnson (2020), which emphasize the pivotal role of teachers in designing HOTS questions to stimulate student thinking and enhance their engagement in learning.

In addition to competence, self-efficacy plays a crucial role in teachers' ability to create HOTS questions. According to Albert Bandura, as cited by John W. Santrock (2013:180), self-efficacy refers to the belief that one can manage challenges and achieve positive outcomes. This belief significantly impacts the behaviors a person chooses to pursue, the effort they invest, their perseverance through trial and error, and their resilience. Individuals with high self-efficacy are more likely to take on difficult tasks, maintain confidence, remain calm under pressure, and approach problems analytically. Conversely, those with low self-efficacy often doubt their ability to complete tasks, tend to avoid challenges, give up easily when faced with difficulties, experience anxiety when performing tasks, and struggle with focus and analysis.

The pre-research observations at SDN 2 Danguran reveal that most teachers lack the competence to develop questions using the HOTS (Higher Order Thinking Skills) approach. Many teachers tend to rely on pre-existing materials from LKS or other textbooks without considering whether the questions align with the necessary indicators and basic competencies. Interviews with teachers further confirm that 75% (6 out of 8) of the class teachers are not yet proficient in designing accurate and effective question items. Ideally, teachers should be able to craft questions that encourage students to think critically, creatively, and innovatively. However, most teachers continue to focus on LOTS (Lower Order Thinking Skills), which only assess basic comprehension and memorization. Observations indicate that only 2 out of 8 teachers at the school are capable of developing HOTS-based questions. This gap in skills is likely due to

a lack of training or workshops on HOTS, as well as limited access to resources and examples (Herawati, 2021; Menggo et al., 2021). The inability to formulate HOTS questions can hinder the learning process, as students are not challenged to engage in deeper thinking (Nur'aeni et al., 2021). Therefore, this study aims to evaluate the effectiveness of In-House Training (IHT) as a means to enhance teacher competence, efficacy, and skills in developing HOTS questions, offering a potential solution to the challenges identified.

2. METHOD

The methodology used to assess the impact of training on teachers' ability to develop HOTS-based questions at SD Negeri 2 Danguran. This study was designed using the School Action Research (SAI) framework, based on the Kemmis and McTaggart action research model, which allows for an iterative cycle of planning, action, observation, and reflection. The subjects of the study were eight teachers at SD Negeri 2 Danguran who represented a combination of experience levels and subject specializations.

This research was designed using the School Action Research (SAR) design by adopting the Kemmis and Mc. Taggart Action Research model which is a spiral from one cycle to the next. This research was conducted in two cycles, each cycle consisting of two meetings. Each cycle includes planning, action, observation, and reflection. That indicator from the question observation evaluation it could be seen in the the following table:

Table 1. Observation Sheet to Size Teacher Ability to Develop HOTS Questions For Teacher on Public Elementary School2 Danguran

No.	Component	Indicator	Mark
1	Material	Usage issues An interesting stimulation (new, pushing student to read)	10
		Question use contextual stimulation (picture/graphic, text, visualization, etc., in accordance to that real world)	10
		That problem Measurement The cognitive level of thinking (analyze, evaluate, (create) in the solution	10
		The answer implied in the simulation	10
2	Problem Construction	Question Goods is clear formulated	10
		Picture, chart, diagram, or table And That like function clear	10
		Question Goods Do No cause double meaning	10
3	Language	Question Do No contains elements from SARAPP (Tribes, Religion, Race, Intergroup, Pornography, and Political)	10
		Use Language in the in accordance with That Rule Indonesia, For area Language or foreign Language in the in accordance with That rule.	10
		No use local/taboo Language	10
		Total	**100**

This research is considered successful, having achieved an average score of 80% in overall teacher work ability, which includes planning learning activity programs, implementing them, and evaluating outcomes. Additionally, a questionnaire was used to measure teacher efficacy, specifically in test preparation and the development of HOTS (higher-order thinking Skills) items, aligned with the established indicators and basic competencies. This aligns with findings by Wangid et al. (2020), indicating that this professional development activity positively impacted teachers by enhancing their ability to prepare HOTS-based learning materials and assessments. After participating in the program, teachers were able to develop HOTS-oriented tools for various subjects, such as Science and Civics. Continued training is recommended, focusing on the in-depth development of HOTS assessment materials across all subjects, in line with the needs of 21st-century learning, Industry 4.0, and Society 5.0.

Table 2. Teacher Reason from Efficacy Scale

No	Size	Items Number	Total Item
1	Efficacy in Students Engagement	2, 3, 4, 11	4
2	Efficacy in Instructional Strategy	5, 9, 10, 12	4
3	Efficacy in Classroom Management	1, 6, 7, 8	4
	Total		**12**

3. FINDINGS AND DISCUSSION

3.1 Findings

Teachers' ability to compile Higher Order Thinking Skills (HOTS) questions needs to be developed, considering that most teachers still get a total score below 80. There are only two teachers who have good ability to compile HOTS questions. Based on the results of the research in cycle I, the researcher conducted a reflection to develop In House Training (IHT) activities in cycle II to produce more optimal results.

The steps of activities carried out by teachers during the training period are (1) Providing information / notification to teachers about IHT (In House Training) activities (b) The principal together with the teacher makes an agreement on the implementation time. (c) The researcher examined the daily assessment questions prepared by the teacher in quantity and leatherative. (d) Researchers identified the problems found. (e) Develop an action plan. (f) The principal prepares the observation instruments used in the action cycle Internal training also facilitates the exchange of experiences and collaboration among teachers, allowing them to enrich their insights on various pedagogical approaches.

Based on the results of the assessment of teachers' ability in compiling HOTS questions in cycle II, it is known that there was an increase in teacher ability in cycle II. After being given a more intensive compilation, the average assessment of each work indicator increased significantly, this can be seen from the teacher's ability in compiling HOTS questions getting better. In cycle II, it was known that all teachers at SD Negeri 2 had met the minimum success standard set, which was > 80. The average teacher ability score was 86.25, which indicates that the average score obtained had exceeded the success criteria set, which was 80.

Table 3. Teacher Ability to Developing HOTS Questions in Cycle I

Research Subject	Component			Total Score	Category
	Material I	Problem Construction	English Language		
Subject 1	20	20	20	60	Less
Subject 2	40	20	20	80	Good
Subject 3	30	20	20	70	Less
Subject 4	30	20	20	70	Less
Subject 5	20	20	20	60	Less
Subject 6	40	20	20	80	Good
Subject 7	30	10	20	60	Less
Subject 8	20	30	20	70	Less
Average	**28.75**	**20.00**	**20.00**	**68.75**	

The table above indicates that the teachers' ability to create Higher Order Thinking Skills (HOTS) questions requires further development, as most teachers achieved a total score below 80. Only two teachers demonstrated strong skills in preparing HOTS questions. Based on the results from this research in Cycle I, the researcher reflected on these findings and decided to enhance internal training activities (IHT) in Cycle II to achieve more optimal outcomes. Following this reflection, the researcher

implemented the following actions: (1) The principal provided an explanation of the fundamental steps for developing HOTS questions; (2) The principal asked teachers to complete the provided HOTS question practice sheet; (3) The principal encouraged teachers to develop five HOTS questions, specifying core competencies, indicators, and topics to be completed within one week; (4) Teachers presented their questions during in-house training; (5) The researcher observed and recorded areas requiring improvement, necessitating further actions in Cycle II compared to the previous cycle.

Cycle II is conducted during the third week, during which teachers received further instructions from the principal to enhance the quality of their work. Following these directions, teachers made necessary adjustments and shared their revisions with their peers. In the implementation of Cycle II, the researcher enhanced the process by introducing a series of activities, including: (1) providing feedback by analyzing the work; (2) offering guidance on creating tasks that align with the indicators; (3) advising on the selection of content that matches the assessed competencies; (4) explaining the arrangement of answer choices to ensure consistency and logical flow; (5) guiding the creation of balanced answer options; and (6) offering direction in using language that adheres to subject-specific guidelines. From the findings in Cycle I, it was observed that the average teacher score was 68.75, with only two teachers achieving a good rating.

Table 4. Teacher Ability to Develop HOTS Questions in the Cycle II

Research Subject	Component			Total Score	Category
	Material I	Problem Construction	English Language		
Subject 1	40	20	20	80	Good
Subject 2	40	30	20	90	Good
Subject 3	50	20	20	90	Good
Subject 4	40	20	20	80	Good
Subject 5	30	30	20	80	Good
Subject 6	50	30	20	100	Good
Subject 7	30	30	20	80	Good
Subject 8	40	30	20	90	Good
Average	**40.00**	**26.25**	**20.00**	**86.25**	

The assessment results of teachers' abilities in developing HOTS questions during cycle II show a significant improvement. The average score for each work indicator increased substantially after teachers received more intensive coaching, indicating an enhanced ability to formulate HOTS questions. In cycle II, all teachers at SD Negeri 2 surpassed the required success standard of 80, with an average score of 86.25, exceeding the set criteria. Therefore, it can be concluded that the in-house training (IHT) intervention effectively improved the teachers' skills at SD Negeri 2 in developing HOTS questions.

The comparison between cycles is a comparison of the average values obtained in each cycle, namely pre-cycle, cycle I, and cycle II. The results of the comparison between cycles can be seen in the following image. diagram:

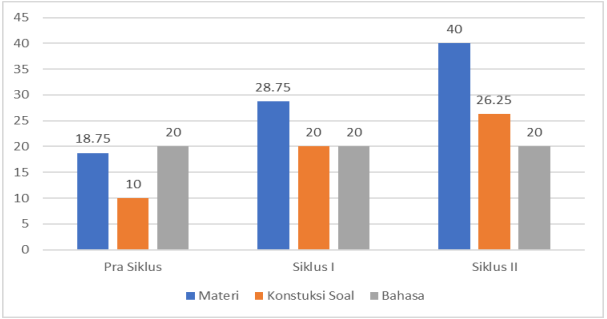

Figure 1. Comparison Results between Cycle from That Ability to Compile HOT Question

Comparison of the average values per indicator between cycles shows significant differences. increase in average value in cycle II, especially in the aspect of mastery of HOTS material. The comparison The results of the study showed that mastery of the material at the pre-cycle stage was 18.75 and increased to 28.75 at the pre-cycle stage. cycle I And Then improved significantly to 40 on That cycle II stage. That improvement in the That ability to develop HOTS questions are also followed by an increase in teacher self-efficacy. This can be seen in the following table.

Table 5. Results from Inter Cycle Comparison from Teacher Self Efficacy

Subject	Pre Cycle		Cycle I		Cycle II	
	Average	Information	Average	Information	Average	Information
Subject 1	2.92	Currently	3.42	Good	3.42	Good
Subject 2	3.17	Currently	3.75	Good	4.42	Very Good
Subject 3	2.58	Less	3.33	Currently	3.83	Good
Subject 4	2.67	Currently	3.33	Currently	3.92	Good
Subject 5	2.67	Currently	3.75	Good	3.75	Good
Subject 6	3.58	Good	4.42	Very Good	4.67	Very Good
Subject 7	3.08	Currently	3.58	Good	4.00	Good
Subject 8	2.92	Currently	3.42	Good	3.67	Good
Average	**2.95**		**3.63**		**3.96**	
Minimum	2.58		3.33		3.42	
Maximum	3.58		4.42		4.67	

Table 6 shows the changes in teacher self-ability across three study cycles. There was a significant increase from the pre-cycle (2.95) to cycle I (3.63), followed by a further rise in cycle II (3.96). These results indicate that teachers experienced a notable improvement in their self-ability through the implementation of in-house training (IHT). The increase in self-efficacy reflects enhanced confidence in their teaching skills and ability to facilitate learning, especially during the transition from cycle I to cycle II. This improvement is a positive outcome of the changes in the learning approach implemented in this study.

Discussion

The research results indicate that the in-house training (IHT) effectively enhanced teachers' ability to develop Higher Order Thinking Skills (HOTS) questions and their self-efficacy. In cycle I, the average score for developing HOTS questions was 68.75, which increased significantly to 86.25 in cycle II. Similarly, teacher self-efficacy improved from an average score of 3.63 in cycle I to 3.96 in cycle II. These findings highlight the positive impact of training on improving teachers' skills in creating HOTS questions. The increase in average scores demonstrates the effectiveness of the internal training program in enhancing teacher competencies.

Higher Order Thinking Skills (HOTS) is a learning approach that emphasizes advanced thinking skills such as analysis, evaluation, and creation (Kusuma et al., 2017; Yulianto et al., 2019). HOTS-based learning encourages students to think critically rather than just memorize theories. This method sharpens students' critical thinking abilities by allowing them the freedom to understand and apply the knowledge they acquire (Wiyaka et al., 2020). In this approach, the teacher acts as a facilitator rather than the primary source of knowledge (Yulianto et al., 2019). HOTS questions require students to engage in deeper thinking, such as analyzing, evaluating, and creating solutions, rather than simply recalling information (Sari et al., 2019). These questions help students develop critical and creative thinking, which is crucial for addressing the challenges of the 21st century (Widana, 2020).

In-house training (IHT) aims to enhance teachers' ability to develop HOTS questions, aligning with the emphasis on continuous professional development in education (Diana, 2021). This training provides

teachers with the skills and knowledge needed to design questions that foster higher-order thinking, such as analysis, synthesis, and evaluation (Herawati, 2021). It also offers practical guidance and examples for preparing HOTS questions (Uyuni, 2019), enabling teachers to create assessment tools that align with learning goals and promote advanced thinking skills. IHT is a form of internal training held within schools, teacher workgroups, or other designated venues (Hidayat, 2022). Its purpose is to equip educators with new skills, enhance collaboration among teachers, address specific classroom needs, and offer a practical training schedule that complements the school's agenda (Ali and Takdir, 2021).

In-house training plays a crucial role in improving teachers' pedagogical competence. According to professional development theories, enhancing pedagogical skills is key to raising the quality of education (Akimov & Malin, 2020). To help students develop higher-order thinking skills, teachers must innovate their teaching approaches, providing opportunities for students to build their knowledge and develop these skills. This requires more than just traditional lecture methods or standard textbook questions; teachers need to design tailored HOTS questions that challenge students' thinking.

IHT provides teachers with access to the latest knowledge in pedagogy, teaching strategies, and curriculum updates (Diana, 2021). It allows teachers to deepen their understanding of learning theories, effective teaching practices, and relevant assessment strategies (Mustamin, 2021). Additionally, IHT gives teachers the chance to improve their teaching practices, focusing on student-centered learning, differentiated instruction, and integrating technology into the classroom (Wiyaka et al., 2020). It also encourages collaboration and sharing of experiences among teachers, enriching their perspectives on various pedagogical methods (Fadil & Aryani, 2021).

The research findings from cycles I and II demonstrate that in-house training significantly enhances teachers' ability to create HOTS questions and boosts their self-efficacy. In cycle I, the average score for HOTS question development was 68.75, which rose to 86.25 in cycle II. Teacher self-efficacy also improved, increasing from 3.63 in cycle I to 3.96 in cycle II. These findings highlight the positive impact of IHT on improving teachers' skills in developing HOTS questions and their confidence in teaching.

These results align with Herawati's (2021) research, which found that in-house training can improve teachers' competence in creating HOTS questions. Similarly, Diana (2021) emphasized that IHT enhances teachers' pedagogical skills, enabling them to better fulfill their teaching roles. By strengthening their ability to design HOTS questions, teachers can create assessments that are more suited to the needs of 21st-century learning, which requires analytical, evaluative, and creative thinking skills.

4. CONCLUSION

The research demonstrates that in-house training (IHT) significantly enhances teachers' ability to develop Higher Order Thinking Skills (HOTS) questions and improves their self-efficacy. The average score for creating HOTS questions rose from 68.75 in cycle I to 86.25 in cycle II, while self-efficacy scores increased from 3.63 to 3.96, underscoring the effectiveness of IHT in boosting teachers' competencies. This aligns with previous studies, highlighting the role of IHT in improving pedagogical skills and the ability to create more advanced assessment tools. However, the study is limited by its focus on a short time frame, potentially restricting a deeper understanding of long-term impacts. Future research should consider extending the study duration and exploring the influence of IHT on other teacher competencies, such as creativity and instructional adaptability, to provide a more comprehensive view of its effectiveness.

REFERENCES

Ali, EY, & Takdir, M. (2021). Implementation of In-House Training Program as an Effort to Form Professional Teachers. *Islamic Management: Journal of Islamic Education Management* , *4* (02).

Alkhatib, O.J. (2019). A Framework for Implementing Higher Order Thinking Skills (Problem Solving, Critical Thinking, Creative Thinking, and Decision Making) in Engineering & Humanities. *International Conference on Advances in Engineering Science and Technology (ICASET) 2019* , 1–8. https://doi.org/10.1109/ICASET.2019.8714232

Andoko, TH (2020). Improving Hots And Learning Achievement Through The Inquiry Method Of Class 7C SMPN 1 WONOSOBO In The 2018/2019 Academic Year. *SPECTRA : Journal of Science Education Studies* , *6* (1), 92. https://doi.org/10.32699/spektra.v6i1.134

Bunawar, B. (2022). Strategy to Improve Graduate Quality Through Productive Learning. *Proceedings of the 1st International Conference on Law, Social Sciences, Economics, and Education, MALAPY 2022, 28 May 2022, Tegal, Indonesia* . https:// doi.org/10.4108/eai.28-5-2022.2320433

Diana, E. (2021). The Urgency of In House Training in Improving Teachers' Pedagogical Competence during the Covid-19 Pandemic. *Basicedu Journal* , *5* (5), 3290–3298. https://doi.org/10.31004/basicedu.v5i5.1323

Fadil, A., & Aryani, IK (2021). Improving Teachers' Pedagogical Competence through In-House Training Activities. *Dynamics of Elementary Education Scientific Journal* , *13* (2), 89. https://doi.org/10.30595/dinamika.v13i2.11551

Filho, W.L., Raath, S., Lazzarini, B., Vargas, V.R., de Souza, L., Anholon, R., Quelhas, O.L.G., Haddad, R., Klavins, M., and Orlovic, V.L. (2018) The role of transformation in learning and education for sustainability. *Journal of Cleaner Production* , *199* , 286–295. https://doi.org/10.1016/j.jclepro.2018.07.017

Hamzah, H., Hamzah, MI, & Zulkifli, H. (2022). Systematic Literature Review on Elements of Metacognition-Based Higher Order Thinking Skills (HOTS) Learning and Teaching Modules. *Sustainability* , *14* (2), 813. https://doi.org/10.3390/su14020813

Hashim, S., Baharudin, N., Abdul Rahman, KA, Hussin, I., Mohd Asri, K., & Zulkifli, NN (2022). Observation of Teacher Readiness in the Application of High-Order Thinking Skills (HOTS) in Vocational Education and Training (P3K). *Online Journal of P3K Practitioners* , *7* (1). https://doi.org/10.30880/ojtp.2022.07.01.004

Herawati, N. (2021). Teachers' Ability in Creating HOTS Questions in Mid-Semester Exams. *Pratama: Journal of Elementary School Education* , *10* .

Hidayat, IS (2022). Efforts to Improve Teacher Skills in Compiling Assessment Instruments Through In-House Training (IHT) for PAI Teachers in High Schools/Vocational High Schools. *Edumaspul: Jurnal Pendidikan* , *6* (1), 1398–1404.

Indah, P. (2020). Development of HOTS (High Order Thinking Skill) Oriented Learning Through Discovery Learning Model to Improve Critical Thinking Skills of High School Students. *International Journal of Chemical Education Research* , 26–32. https://doi.com/10.1016/j.2016. .org/10.20885/ijcer.vol4.iss1.art4

Ishartono, N., Desstya, A., Prayitno, HJ, & Sidiq, Y. (2021). The Quality of HOTS-Based Science Questions Developed by Elementary School Teachers in Indonesia. *Journal of Educational Technology* , *5* (2). https://doi.org/10.23887/jet.v5i2.33813

Kembara, MD, Rozak, RWA, & Hadian, VA (2019). Research-Based Lectures to Improve Students' 4C Skills (Communication, Collaboration, Critical Thinking, and Creativity). *Proceedings of the International Symposium on Social Sciences, Education, and Humanities (ISSEH 2018)* . https://doi.org/10.2991/isseh-18.2019.6

Kusuma, MD, Rosidin, U., Abdurrahman, A., & Suyatna, A. (2017). Development of Higher Order Thinking Skill (HOTS) Assessment Instrument in Physics Learning. *IOSR Journal of Research & Method in Education (IOSRJRME) , 07* (01), 26–32. https://doi.org/10.9790/7388-0701052632

Ma'dan, M., Ismail, M. T., & Daud, S. (2020). Strategies to Enhance Graduate Competitiveness: Insights from Policymakers of Malaysian Public Universities. Malaysian *Journal of Learning and Instruction* , *17* (No. 2), 137–165. https://doi.org/10.32890/mjli2020.17.2.5

Menggo, S., Par, L., Gunas, T., & Guna, S. (2021). GUIDANCE IN COMPILING HOTS-ORIENTED QUESTIONS FOR HIGH SCHOOL TEACHERS. *WIDYA LAKSANA JOURNAL* , *10* (1), 14. https://doi.org/10.23887/jwl.v10i1.25010

Muhibbuddin, M., Artika, W., & Nurmaliah, C. (2023). Improving Critical Thinking Skills Through Science Based on Higher Order Thinking Skills (HOTS). *International Learning Journal* , *16* (4), 283–296. https://www.jurnalpembelajaran.ac.id/index.php/jurnalpembelajaran/ ://doi.org/10.29333/iji.2023.16417a

Mulyasa, DIA (2022). *Character education management* . Bumi Aksara.

Nadeak, B., & Naibaho, L. (2020). The relationship between motivation and human resource management factors with employee loyalty. *Polish Journal of Management Studies* , *22* (2), 261–276.

Notanubun, Z. (2019). Developing Teacher Professionalism Competence in the Digital Era (21st Century). *Journal of Applied Guidance and Counseling* , *3* (2), 54. https://doi.org/10.30598/jbkt.v3i2.1058

Nur'aeni, I., Yunidar, Asrianti, & Pujiningtyas, A. (2021). Assistance in Compiling HOTS (Higher Order Thinking Skill) Standard Questions as an Effort to Realize Literacy. *Journal of Community Service* , *9* (1), 44–50.

Nurmala, & Mukti, A. (2019). Effectiveness Of Using Hots (Higher Order Thinking Skills) Based Lkm On Student Learning Outcomes Of Mathematics Education. *Honai Mathematics Journal* , *2* (2), 117–128. https://doi.org/10.30862/jhm.v2i2.67

Oktaviana, D., & Susiaty, UD (2020). Development of Test Instruments Based on Revised Bloom's Taxonomy to Measure Students' High-Order Thinking Skills. *JIPM (Scientific Journal of Mathematics Education)* , *9* (1), 21. https: //doi.org/10.25273/jipm.v9i1.5638

Saputri, A.C., Sajidan, S., Rinanto, Y., Afandi, A., & Prasetyanti, N.M. (2019). Improving Students' Critical Thinking Skills in Cell Metabolism Learning Using a High-Order Thinking Skills Stimulation Model. *International Journal*

of Learning , *12* (1), 327–342. https://doi.org/10.29333/iji.2019.12122a

Sari, Y., Cahyaningtyas, AP, Maharani, MM, Yustiana, S., & Kusumadewi, RF (2019). Improving the ability to compile HOTS-oriented science questions for elementary school teachers in Pandanaran Cluster Dabin IV UPTD Central Semarang. *Indonesian Community Service Journal* , *1* (2), 175. https://doi.org/10.30659/ijocs.1.2.175-183

Seng, LC (2018). Employability Policy of Malaysian Public University Graduates: Analysis of Unemployment and Underemployment Issues of First-Time Bachelor Graduates. *International Journal of Social Sciences and Humanities Research* , *6* (4), 480–489.

Tanudjaya, C. P., & Doorman, M. (2020). Examining Higher-Level Thinking In Lower-Secondary School Mathematics Classes In Indonesia. *Journal of Mathematics Education* , *11* (2), 277–300. https://doi.org/10.22342/jme.11.2.11000.277-300

Tyas, M.A., Nurkamto, J., Marmanto, S., & Laksani, H. (2019). *Developing Questions Based on Higher Order Thinking Skills (HOTS): Challenges for English as a Foreign Language (EFL) Teachers in Indonesia* . 52–63. https://doi.org/10.17501/26307413.2019.2106

Uyuni, M. (2019). Improving Teachers' Ability in Compiling Evaluation Questions Through In House Training (IHT) Activities. *Journal of Classroom Action Research* , *1* (2), 61–65. https://doi.org/10.29303/jcar.v1i2.268

Walid, A., Sajidan, S., Ramli, M., & Kusumah, RGT (2019). Assessment Concept Construction to Measure Students' Higher Order Thinking Skills. *Journal of Gifted Young Scientists Education* , *7* (2), 237–251. https://doi.org/10.17478/jegys.528180

Wangid, MN, Mustadi, A., Syamsudin, A., Hastuti, WS, Perwitasari, N., Noor, AF, Kusrini, E., & Prihandoko, Y. (2020). HOTS-Based Learning and Assessment Training for Elementary School Teachers in Mantrijeron District, Yogyakarta City. *PengabdianMu: Scientific Journal of Community Service* , *5* (4), 394–403. https://doi.org/10.33084/pengabdianmu.v5i4.1197

Widana, IW (2020). The Influence of Understanding the HOTS Assessment Concept on the Ability of High School/Vocational High School Mathematics Teachers to Compile HOTS Questions. *Jurnal Emasains: Jurnal Edukasi Matematika dan Sains* , *9* (1), 66–75.

Wiyaka, W., Prastikawati, E.F., & Kusumo Adi, A.P. (2020). Higher Order Thinking Skills (HOTS) Based Formative Assessment: A Proposed Model for Language Learning Assessment. *Vision: Journal of Language and Foreign Language Learning* , *9* (2), 115–130. https://doi.org/10.21580/vjv9i25859

Yamin, M., Saputra, A., & Deswila, N. (2021). Improving Critical Thinking in Analyzing the Short Story "The Lazy Jack" Reviewed from Identity Theory. *Indonesian Journal of Learning and Advanced Education (JPLAI)* , *3* (1), 30–39. https://doi.org/10.23917/ijolae.v3i1.9948

Yulianto, T., Pramudya, İ., & Slamet, İ. (2019). The Effect of 21st Century Learning Models and Problem-Based Models on Higher-Order Thinking Skills. *International Journal of Educational Research Review* , *4* , 749–755. https://doi.org/10.24331/ijere.629084