Professional Status: Teachers' Difficulties in Compiling Questions Based on Higher Order Thinking Skills

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A B S T R A K

Keterampilan berpikir tingkat tinggi dibutuhkan dalam menghadapi pembelajaran abad ke-21. Peran guru sangat penting dalam meningkatkan keterampilan berpikir tingkat tinggi siswa, namun implementasi soal berbasis HOTS masih jarang digunakan oleh guru baik yang sudah ataupun belum menyandang status profesional. Penelitian ini bertujuan untuk menganalisis kesulitan guru dalam menyusun soal berbasis HOTS ditinjau dari status profesional. Penelitian ini menggunakan pendekatan kuantitatif deskriptif. Populasi pada penelitian ini yakni seluruh guru di dalam satu gugus. Pengambilan sampel pada penelitian ini dilakukan dengan cluster sampling, kemudian proportional random sampling pada tiap cluster. Sampel pada penelitian ini sebanyak 34 guru, yang terbagi menjadi dua kelompok, yaitu guru yang belum dan sudah menyandang status profesional. Pengumpulan data menggunakan instrumen berupa angket. Selanjutnya, data penelitian dianalisis menggunakan statistik deskriptif berupa mean, standar deviasi, dan persentase yang dikonversikan ke PAP. Hasil penelitian ini adalah kesulitan guru yang belum profesional dalam menyusun soal berbasis HOTS terdapat pada kategori sangat tinggi, sedangkan kesulitan guru yang sudah menyandang status profesional dalam menyusun soal berbasis HOTS terdapat pada kategori tinggi. Kesulitan guru yang belum profesional dalam menyusun soal berbasis HOTS yaitu kesulitan memahami level kognitif, menentukan level kognitif, memilih KKO, menyusun stimulus bersifat kontekstual, menyusun stimulus yang mudah dipahami siswa, dan menyusun soal HOTS. Bagi guru yang sudah menyandang status profesional, kesulitan yang dialami yaitu memilih KKO, menyusun stimulus bersifat kontekstual, dan menyusun stimulus yang mudah dipahami siswa.

A B S T R A C T

Higher-order thinking skills are needed in dealing with 21st-century learning. The teacher's role is crucial in improving students' higher-order thinking skills. However, implementing HOTS-based questions is rarely used by teachers who have or have not held professional status. This study analyzes teachers' difficulties in compiling HOTS-based questions regarding professional status. This study used a descriptive quantitative approach. The population in this study were all teachers in Cluster. Sampling in this study was carried out by cluster sampling, then proportional random sampling in each Cluster. The sample in this study was 34 teachers, who were divided into two groups, namely teachers who had not yet held professional status and had. Data collection used an instrument in the form of a questionnaire. Data were analyzed using descriptive statistics in mean, standard deviation, and percentages converted to PAP. The results of this study were that teachers who are not yet professional in compiled HOTS-based questions were in the very high category, while the difficulties of teachers who already hold professional status in compiled HOTS-based questions were in the high category. Teachers who are not yet professional in compiling HOTS-based questions have difficulty understanding cognitive levels, determining cognitive levels, choosing KKO, and compiling contextual stimuli. For teachers with professional status, the difficulties experienced are chosen KKO, compiled contextual stimuli, and compiled stimuli that are easy for students to understand.

1. INTRODUCTION

The thinking skills needed in the 21st Century are high-level thinking. Learning in the 21st Century and the Industrial Revolution 4.0 requires high-level thinking skills to prepare a flexible, creative generation that makes the right decisions and can solve problems (Agusta & Sadijah, 2021; Sani, 2019). Higher-order thinking skills are also called Higher Order Thinking Skills, abbreviated as HOTS. HOTS should be implemented in every learning process as an integral part of learning. Teachers can stimulate students' thinking abilities by applying HOTS to learning because HOTS can be improved and trained in the learning process (Gradini, 2019; Musrikah, 2018). HOTS is a thinking ability to analyze, connect, evaluate, create, and apply solutions to problems through critical thinking and creative thinking processes (Sani, 2019; Setiawati et al., 2018). According to the cognitive taxonomy, levels four to six are HOTS

(Higher Order Thinking Skill), so HOTS consists of the ability to analyze (C4), evaluate (C5), and create (C6) (Sani, 2019; Tanujaya et al., 2017). The characteristics of HOTS-based questions are: 1) able to measure students' high-level thinking skills; 2) is divergent; 3) using multiple representations; 4) using problems that are contextual and interesting; 5) use varied types of questions (Rohim, 2019; Widana, 2017).

However, students' high-level thinking abilities do not meet expectations. Students' high-level thinking abilities are still relatively low (Akmala et al., 2019; Fatra et al., 2022; Irawati, 2018; Ramadhan et al., 2018). The low level of students' high-level thinking abilities is caused by the teacher's learning process not being HOTS-based, so it cannot develop students' high-level thinking abilities (Akmala et al., 2019; R. R. Putri et al., 2018). In line with this, the factor causing students' low high-level thinking abilities is that teachers often forget to evaluate student progress, where HOTS-based assessment instruments can increase student HOTS (Angraini & Sriyati, 2019; R. R. Putri et al., 2018). Teachers rarely implement HOTS-based learning because teachers' understanding of HOTS concepts, solving HOTS-based problems, and teachers' ability to develop student HOTS is still low (Andromeda et al., 2020; Retnawati et al., 2018). The teacher's role is very important in improving students' HOTS, and students' thinking abilities are still low because teachers have difficulty compiling HOTS-based questions (Miftahuddin et al., 2021; Sinta et al., 2022). The teacher's ability to create HOTS questions needs to be improved because the teacher's ability to compose HOTS-based questions is still lacking (Suhady et al., 2020; Winarti et al., 2021).

It is necessary to increase teacher competence in preparing HOTS questions. Government Regulation Number 19 of 2005 Article 28 Paragraph 3 states that teachers must have pedagogical, personal, professional, and social competencies to overcome this problem. Teachers' professional competence needs to be improved to increase their abilities in organizing the learning process, including their ability to teach, master the material, and evaluate the learning process. The role of teachers in the world of education is very important. Not everyone is capable of becoming a teacher. Teaching is a profession because not everyone can be educated in the field (Galih & Iriani, 2018; Maulana et al., 2023). Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers states that teachers are professional educators with the main task of educating, teaching, guiding, directing, training, assessing, and evaluating students in formal early childhood education, basic education, and secondary education. Republic of Indonesia Law Number 14 Article 2 of 2005 concerning Teachers and Lecturers states that a teacher is said to be a professional if he has certification.

The government has made various efforts to actualize teachers' professional competence. One program that supports teacher professional development is the Teacher Professional Education program (Hanun, 2021; Maulana et al., 2023). Through Teacher Professional Education activities, it is hoped that teachers will be able to increase understanding regarding HOTS because, in Teacher Professional Education activities, teachers are given an understanding of the concept of HOTS, applying HOTS to the learning process, and preparing HOTS questions (Harjanti et al., 2022; Poerwanti & Tribudhiarto, 2020). However, not all teacher professional development activities run smoothly, including the Teacher Working Group Activities as a forum for teacher professional development at the elementary school level. Often, the contribution of these activities to improving teacher professionalism is still low (Maiza & Nurhafizah, 2019; Riastini, 2021).

Previous studies regarding the difficulty of compiling HOTS-based questions have not shown the types of difficulties experienced by teachers, especially teachers who do not yet have or already have professional status. This research compares teachers' difficulties in compiling HOTS-based questions regarding professional status. So, this research focuses on comparing teachers' difficulties in preparing HOTS-based questions in terms of professional status.

2. METHOD

This research uses a descriptive research design. Descriptive research is included in non-experimental research. Descriptive research focuses on describing the problems that occurred during the research. The population of this study was all teachers at Gugus VI Elementary School, Abang District, which consists of seven state schools, with a total of 58 teachers. The sampling technique used in this research used a multistage sampling technique. The multistage sampling technique determines the sample through two stages (Aprilyani & Hakim, 2020). The first stage of the cluster sampling technique is used to group the samples that will be used for research. This research has two groups: a group of teachers who already have professional status and a group of teachers who do not yet have professional status. In the second stage, the proportional random sampling technique was used to determine individuals in the group of teachers who had professional status and those who did not yet have professional status. The number of samples used in this research was 34 people.

The data collection instrument used a questionnaire distributed via Google Forms comprising 20 statement items. The instrument aspects consist of difficulty compiling HOTS-based questions and factors in the difficulty of compiling HOTS-based questions. Aspect indicators include understanding Basic Competencies, formulating indicators, determining the cognitive level, and compiling stimuli, as shown in Table 1.

Table 1. Indicators of Teacher Difficulty in Compiling HOTS Questions

Indicator	Statement
Teacher understanding regarding Basic Competencies and cognitive levels.	Difficulty in determining Basic Competencies that can be compiled into HOTS questions.
	Difficulty understanding cognitive levels C4 (analyzing), C5 (evaluating), and C6 (creating)
	Difficulty in determining cognitive level in HOTS questions
Teacher skills in compiling question indicators	Difficulty choosing operational verbs to formulate question indicators.
	Difficulty developing Basic Competencies in learning is an indicator of HOTS questions.
Teacher skills in compiling question stimuli	Difficulty compiling contextual stimuli in HOTS questions.
	Difficulty compiling stimuli that are easy for students to understand
Formulate HOTS questions based on question indicators	Difficulty compiling questions to measure students' high-level thinking processes.
	Difficulty writing question items that match the HOTS question indicators.
	Difficulty compiling HOTS questions that are easy for students to understand.

Two expert lecturers have tested the instrument in learning evaluation. The results of the instrument validity test are in the very high category. Next, the research data was analyzed using descriptive statistics converted into Benchmark Assessments to obtain categories of teacher difficulty in compiling HOTS-based questions. The Benchmark Assessment consists of five categories: very high, high, medium, low, and very low. The data is presented in graphical form: a graph of the percentage of teachers' difficulty in compiling HOTS-based questions in terms of professional status and a graph of the percentage of factors that influence teachers' difficulty in compiling HOTS-based questions in terms of professional status.

3. RESULT AND DISCUSSION

Result
Teachers' Difficulties in Compiling HOTS-based Questions are Viewed from their Professional Status

The difficulties for teachers who do not yet have professional status are higher than for teachers who already have professional status. The difficulty for teachers who do not yet have professional status in preparing HOTS-based questions is very high, while teachers who already have professional status are in the high category. Data on teachers' difficulties in preparing HOTS-based questions is divided into two: data on difficulties for teachers who do not yet have and already have professional status. The data analysis results as a percentage graph, as in Figure 1.
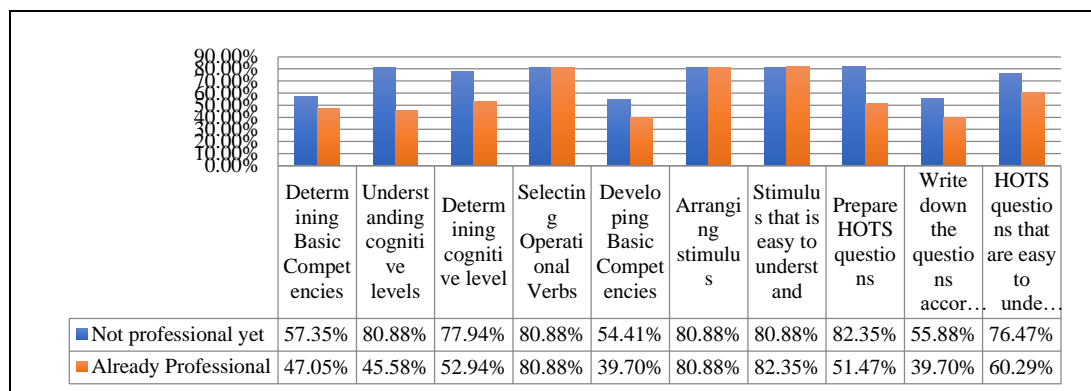
Figure 1. Graph of the Percentage of Teacher Difficulties in Terms of Professional Status

Figure 1 shows the difficulties of teachers who do not yet have professional status in compiling HOTS-based questions, namely compiling contextual stimuli, choosing operational verbs, compiling HOTS questions, understanding cognitive levels C4, C5, and C6, compiling stimuli that are easy for students to understand, determining cognitive level, and compiling HOTS questions that are easy for students to understand. Meanwhile, aspects with a low difficulty level are developing Basic Competencies, determining Basic Competencies, and writing HOTS questions based on indicators.

The difficulties for teachers with professional status in compiling HOTS-based questions are compiling stimuli that are easy for students to understand, compiling contextual stimuli, and choosing operational verbs, which do not experience difficulties, namely developing Basic Competencies and writing question items according to indicators.

Aspects that show the same difficulties between teachers who are not yet professional and already professional, namely choosing operational verbs and preparing contextual question stimuli. The aspect of difficulty that is inversely proportional is composing stimuli that are easy for students to understand. It can be seen that teachers who already have professional status have a higher percentage of difficulty than teachers who do not yet have professional status. Meanwhile, other aspects of difficulty show that teachers who do not yet have professional status experience more serious difficulties than teachers who already have professional status.

Factors that Influence Teachers' Difficulties in Preparing HOTS-based Questions are Viewed from their Professional Status

In this section, we explain the factors that influence teachers' difficulty in compiling HOTS-based questions, originating from the interpretation of raw data calculated using descriptive statistics. The factors that influence teachers' difficulties in preparing questions are divided into two groups: teachers who do not yet have professional status and those who already have professional status. They are presented in graphical form, as in Figure 2.
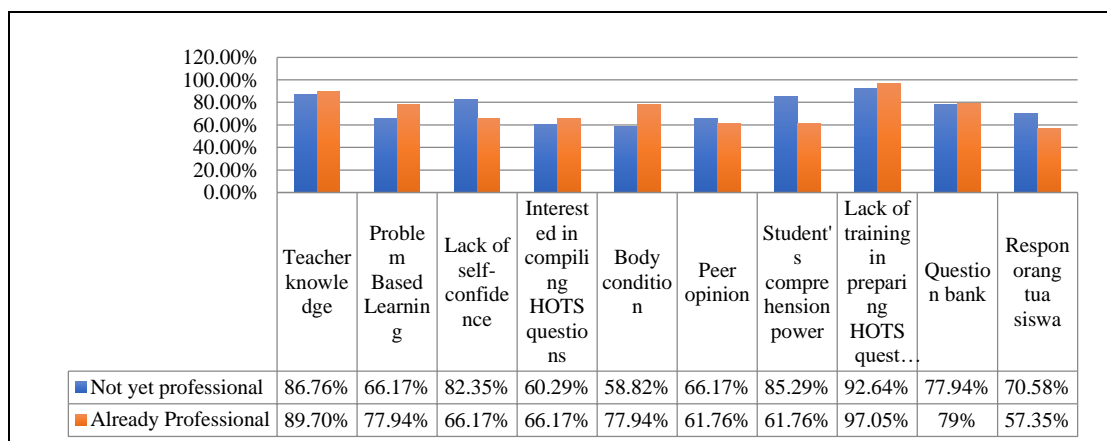

Figure 2. Percentage Graph of Factors Influencing Difficulties in Terms of Professional Status

Figure 2 shows the factors that influence the difficulties of teachers who do not yet have professional status, namely teacher knowledge, lack of self-confidence, students' comprehension ability, and lack of training in preparing HOTS questions. Factors that do not influence teacher difficulties are

body condition. Factors that influence the difficulties of teachers with professional status in preparing HOTS-based questions are teacher knowledge and lack of training in preparing HOTS-based questions. The factor that does not have much influence on teachers' difficulties is the parents' response.

Some data is inversely proportional to the factors that influence teachers' difficulty compiling HOTS-based questions between teachers who do not yet have professional status and those who already have professional status. These factors are teacher knowledge, interest in preparing HOTS questions, body condition, and lack of training in preparing HOTS-based questions. It means that teachers who are already professional state that teacher knowledge, interest in composing HOTS questions, body condition, and lack of training in composing HOTS-based questions influence the difficulty in composing HOTS-based questions compared to teachers who are not yet professional.

Discussion

The difficulties for teachers who do not yet have professional status are higher than for teachers who already have professional status. The difficulty for teachers who do not yet have professional status in preparing HOTS-based questions is very high, while teachers who already have professional status are in the high category. Aspects that have serious difficulty for teachers who do not yet have professional status are understanding cognitive levels C4, C5, and C6, determining cognitive levels, choosing operational verbs, compiling contextual stimuli, compiling stimuli that are easy for students to understand, compiling HOTS questions, and compiling HOTS questions that are easy for students to understand. Furthermore, aspects considered difficult for teachers with professional status are choosing operational verbs, compiling contextual stimuli, and compiling stimuli that are easy for students to understand.

Factors considered to have a big influence on the difficulties for teachers who do not yet have professional status in preparing HOTS-based questions are teacher knowledge, lack of self-confidence, students' comprehension ability, and lack of training in preparing HOTS questions. Furthermore, for teachers who already hold professional status, factors considered to have a high influence on difficulties are teacher knowledge and lack of training in preparing HOTS questions.

Understanding cognitive levels C4, C5, and C6 is crucial in preparing HOTS-based questions. LOTS questions are at cognitive levels C1, C2, and C3, while HOTS questions are at cognitive levels C4, C5, and C6. High-level thinking abilities (HOTS) include the dimensions of the thinking process of analyzing (C4), evaluating (C5), and creating (C6) (Sani, 2019; Widana, 2017). Before preparing HOTS-based questions, teachers should understand cognitive levels C4, C5, and C6 so that the questions prepared can measure students' high-level thinking abilities. Questions can be said to be HOTS if they use cognitive levels C4 – C6, so the teacher's most basic level of understanding before composing HOTS questions is understanding cognitive levels C4, C5, and C6 (Miftahuddin et al., 2021; C. A. Putri et al., 2021). Difficulty understanding cognitive levels results in teachers having difficulty determining cognitive levels on HOTS question indicators. Difficulty determining the cognitive level causes the questions not to match the realm of thinking you want to achieve. The teacher's misunderstanding of the distribution of cognitive levels that are not by the portions causes the questions that are prepared to be unable to measure students' high-level thinking abilities (Sinta et al., 2022; Suratmi et al., 2020). One of the causes of teachers' difficulties in understanding and determining cognitive level is the lack of training in preparing HOTS-based questions. The main key to developing HOTS questions is training teachers to compose HOTS questions (Maryani & Martaningsih, 2020). Through training activities to compose HOTS questions, teachers can exchange ideas with other teachers and gain knowledge and understanding regarding the steps for compiling good and correct HOTS-based questions. The main key to developing HOTS questions is training teachers to compose HOTS questions through training activities. The lack of training in preparing HOTS questions causes teachers to have difficulty compiling HOTS-based questions (Maryani & Martaningsih, 2020; Sinta et al., 2022).

Difficulty in choosing operational verbs to formulate indicators causes the question indicators to not be by the HOTS cognitive domain, so the formulated questions cannot measure students' high-level thinking abilities. One of the reasons for this is that teachers' knowledge about operational verb selection still needs to be improved. Teachers' lack of understanding regarding operational verbs causes teachers to have difficulty choosing operational verbs. This results in a mismatch between Basic Competencies and the indicators formulated (Budiarta et al., 2018; Miftahuddin et al., 2021). Teachers' understanding of operational verbs is the main thing teachers must have. Besides knowledge of HOTS-based assessments, teacher knowledge regarding the material is very important in preparing HOTS-based questions. Good mastery of the material will create a good assessment instrument as well. Research results state a positive correlation between mastery of the material with question writing skills and the quality of the tests produced by teachers (Hartati, 2023; Irwansyah, 2017).

Arranging stimuli is not an easy thing for teachers. Choosing the right stimulus can encourage students to pay attention to the problem. The stimulus used in creating HOTS questions must be appropriate and contextual (Sani, 2019; Widana, 2017). Contextual stimuli are stimuli related to students' daily lives. Preparing stimuli requires teacher skill and creativity because HOTS question stimuli must be interesting and relevant to the problem. HOTS questions must begin with a stimulus as an introduction to the question, so teacher skills are needed to compose varied stimuli (Maulina et al., 2019; Winarti et al., 2021). Difficulty arranging stimuli impacts students having difficulty understanding the stimuli presented. The stimulus presented is often not appropriate to the problem being asked. The stimulus is less varied because the teacher has difficulty constructing question sentences (Doley, 2023; Sinta et al., 2022). Preparing stimulus questions requires teacher creativity and self-confidence in the stimulus being prepared. The teacher's lack of confidence in the stimulus that has been prepared results in teachers being hesitant to give HOTS-based questions that have been prepared to students. In the end, the teacher only created a stimulus based on the discourse contained in the student's textbook. Lack of teacher confidence impacts the low implementation of HOTS questions in learning. Research results show that self-confidence significantly affects teacher performance (Harefa, 2020; Sulfemi, 2020). Teacher performance includes performance in planning, implementing, and evaluating learning.

The difficulty in preparing questions that can measure students' high-level thinking abilities is because teachers still experience difficulties in the steps for preparing HOTS questions. The steps for preparing HOTS questions start from analyzing basic competencies, compiling a grid, selecting appropriate and contextual stimuli, writing down the question items, and creating scoring guidelines (Sani, 2019; Widana, 2017). The difficulty that teachers encounter at the stage of preparing HOTS questions is preparing the grid. Teachers have difficulty determining the cognitive level and choosing operational verbs appropriate to the question indicators, especially in question indicators. The difficulty in compiling HOTS questions means that the HOTS questions that have been prepared are not easy for students to understand. It shows that the low level of students' high-level thinking abilities is due to teachers' difficulty compiling HOTS-based questions (Miftahuddin et al., 2021; Winarti et al., 2021). One of the causes of difficulties for teachers in preparing HOTS-based questions is students' different abilities. It is because not all students can solve problems on HOTS questions. The formulation of HOTS question indicators must be adjusted to student characteristics, making it difficult for teachers to align indicators with students' different abilities. Differences in students' understanding make it difficult for teachers to prepare question indicators according to the student's abilities they want to develop (Pertiwi et al., 2016; Sinta et al., 2022).

A teacher is considered professional if the teacher has academic qualifications at Bachelor and Diploma IV levels and professional recognition through certification. This research shows that the difficulty level between teachers who do not yet have professional status is in the very high and high categories. It shows that teachers who already have professional status or do not still have difficulty compiling HOTS-based questions. Therefore, this research implies that professional status cannot be used as a benchmark for the quality of teachers compiling HOTS-based questions. This research still has limitations. This limitation is that the indicator of the difficulty aspect of preparing HOTS-based questions includes understanding Basic Competencies, formulating question indicators, determining the cognitive level, and preparing question stimuli. This research instrument only uses closed questionnaires, so the data obtained is limited to the results of the questionnaire only. Other researchers can use various data collection techniques, such as interviews and observations, to triangulate the data.

4. CONCLUSION

The difficulty of compiling HOTS-based questions for teachers who do not yet and already have professional status is in the very high and high categories, respectively. Based on the presentation of the results and discussion described, it can be concluded that the low level of students' high-level thinking abilities is caused by teachers still having difficulty compiling HOTS-based questions. A teacher with an educational certificate is considered professional, but they still have difficulty preparing HOTS-based questions.

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