**Data Analysis**

1. **Qualitative data coding**

|  |  |  |
| --- | --- | --- |
| **No.** | **Code** | **Description** |
| 1. | I | Interview |
| 2. | O | Observation |
| 3. | D | Documentation |
| 4. | R | Recording |
| 5. | F | File |
| 6. | 01 | First informant |
| 7. | 02 | Second informant |
| 8. | 2020 | Time |
| 9. | SHN | 5th-grade teacher |
| 10. | NH | Head master |
| 11. | CPH | Comprehension |
| 12. | LRN | Learning |
| 13. | ABL | Ability |
| 14. | TRN | Training |
| 15. | OBS | Obstacles |

1. **Results and analysis data from interviews, observations, documentation**
2. **Teacher's Understanding of Making HOTS Questions**

Based on research conducted by researchers, in making HOTS questions the teacher must be able to understand well related to making HOTS questions and also their characteristics. As explained by SHN:

In making HOTS questions, teachers must be able to understand well what HOTS questions are and their characteristics so that they can be given to students at the time of assessment or evaluation. Because the HOTS question is a question that measures higher-order thinking skills, is based on contextual problems, contains stimulus, and is renewable (CPH/I/SHN/R/01/2020).

Then, the principal conveyed his response regarding the fifth-grade teacher's understanding of the HOTS questions, as follows:

For my response, yes, of course, he knows and understands HOTS. Because we have also discussed the HOTS problem. He was also very enthusiastic (CPH/I/W/NH/R/02/2020).

Based on the results of interviews with SHN and NH, it can be seen that the fifth-grade teacher already knows about making HOTS questions and the characteristics of HOTS questions.

1. **Teacher's Ability to Making HOTS Questions**
2. **Teacher's Ability to Making HOTS Questions**

Making HOTS questions is a job that must be done by the teacher. Although there are difficulties, the most important thing is the willingness of the teacher, as stated by SHN:

Yes, as a teacher, you must be able and capable of making HOTS questions. Because the difficulties are only at the beginning, the most important thing is that there is a will and a lot of learning so that they can broaden their knowledge and abilities (ABL/I/SHN/R/01/2020).

NH said the same thing:

In terms of difficulty, in the beginning, the teacher must be difficult and confused too. However, the most important thing is that there is a willingness from the teacher to practice and for now I think I am capable because I already have the provision and more insight related to it (ABL/I/NH/R/02/2020).

Although the teacher had difficulties at the beginning in giving questions to students and from the willingness of the teacher to practice, finally the teacher was able to give questions to students whose abilities were very diverse:

So, firstly, I had difficulties in giving HOTS questions to students whose abilities were very diverse and then they began to be able and able to give HOTS questions (ABL/I/SHN/R/01/2020).

Therefore, several abilities or skills must be mastered by the teacher to make HOTS questions. SHN explains:

"For the skills needed by the teacher in making HOTS questions, namely the ability to analyze KD, compose a grid of questions, determine the form of the stimulus and determine the stimulus description and make scoring guidelines or answer keys (ABL/I/SHN/R/01/2020)

Based on the various explanations above, it can be said that the fifth-grade teacher already has experience in giving questions to students. The principal also gave praise regarding his experience and ability in making questions:

As for his experience, there is no need to ask again. He can be said to be experienced and has the ability. Moreover, he is one of the teachers whose activities are the densest every week (ABL/I/NH/R/02/2020).

1. **Efforts to Improve Teacher Capability related to HOTS**

In efforts to improve the ability of teachers related to HOTS, school principals also often advise teachers to take part in education and training on HOTS. NH says:

Yes, we always give advice and of course every time there is education and training we always follow it (TRN/I/NH/R/02/2020).

NH also added an explanation, from the education and training it can also improve abilities and add insight into HOTS as well as good provisions for teachers.

Making HOTS questions for students certainly requires a variety of good teachers' pedagogical abilities. In addition, it is also necessary to have a broad insight related to it. So, the efforts we make to improve the ability of teachers are yes, as previously explained, we often invite teachers to take part in training to hone their skills. Because education and training can add insight and help teachers as study material for making HOTS questions (TRN/I/NH/R/02/2020).

A similar statement was also conveyed by SHN:

Improving the ability of teachers related to HOTS, the main thing is that teachers must be sensitive to developments and of course, must-attend education and training to add new insights, can also discuss, as well as practice implementing learning and also HOTS assessment (TRN/I/SHN/R/01/2020).

Because it can be ascertained from the education and training that it becomes a good and strategic means for teachers to improve their abilities related to HOTS. As SHN's statement:

Yes, of course, through scientific forums such as education and training or KKG activities, it is a good and strategic tool for compiling HOTS learning and assessments (TRN/I/SHN/R/01/2020).

1. **Application of HOTS at MI Jombor**

One element of change in the 2013 curriculum at the elementary school level is the strengthening of the learning process or the application of HOTS in learning. Making HOTS questions must also be followed by HOTS learning. Based on SHN's experience as a fifth-grade teacher, said:

According to my experience, in making HOTS questions, you must also do HOTS learning as well (LRN/I/SHN/R/01/2020).

SHN also added annotations back:

Besides that, making HOTS questions is a good thing, but this must start with HOTS learning too, because it will feel strange if the learning is mediocre, but the teacher gives HOTS questions to students. Thus, HOTS assessments must be based on HOTS learning as well (LRN/I/SHN/R/01/2020).

Therefore, in the implementation of the Curriculum 2013 learning, several paradigm changes have been used by teachers, these changes are intended to adapt to the demands of the times or the demands of the curriculum to prepare human resources. As NH explains:

Here we have implemented K-13 which is oriented to HOTS learning as well. Due to the demands of the times and the demands of K-13, namely improving critical and creative thinking skills, students must be continuously trained to produce something new, and strengthening teacher competence in conducting K-13 analysis automatically also strengthens competence in evaluation questions including the HOTS questions (LRN/I/NH/R/02/2020).

Assessment is also carried out by measuring students' thinking levels from low to high levels. Not just memorizing a concept, but until students can produce work. This was added by SHN:

...moreover, learning in the 21st century must improve students' critical and analytical thinking skills. In fact, to make students produce a work. In other words, learning is expected to be at a higher level following the demands of the 2013 Curriculum (LRN/I/SHN/R/01/2020).

Referring to the explanation above, one of the implementation efforts that can be done to develop students' higher-order thinking skills is to reform learning to change teaching strategies by shifting the emphasis from rote-based learning to exploration and problem-based learning that is oriented towards real-world phenomena according to with the demands of the times and curriculum.

1. **Teacher Obstacles in Making HOTS Questions**

The Curriculum 2013 demands an assessment or evaluation, in carrying out the HOTS-based learning assessment process, teachers have their obstacles in making evaluation questions and implementing HOTS-based learning. Because in practice the implementation of HOTS is not an easy thing for teachers to implement. As explained by SHN:

In practice, the implementation of HOTS learning is not an easy thing for teachers to implement. Because teachers are faced with challenges with different student environments. Sometimes they feel they are doing their best but the students' responses are relatively passive (OBS/I/SHN/R/01/2020).

As a fifth-grade teacher, he also told many things related to various other obstacles in making HOTS questions for students. Even though there were obstacles, he still tried to make the questions as good as possible and not sober. The following is SHN's statement:

The obstacles that I often experience are the first lack of time to make HOTS questions, the second sometimes there are obstacles in adjusting the questions with the KKO contained in the indicators, the last one is the difference in the way students show their ability to think where there are students who are active towards material, but when given a question the value tends to be below the average. On the other hand, some students are not active but when they are given questions, their scores tend to be satisfactory. Even so, I also keep trying to divide my time and not run away and keep making simple questions. (OBS/I/SHN/R/01/2020).

In this case, NH adds:

As for the obstacles, according to my observations, because he is busy, he often goes out, yes, the lack of time allocation in making questions for sure. Even so, I see that he is still responsible for making good questions for students (OBS/I/NH/R/02/2020).

Based on the explanation above, it can be concluded that the obstacles experienced by the teacher consist of several of them being confused about dealing with students with different abilities, the lack of time allocation for making questions because of the density of activities, there are often obstacles in adjusting between questions and operational verbs contained in the text. learning indicators based on HOTS, and constrained by various students who have different ways of showing their ability to think.

Although there are still obstacles, SHN also gives a message to educators to continue to improve their knowledge because, without the provision of knowledge, it will be difficult to make HOTS questions and remain patient in facing various obstacles.

Making HOTS questions without adequate knowledge must be difficult, confused. Therefore, I invite fellow educators to remain patient and increase their knowledge so that their tasks will be easier (OBS/I/SHN/R/01/2020).

**Table 1. Overall Question Category**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Question Category** | **C-1**  **(remembering)** | **C-2**  **(understanding)** | **C-3**  **(applying)** | **C- 4**  **(analyze)** | **C-5**  **(evaluate)** | **C-6**  **(create)** |
| Multiple Choice | 13 | 3 | 0 | 4 | 0 | 0 |
| Fill-the-blank | 9 | 1 | 0 | 0 | 0 | 0 |
| Essay | 1 | 3 | 1 | 0 | 0 | 0 |

**Table 2. Analysis of Constraints in Making Questions**

|  |  |  |
| --- | --- | --- |
| **No.** | **Aspect** | **Results** |
| 1. | Analyzing KD and compiling HOTS KD indicators (C-4, C-5, C-6). | There are obstacles in adjusting the questions with operational verbs contained in the HOTS-based learning indicators. |
| 2. | Develop a grid of questions, cognitive domains, and question indicators according to the HOTS rules. | Constrained by various students who have different ways to show their ability to think. |
| 3. | Develop contextual problems with interesting stimuli. | Constrained in overcoming students with different abilities and difficult to find reference sources. |
| 4. | Make multiple choice questions, descriptions, and entries by the rules for making HOTS questions, as well as scoring guidelines. | The lack of time allocation for making questions according to the HOTS rules is due to the density of activities. |

**Figure 1. Cognitive level categorization bar chart of questions**

Based on the previous findings, it can be seen that the teacher has indeed seen understanding in making HOTS questions. However, after cross-checking the data by comparing the findings with other sources, it was found that the teacher only knew, did not understand well about making HOTS questions. Therefore, in making HOTS questions the teacher must be able to understand well regarding the making of HOTS questions and their characteristics, including: (1) using attractive stimuli; (2) based on contextual problems; (3) managing the level of difficulty and cognitive complexity separately; (4) as well as measuring critical thinking skills so that it requires students to be creative and not just remember.

Because in carrying out their duties, teachers are required to have adequate competence and skills. However, based on the findings and cross-check data, it can be seen that the teacher's ability to make HOTS questions is in the category of not being able to. This is evidenced by the 35 questions made by the teacher. There are only 4 questions (11%) in the HOTS category and the remaining 31 questions (89%) in the LOTS category. Efforts to improve the ability of teachers in preparing HOTS assessment scenarios are through forums such as education and training or KKG activities which are strategic means to increase knowledge and hone skills. Making HOTS questions certainly requires a variety of pedagogical and professional skills for teachers. Therefore, teachers must also be sensitive to developments and through various forums can add insight and help teachers as study material for making HOTS questions.

The application of HOTS in MI Jombor is said to be a new thing for teachers and a must-have for teachers' abilities. This is part of the challenge to have a forward attitude to achieve goals. Through the implementation of the Curriculum 2013 that has been applied at MI Jombor, it is hoped that there will be a paradigm shift in the implementation of learning. Because making HOTS questions must be done with HOTS learning as well. Based on the findings and cross-checking the data, it can be seen that the implementation of the HOTS-based assessment in MI Jombor has not been successful as expected and improvements still need to be made. In other words, learning is expected to be at a higher level following the demands of the times and the demands of the curriculum.

Although in practice, the implementation of HOTS learning is not an easy thing for teachers to carry out. Because teachers are also faced with challenges with different local characteristics of students. Sometimes the teacher feels that he is doing his best, but the student's response is still relatively passive. This is one of the toughest challenges that teachers have to overcome. Based on the results of the study, it can be found various obstacles experienced by teachers, namely: (1) still confused in overcoming students with different abilities; (2) the lack of time allocation for making questions due to the density of activities; (3) there are often obstacles in adjusting the questions with operational verbs contained in the HOTS-based learning indicators; (4) constrained by various students who have different ways to show their ability to think. Therefore, the application of a learning approach that includes observing, asking, trying, reasoning, and communicating is expected to be able to change the learning atmosphere to be more active and able to stimulate students' ability to think critically and creatively, even make them produce a work.