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PQ4R-based E-LKPD to improve the fourth grade students' higher order thinking skills

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ABSTRACT

This study is intended to analyze the need for e-LKPD development based on the preview, question, read, reflect, recite, and review (PQ4R) to improve students' HOTS. There are three syntaxes of 3-stage levels of high order thinking skills recommended by Bloom's taxonomy. It consists of analyzing, evaluating, and creating. The type of this research is a descriptive qualitative study analysis based on a literature review of e-LKPD and equipped with the PQ4R strategy as an effort to increase the HOTS of students. The research subjects were educators and fourth-grade students of SD Negeri 1 Purwosari, Padangratu Sub-District, Central Lampung. The research objects are HOTS, PQ4R, and e-LKPD. The data collection instrument used interview guidelines, questionnaires, and tests. The cause of the low HOTS of students is the inadequacy of teaching materials and learning strategies used in training HOTS abilities. The results of the study found that educators had not fully used e-LKPD teaching materials. Educational units also require learning strategies that can increase HOTS. PQ4R is one of the learning strategies that can be applied as a solution to increase students' HOTS. Educators need e-LKPD that contains PQ4R learning strategies that are following the characteristics of students. Thus, it can be concluded that the PQ4R-based e-LKPD to improve the HOTS of students in primary schools needs to be developed.

Introduction

Education is an effort to actualize the learning process actively to help students develop their potential. (Tohir & Mashari, 2020). One's activeness becomes very important in terms of developing knowledge (Qomario et al., 2020). HOTS learning is learning that develops students' higher-order thinking skills which are more than just memorizing/remembering abilities but also efforts to restate and study (Wijayanto, 2018). HOTS is the ability of students to apply knowledge, skills, and values in reasoning and reflection to solve problems, making decisions, innovate and create things (Keleman, 2021). HOTS is a cognitive capacity that allows a person to alter their cognitive level. HOTS must be introduced to primary school students in accordance with their cognitive development at that age (Pulungan, 2021). In this scenario, higher-order thinking will inspire pupils to think broadly and thoroughly about the topic at hand (Sutami, 2020).

Referring to the explanation above, it can be said that HOTS is a complex ability possessed by students to describe learning materials, conclude, integrate and find solutions to problems faced in their lives. To obtain maximum results in increasing HOTS, the role of educators is very important in the learning process. However, the reality shows that there are still many educators who teach only to fulfill their obligations, not really. Educators still do not understand the importance of using strategies and teaching materials in the learning process.

The results of the needs analysis prove that the development of students is very important to do so that the potential possessed by students can develop optimally. The results of the needs analysis were obtained based on a pre-survey in the form of a test on higher-order thinking skills which was carried out on June 14 -1 July 2020 with the subject of 125 fourth grade elementary school students in the Imam Bonjol, Padangratu District. From that stage, it was found that 82 (68%) students were at the LOTS level, while 38 (32%) were at the HOTS level. This finding indicates that the learning outcomes of fourth-graders at SD Negeri Padangratu District have not yet reached the HOTS success indicator. This result is in line with what was said by (Kusuma, 2017) which revealed that most students in Indonesia have low abilities when viewed from the cognitive aspect (knowing, applying, reasoning).

The use of learning resources according to the findings of this study has not functioned optimally where

educators only use the classical lecture method with learning that is still centered on the educator as the source of the message (teacher-centered). The learning process is coupled with the use of conventional media and class-based learning media so that learning activities are not interesting and tend to be boring. HOTS integration in the teaching and learning process is influenced by a number of factors, including national curriculum policies, textbook availability, educators, and students' cognitive capacities (Tyas, 2019). This educator awareness needs to be supported by reading sources or handbooks on HOTS (Pulungan, 2020). As educators, they are required to always develop learning materials to improve students' thinking skills. One of the teaching materials that can be used in this case is e-LKPD.

Referring to the results of the needs analysis questionnaire given to educators regarding e-LKPD, it was found that 100% of educators agreed that it would be necessary to develop E-LKPD based on PQ4R strategy of learning. PQ4R is a learning approach that assists students in reading, comprehending, and retaining learning topics in preparation for actual learning (Primadani, 2021).

The explanation of the problems above concludes the need for teaching materials and learning strategies that can improve students' cognitive abilities, especially at the HOTS level. The teaching materials are PQ4R-based e-LKPD. The importance of these teaching materials is supported by research by Setiawati & Corebima (2018) which found that the integration of the PQ4R learning strategy has a much greater potential to improve students' metacognitive skills compared to other learning strategies. Thus, the implementation of the PQ4R strategy will not only increase knowledge but will also foster creative thinking skills for students. With this background, researchers are interested in conducting research on "Development of PQ4R-based e-LKPD which aims to increase the HOTS of Class IV Students in Elementary Schools"

Research method

This study adopted a qualitative descriptive study analysis based on a literature review from e-LKPD which was equipped with the PQ4R strategy as an effort to increase students' HOTS. The population in this study was the Imam Bonjol Cluster Elementary School, Central Lampung Regency. The research sample was the fourth-grade students of SD N 1 Purwosari which consisted of 29 students. Data was collected using interview techniques, questionnaires, tests, and documentation. The test technique used is a multiple-choice test because it is considered one of the most practical and objective evaluation techniques given that there is no interference from reader subjectivity (Gentilini, et al. 2020).

Results and discussion

It is known based on the HOTS assessment data for students at SDN 1 Purwosari, Padangratu sub-district, Central Lampung Regency, that only 37% of students achieved HOTS. This finding indicates the low level of HOTS of students in the education unit. The low result is influenced by the availability of teaching materials owned by the education unit. The results of interviews and distributing questionnaires using Google forms provide information about the existence of educators who have not used LKPD as teaching materials to help the learning process. LKPD in this case is a sheet that can be used by educators to convey information in a better, interesting and enabling learners to be more active. LKPD functions as an evaluation tool, according to its function (Lee, 2014).

Based on the development of the 21st century that prioritizes the technological aspects of learning, LKPD can be used as an electronic-based learning media to support 21st-century learning to be more effective and efficient. This is reinforced by the results of research (Zahara, 2021) which shows that electronic worksheets that are integrated with STEM that can facilitate the learning process must be developed, especially on materials that are difficult to understand. The development of e-LKPD can be used as a solution to achieve 21st-century skills. Modern learning has made electronic learning a mandatory tool that must be developed, hereinafter known as e-LKPD (Subakti, 2021). e-LKPD as one of the teaching materials requires students to play an active and creative role in participating in classroom learning (Suparman, 2019). In the use of e-LKPD teaching materials, a learning strategy that can support the learning process is needed, namely the PQ4R strategy. The results of the analysis conducted revealed that there are still few educators who know the PQ4R strategy. The PQ4R strategy is suitable for use in teaching integrated thematic material because students can find concepts and knowledge using the 6 stages of PQ4R (preview, question, read, reflect, recite, review) without intense educator guidance. This is because students at SDN 1 Purwosari have reached the HOTS level with a percentage of 32%. The purpose of cognitive teaching is to equip students to transfer. "Being able to think" indicates that students can apply the knowledge and skills they have developed during learning into new contexts (applications that have not been thought of by students before, not necessarily something universally new) (Kusuma, 2017). Therefore, an effective learning strategy used to improve HOTS, namely PQ4R, is needed. The importance of this is reinforced by the findings found out by Primadani (2021) that (1) for students' mathematical reasoning abilities, the TGT learning model using the PQ4R strategy was determined to be better than the direct learning model; (2) when it comes to training students' mathematical communication skills, the TGT learning model with the PQ4R method outperforms the direct learning model. Furthermore, the results of the study (Suhardi, 2018) also show that the application of the PQ4R learning model can improve students' reading comprehension skills. PQ4R offers a learning concept that optimizes students'

abilities through organizing meaningful information and involving students' active roles in learning. This research is also strengthened by research (Setiawati, 2018) which finds that the PQ4R-TPS learning strategy has significantly more potential to empower metacognitive skills compared to other learning strategies. The results of the study (Herman, 2018) added that the PQ4R strategy had a positive effect and made a good contribution to students' mathematical communication skills. Another study conducted by Wahyuningsih & Kiswaga (2019) Learning Model Preview Question Read Reflect Recite Review (PQ4R) also revealed that P4QR was effective in improving students' reading comprehension skills.

Based on the literature, the conclusion that can be drawn is that the PQ4R strategy is very suitable for use in learning to improve the cognitive level of students, especially at the HOTS cognitive level (analyzing, evaluating, and creating). HOTS-based learning requires educators to be able to plan and implement the use of HOTS questions that must be developed in learning considering this can have a potential effect on students (Ringkisa, 2020). The level of achievement of HOTS owned by students can be seen based on the assessment of student learning outcomes. Assessment of learning outcomes is expected to help students to increase their level of HOTS thinking skills (Pulungan, 2021). This is following the results of research (Okayana, 2019) that the assessment instrument is considered theoretically and empirically feasible in developing high-level thinking skills. Meanwhile, (Firdaus, 2020) also said that:

> "Students' inability in solving HOTS problems are certainly caused by many factors, (1) model, strategy, or approach applied is not maximal and is not in accordance with the material to be taught, (2) teacher is less attention to student soft skills, (3) inadequate facilities at school, (4) lack of human resources of teacher."

Thinking ability consists of Lower Thinking Order (LOT), which is the ability to remember, understand and apply, while Higher Order Thinking (HOT) includes the ability to analyze, evaluate, and create (Ramadhan, 2019). Therefore, proper assessment measures not only low-level thinking but also higher-order thinking. Higher-order thinking skills can be seen from the ability of students at the level of analysis, synthesis, and evaluation (Saregar, 2016).

Conclusion

Knowing the results of the analysis of educational needs and students, it was concluded that the learning carried out had not used the e-LKPD teaching materials prepared by the teacher themselves, but only used the available LKPD. Even the available and used LKPDs are not necessarily following the conditions in the field, which are different between educational units. This causes the low level of HOTS owned by students. Therefore, innovation in learning so that the HOTS ability of students can be increased is very much needed. PQ4R is one of the learning strategies that can be applied as a solution to improve students' HOTS abilities. Educators need e-LKPD that contains PQ4R learning strategies that are following the characteristics of students. Thus, it can be concluded that the PQ4R-based e-LKPD to improve the HOTS of students in primary schools needs to be developed.

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