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INFLUENCE OF THINK TALK WRITE LEARNING MODEL ASSISTED BY PRACTICUM METHOD ON SCIENCE LEARNING OUTCOMES

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Abstract. *The primary objective of this research is to analyze the influence of the Think Talk Write (TTW) learning model assisted by the practicum method on the science learning outcomes, which include the cognitive, affective, and psychomotor abilities of seventh-grade students at SMPN 3 Kalidawir. This study employs a quantitative approach, using a quasi-experimental research type, a non-equivalent control group design, and samples selected through purposive sampling techniques. Data collection is done using pre-test and post-test questions to assess cognitive abilities, questionnaires to evaluate affective abilities, and observations to assess psychomotor abilities. Data analysis uses the Independent Sample T test for data that is normally distributed and homogeneous, while the Mann-Whitney test is used for data that is not normally distributed and homogeneous. The research findings are as follows: (1) there is a positive and significant influence of the Think Talk Write (TTW) learning model assisted by the practicum method on the cognitive abilities, as evidenced by the independent t-test result with a significance value (2-tailed) of 0.003 < 0.05. (2) there is a positive and significant influence of the Think Talk Write (TTW) learning model assisted by the practicum method on the affective abilities, as evidenced by the independent t-test result with a significance value (2-tailed) of 0.002 < 0.05. (3) there is a positive and significant influence of the Think Talk Write (TTW) learning model assisted by the practicum method on the psychomotor abilities, as evidenced by the Mann-Whitney test result with a significance value (2-tailed) of 0.000 < 0.05.*

Keywords: *Think Talk Write, Practicum, Science Learning Outcomes*

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1. INTRODUCTION

Sciences is a school subject that provides students with knowledge, ideas, and concept about the natural environtment. This knowledge is acquired through structured scientific experience and processes. In the Merdeka curriculum, sciences is a general subject and plays a crucial role in balancing students' competencies across cognitive, affective, and psychomotor domains, aiming for a learning process that integrates all three aspects. However, in practice, science education often emphasizes only the cognitive domain, neglecting the affective and psychomotor domains[1].

The imbalance of these aspects was found during pre-research observations at SMPN 3 Kalidawir. It was discovered that the learning model used was ineffective, focusing on teacher dominance, lack of student involvement in class discussions, and inadequate resources to support learning activities, such as the underutilization of laboratory facilities. The lack of laboratory optimization was reflected in the infrequent practicum activities, especially for seventh-grade students, who had not conducted any practicum activities during the odd semester of 2023/2024. This impacted student assessments, which relied solely on cognitive assessments. In fact, affective and psychomotor assessments are essential components that teachers need to evaluate, and each assessed aspect has its own characteristics and requires different forms of assessment.

In addition to the imbalance in affective and psychomotor competencies, the implementation of cognitive competencies is also suboptimal. This is evident when students are faced with questions and often cannot answer them, indicating a lack of understanding of the material studied. Most students categorize science, especially biology, as difficult to understand and memorize because the material often involves abstract concepts and complex biological processes. Students find it challenging to grasp theoretical information, which requires deep understanding, thus affecting their science learning outcomes, which are still below the Minimum Mastery Criteria (KKM) set at SMPN 3 Kalidawir, which is 80. This is evidenced by the daily test scores of most students, averaging 70. Therefore, it is important to evaluate the learning model to encourage active student participation, making learning more effective and enabling students to develop a deeper understanding of science overall. One learning model that actively involves students in learning activities is the Think Talk Write (TTW) learning model, as an effort to improve student competencies.

The Think Talk Write (TTW) learning model encourages active student engagement in the learning process through direct experience by performing three key steps: thinking, talking, and writing. This allows students to actively participate in deeply processing information. In the thinking (Think) phase of this model, students are asked to understand the topic or problem to be discussed by making small notes, which provides them with the opportunity to develop critical thinking skills and trains them to think critically to solve problems. Through reading, processing information, and taking notes, students can enhance their abilities to analyze, synthesize, and evaluate information[2].

The talking (Talk) phase in this model emphasizes the importance of communication and collaboration among students. Speaking with group members allows for the exchange of ideas, discussions, and shared understanding, which can enhance comprehension of the material. The final phase, writing (Write), involves students expressing their ideas in written form. This helps strengthen students' writing skills, which are essential for clearly communicating understanding and ideas. Overall, the Think Talk Write (TTW) learning model provides a clear structure for the learning process: thinking, talking, and writing. This structure helps students understand the steps needed to comprehend and present learning material, fostering a deeper understanding of the subject matter. Additionally, this learning model can improve material comprehension, independence, responsibility, and social skills[3].

A learning model is a part of the learning structure with a broad scope that includes learning methods. Methods are various general approaches suitable for achieving specific goals. One well-known learning method is the practicum method. In using the practicum method, students are given the opportunity to develop skills through experimental processes, which often enhance memory and information retention. Students are also given the chance to fulfill the encouragement of discipline, accuracy, responsibility, and curiosity. The practicum method also supports a more realistic explanation of the lesson material. Additionally, practicum helps illustrate scientific concepts and principles that were previously abstract, making them more concrete. Based on these activities, it can be concluded that practicum can support students' understanding of lesson material, achieving the successful implementation of the Merdeka Curriculum[4].

The objectives of this research are as follows: (1) to analyze the influence of the Think Talk Write (TTW) learning model assisted by the practicum method on the cognitive abilities of seventh-grade students

at SMPN 3 Kalidawir, (2) to analyze the influence of the Think Talk Write (TTW) learning model assisted by the practicum method on the affective abilities of seventh-grade students at SMPN 3 Kalidawir, (3) to analyze the influence of the Think Talk Write (TTW) learning model assisted by the practicum method on the psychomotor abilities of seventh-grade students at SMPN 3 Kalidawir.

2. RESEARCH METHODS

This study uses a quantitative approach to directly measure the influence of the independent variables on the dependent variables and to determine the magnitude of the results of both variables with the method used. The research design is a Quasi Experiment with a Nonequivalent Control Group Design. This research was conducted from February to March 2024 at SMPN 3 Kalidawir. The sample of this study consists of students from classes VII A and VII B, totaling 58 students, selected using purposive sampling techniques.

The data collection instruments used in this study include test sheets to assess students' cognitive abilities, a questionnaire containing statements to assess students' affective abilities, and observation sheets with statements to assess students' psychomotor abilities. Data analysis techniques involve using Independent Sample T Test for normally distributed and homogeneous data, as well as Mann-Whitney test for data that are not normally distributed or homogeneous.

3. RESULTS AND DISCUSSION

The Influence of the Think Talk Write (TTW) Learning Model Assisted by Practicum Method on the Cognitive Abilities of Grade VII Students at SMPN 3 Kalidawir

The research results at SMPN 3 Kalidawir from classes VII A and VII B showed the impact of using the Think Talk Write (TTW) learning model in the experimental group compared to using the Discovery Learning model in the control group. Based on the data analysis, the Kolmogorov-Smirnov test for normality yielded results of 0.200 > 0.05 for the cognitive ability pre-test in the experimental class and 0.200 > 0.05 for the post-test, while for the control class, it was 0.073 > 0.05 for the pre-test and 0.095 > 0.05 for the post-test. Therefore, it can be concluded that both the experimental and control classes' cognitive ability data are normally distributed. The Levene's Test for homogeneity yielded a result of 0.203 > 0.05, indicating homogeneity of the data. With the data confirmed as normal and homogeneous, hypothesis testing was conducted using Independent Sample T-Test. Based on the data, a significance value of 0.003 < 0.05 was obtained. Thus, it can be concluded that the Think Talk Write (TTW) learning model has a positive and significant influence on students' cognitive abilities. This is supported by the average score in the experimental class of 83.90 and in the control class of 75.14, indicating that the experimental class using the Think Talk Write (TTW) learning model performed better than the control class.

The increase in the average score of the experimental class is attributed to the Think Talk Write (TTW) learning model, which encourages students to be more active in their learning activities. Students learn through direct experience by engaging in three important stages: thinking, talking, and writing. By involving students in these activities, they have the opportunity to actively process information deeply. The stages that most influence students' cognitive abilities in this model are Think and Write[5].

The thinking stage (Think) allows students to process information, analyze concepts, make connections, and organize ideas deeply. This affects students' cognitive abilities by enabling them to process information more effectively and understand concepts more profoundly[6]. According to Gistria, through the thinking stage, students can better remember and understand the material provided by teachers or sourced from reading materials[7]. According to Suyitno, thinking activities can help students construct their own knowledge, thus enhancing their understanding of concepts[8]. The Think stage can enhance students' cognitive abilities by providing them with opportunities to elaborate on their thinking skills individually.

After engaging in the thinking process, students are asked to express their understanding through writing. The writing activity strengthens students' comprehension because they have to articulate their ideas in writing, which requires structured thinking and the selection of appropriate words. The writing process allows students to identify areas where they may still have misunderstandings, enabling them to seek additional information or formulate questions for clarification. This also helps enhance their abilities in analysis, synthesis, and evaluation, all of which are crucial aspects of cognitive skills[9]. Medina states that during the Write stage, which involves writing about the learning material being studied, repetition occurs in the learning process. As it is known, the more often a person repeats an [10]activity, the more ingrained

it becomes in their memory. Therefore, in this case, students can develop better memory retention abilities. This is also consistent with the research findings of Muhsin et al., stating that with high student activity, both in thinking and writing, it is possible to improve memory retention[11].

Besides the use of the Think Talk Write (TTW) learning model, the increase in average cognitive ability scores of students is also attributed to the use of practicum methods in learning activities. Practicum methods provide students with opportunities to develop skills through experimentation, often enhancing memory retention and information retention. Practicum methods also support a more realistic explanation of the subject matter[12]. According to Setiawan et al., practical activities influence cognitive abilities by understanding and applying theory to real-world problems[13]. According to Susanti, practical activities provide students with the opportunity to apply and integrate their knowledge and skills in a real-life practice. In her research, Kasmawati outlined that the average learning score of students taught using the practical method was 83.96, with a significance value of 0.000 < 0.05, indicating an influence of the practical method on students' learning outcomes[14].

The Influence of the Think Talk Write (TTW) Learning Model Assisted by Practicum Method on the Affective Abilities of Grade VII Students at SMPN 3 Kalidawir

Based on the research data, the average score for the affective abilities questionnaire in the experimental class was 82.24, which was higher than the control class with a score of 76.14. After obtaining the data, a normality test was conducted which indicated values greater than 0.05 for both classes, and a homogeneity test showed a significance value of 0.951 > 0.05. Once the data were confirmed to be normally distributed and homogeneous, a hypothesis test using Independent Sample T-Test was performed, showing a Sig. (2-tailed) value of 0.002, which is less than 0.05 (0.002 < 0.05). Therefore, there is a positive and significant effect of the Think Talk Write (TTW) learning model assisted by the practical method on the affective abilities of the students.

The syntax of the Think Talk Write (TTW) learning model that influences students' affective abilities is the Talk stage. In this stage, students engage in verbal communication with their peers or in small groups. The speaking process enables students to share ideas, express opinions, and discuss learning topics with others. Through this verbal interaction, students can develop social skills such as empathy, cooperation, active listening, and respecting others' perspectives. This influences students' affective abilities by providing them opportunities to learn effective communication, enhance self-confidence, and build emotional connections with peers. Discussions also help students develop tolerance for differing opinions and appreciate diversity in viewpoints and experiences[15].

Siswanto states that by encouraging students to communicate with their peers, teachers, and even themselves, it enhances interpersonal relationships through social skills such as empathy, courtesy, constructive criticism of others' ideas, and moral development[16]. According to Febrianti et al., affective traits that can emerge during discussion activities include responsibility, discipline, cooperation, curiosity, honesty, and self-confidence[17]. According to Apriliyani et al., scientific attitudes such as responsibility, carefulness, open-mindedness, curiosity, and a desire for investigation can be developed through discussion activities[18].

Setiawan, in his research, suggests that affective abilities emerge through independent planning, collaboration, communicating information, and respecting others. Engaging activities can boost students' enthusiasm and motivation for learning[13]. Consistent with Maharlika's study, the affective learning outcomes in the experimental class II using the Think Talk Write (TTW) learning model achieved higher average scores compared to the control class[19].

The use of teaching methods in research also influences students' affective abilities. According to Kurniawati, practical work can enhance students' motivation in learning science. During practical work, students engage their senses through observation and experimentation, thereby affecting their motivation to learn. Motivated students demonstrate dedication in understanding theories, concepts, laws, and scientific attitudes relevant to science subjects. Through practical activities, students are given opportunities to develop discipline, precision, responsibility, curiosity, and a desire to succeed. According to Assriyanto's research, based on the affective aspect, an F value of 60.660 was obtained, which is greater than the critical F value of 4.00, indicating that the practical method (experimental group) significantly influences affective learning outcomes[20].

The Influence of the Think Talk Write (TTW) Learning Model Assisted by Practicum Method on the Psychomotor Abilities of Grade VII Students at SMPN 3 Kalidawir

Based on the research data, the average observation score for psychomotor skills in the experimental group was 89.87, which was higher than the control group's score of 79.63. After obtaining the data, a normality test was conducted, showing that the values for each group were greater than 0.05. However, a homogeneity test indicated a significance of 0.010, which is less than 0.05 (0.010 < 0.05), suggesting that the psychomotor skill scores were not homogeneous. Due to the non-homogeneous data, a hypothesis test using the Mann-Whitney U test was conducted, which showed a significance value (2-tailed) of 0.000, less than 0.05 (0.000 < 0.05). Therefore, it can be concluded that the Think Talk Write (TTW) learning model assisted by practical methods has a positive and significant effect on students' psychomotor skills.

The implementation of the Think Talk Write (TTW) learning model, which affects students' psychomotor skills, it starts from the Think stage. Students' skills in this stage include analyzing and synthesizing problems. Selvia states that in the Think stage, students learn to develop thinking skills, thereby training them to generate ideas or concepts, making them accustomed to actively contributing to the learning process. The Talk stage plays a role in training students to be proficient in asking and answering questions, and additionally, in this syntax, students are asked to discuss with their group members to enhance their communication skills. Lastly, there is the Write stage, which aims to train students to write summaries and solutions to problems, thus building critical thinking skills[21]. According to Khotijah, the stage that directly influences students' psychomotor skills is Write. The writing process involves physical movements, such as moving hands to write letters and arranging words into sentences[22].

Writing activities require coordination between the eyes and hands, as well as precise and fine motor movements to create readable text. Students must be able to control fine motor movements and manipulate writing tools accurately to produce writing that reflects their ideas and concepts. This manipulation of writing tools aligns with the use of the practical method in this research, which involves setting up and using practical equipment correctly. Moreover, the TTW learning model also provides opportunities for students to strengthen their psychomotor skills through discussion activities (Talk) that involve verbal communication and expression, as well as social interaction, which also includes body movements and facial expressions. Similar research was carried out by Nursaid Fitria, Anom, and Rachman Ibrahim with classroom action research which obtained results in cycle II with completeness of learning outcomes of 73.52% and an average score of 74.36 and a student activity score of 64.8%with the category quite active[23].

The use of laboratory methods in research also influences the psychomotor abilities of students. According to Kurniawati, laboratory activities assist in developing basic scientific skills through experiment implementation. Conducting laboratory activities requires several fundamental skills such as observation, estimation, measurement, comparison, manipulation of laboratory equipment, and other scientific skills. Through laboratory practices, students can train their experimental skills, including careful observation, accurate measurement using various measuring instruments, safe handling and use of equipment, designing, conducting, and interpreting experiments, as well as the ability to communicate their findings. This research is also in line with the study conducted by Agung Setiawan, which found that the psychomotor scores of students reached 96. The retention of learning outcomes through the practical method is relatively high, at 71.55%[13].

4. CONCLUSIONS

The use of the Think Talk Write (TTW) learning model and practicum methods is highly beneficial for enhancing active student participation in learning activities. These approaches not only optimize cognitive aspects, such as understanding and applying concepts, but also strengthen affective aspects, such as motivation and emotional engagement in learning. Furthermore, the use of this learning model supports the development of psychomotor skills through direct practice, including physical and manipulative skills crucial for problem-solving and exploring new concepts. Thus, this approach not only balances cognitive, affective, and psychomotor aspects in learning but also promotes a holistic and sustainable learning experience for students.

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