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Implementation of Mind Mapping in Student Learning Activities on Human Sensory System Materials for Class X Students at SMK Negeri 1 Bolaang

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Abstrak

Penelitian ini bertujuan untuk meningkatkan hasil belajar pada peserta didik di kelas x asisten keperawatan dengan Implementasi Mind Mapping sebagai model yang digunakan pada materi sistem indera manusia. Jenis penelitian ini adalah PTK (Penelitian Tindakan Kelas) dengan dua siklus. Adapun subjek dalam penelitian ini ialah seluruh peserta didik di kelas x asisten keperawatan yang berjumlah 30 orang. Dalam penelitian ini, untuk mengukur hasil belajar para peserta didik digunakan alat evaluasi yakni tes yang berbentuk 10 nomor pilihan ganda dan 5 nomor essay pada materi sistem indera manusia. Pada siklus I menunjukkan nilai rata-rata dari hasil belajar sebesar 63,00 dengan persentase klasikalnya 30% dan dalam penilaian mind mapping menunjukkan 17 peserta didik belum mengerti dalam pembuatan mind mapping. Dikarenakan belum mencapai ketuntasan klasikal pada siklus I maka berlanjut ke siklus II dengan rata-rata hasil belajarnya sebesar 82,50 disertai persentase klasikalnya 90% dan dalam penilaian mind mapping menunjukkan 30 peserta didik sudah mengerti dalam pembuatan mind mapping. Oleh karena itu penelitian ini dikatakan berhasil karena telah mencapai lebih dari 80% persentase klasikalnya, sehingga dapat disimpulkan Implementasi Mind Mapping dapat meningkatkan hasil belajar peserta didik dalam proses pembelajaran pada mata pelajaran Biologi khususnya materi Sistem Indera Manusia pada peserta didik kelas X Asisten Keperawatan di SMK Negeri 1 Bolaang.

Kata kunci: *Mind Mapping, Aktivitas Belajar, Sistem Indra Manusia*

Abstract

This study seeks to enhance learning outcomes for nursing assistant students in class X by employing Mind Mapping as a pedagogical model for human sensory system content. This research is classified as PTK (Classroom Action Research) and consists of two cycles. This study included 30 nursing assistant students from class X. This study employed an evaluation instrument to assess student learning outcomes, namely a test including 10 multiple-choice questions and 5 essay questions on the topic of the human sensory system. In the first cycle, the average score of learning outcomes was 63.00, with a classical percentage of 30%, and the mind mapping assessment showed that 17 students did not understand in making mind mapping. Due to its failure to achieve classical completeness in cycle I, it progresses to cycle II with an average learning outcome of 82.50 and a classical percentage of 90%. The mind mapping assessment indicates that 30 students have successfully grasped the concept of mind mapping. This study is deemed successful as it has surpassed 80% of the classical percentage, leading to the conclusion that the implementation of Mind Mapping enhances the learning outcomes of students in Biology, particularly regarding the Human Sensory System material for class X Nursing Assistant students at SMK Negeri 1 Bolaang.

Keywords: *Mind Mapping, Learning Activities, Human Sensory System*

INTRODUCTION

The definition of education has evolved in conjunction with advancements in science. Education is defined as the acquisition of a community's knowledge, skills, and habits, transmitted from one generation to another by teaching, training, or research (Achru, 2019). Instructors

frequently facilitate education, although it can also occur through self-directed learning (Mangelep, 2015; Dodi, 2016; Aidah, 2020). Education enables individuals to enhance their intelligence and abilities, fostering the development of their potential, which contributes to the formation of a responsible, intelligent, and creative individual (Arief, 2021).

Education plays a role in developing an individual's maximum potential in various aspects, such as physical, intellectual, emotional, social, and spiritual, in accordance with his stage of development and the characteristics of the physical and sociocultural environment in which he lives (Mangelep, 2017; Astriani et al., 2020). Education that is relevant to future needs can only be achieved if there is a change in mindset in the learning process (Blegur et al., 2022). This demands a systematic and sustainable improvement of competitive attitudes through improving the quality of education. Educational quality enhancement necessitates the engagement of all elements within the education quality system. The quality of education is contingent upon the effective facilitation of learning, which necessitates a structured procedure aligned with the predetermined objectives outlined in the curriculum (Darmawan et al., 2020; Mangelep et al., 2020). An efficient educational procedure must be implemented at all levels of instruction (Darmuki et al., 2020; Mangelep et al., 2023).

In biology subjects, especially human taste sense materials, it was found that many students still have not completed their learning results. This was written based on the results of observations and interviews with biology teachers at SMK Negeri 1 Bolaang. Of the 30 students in class X of Nursing Assistants, 21 were incomplete, and the rest received satisfactory/complete scores per the minimum completeness criteria (KKM) set by the school, which is 75. Therefore, teachers' efforts are needed to overcome this. Teachers can make so many efforts, one of which is by using the right learning model according to the situation and conditions at school. Rumeen, et al. (2023) stated that the learning model reviews many teaching methods that can be used to keep students engaged and foster a positive learning environment.

Mind mapping is a note-taking technique that can be used in certain situations and conditions, such as in making plans, solving problems, making summaries, making structures, gathering ideas, for taking notes, lectures, meetings, debates, and interviews (Irayati, 2020; Mangelep et al., 2023). Mind Mapping offers different learning, where students must be creative (Karim, 2018; Mangelep et al., 2023). Making notes that are not boring also makes it easier for students to memorize and understand the lesson because everything related to the lesson becomes interesting according to their creativity (Marjuni & Harun, 2019; Mangelep et al., 2024). With the mind mapping method, it will be expected to improve several aspects of the learning process, namely concentration, creativity, memory, and comprehension, so that students can make better learning decisions (Pramuni, 2022). Thus, learning difficulties will be overcome. In addition, when the teaching and learning process will create a pleasant atmosphere and ultimately impact the receipt of learning materials.

In addition, the mind mapping method helps students and educators learn in the classroom by summarizing many teaching materials into a few that are interesting to read (Putra, 2022). Learning with mind mapping will teach students how to summarize to find out the essence of a subject matter in a structured manner (Rias et al., 2018).

One of the organs of the human body that functions as a sense of taste is the tongue. The tongue is a sense of taste (Sihombing, 2021). The sense of taste is one of the tools to feel the taste caused by food or other ingredients. The tongue is also a muscular organ that protrudes into the cavum of the oris from the inferior surface. Therefore, the author applies the mind mapping method for human taste sense material, focusing on student learning activities to gain knowledge in learning and maximum memory.

The research conducted at SMK N 1 Bolaang, especially on the material of the Human Sense of Taste, is still not optimal, the learning method is used that is centered on the teacher's activity. Students only listen to the material and then do the practice questions. Students' ability to classify, apply concepts, and appreciate knowledge has not been directed optimally. Based on the description above, the researcher is interested in researching "Implementation of Mind Mapping on Human Sensory System Materials in the Learning Activities of Class X Students at SMK N 1 Bolaang".

METHOD

This research is included in the classroom action research. The definition of classroom action research (PTK) is a classroom situation activity that is carried out to find a way out of the learning problems encountered by teachers, revise the quality of education in the classroom, assess learning by looking at the results, and try new things in the learning situation to improve the quality and learning outcomes.

The type of classroom action research was chosen because it solved problems that occurred during teaching and learning activities at school. To improve student learning outcomes it can begin with an unstructured dialogue, which is then focused on efforts so that students are able and willing to make a positive contribution to improving learning outcomes

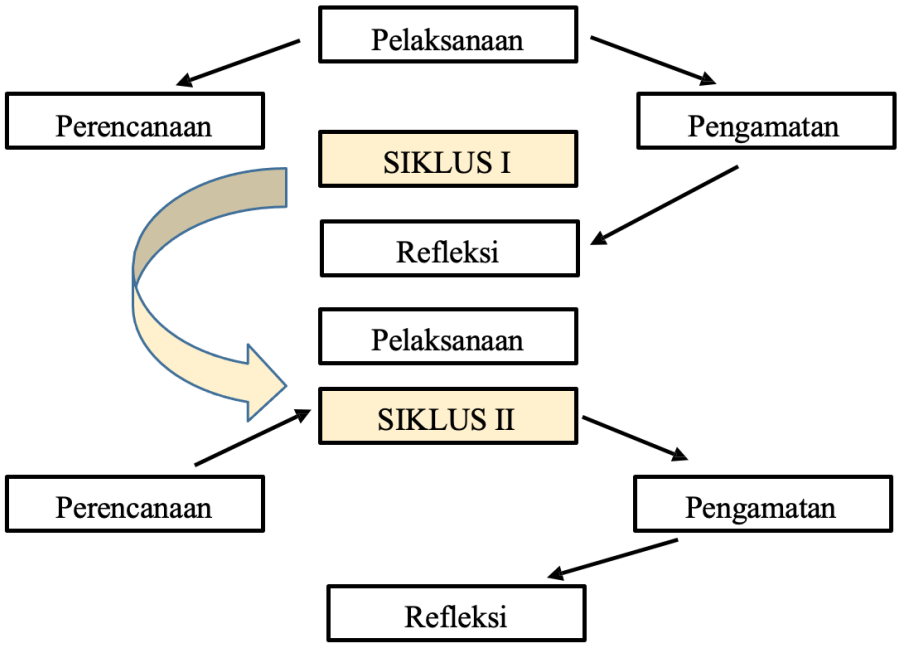

Figure 1. Scheme for the Implementation of Classroom Action Research Model Kemmis & Mc Taggarat

The subjects used in this study are all students of class X of SMK Negeri I Bolaang, which consists of 1 class with a total of 30 students. The object of this study is students' learning outcomes on the concept of Human Taste Sense in class X of SMK Negeri 1 Bolaang. The research will be carried out in odd semesters in the 2024/2025 Academic Year.

This research was carried out using classroom action research (PTK), where four activities were carried out: planning, implementation of actions, observation, and reflection. Data collection techniques used interviews, observations, and documentation. Meanwhile, data analysis used quantitative and qualitative data analysis.

RESULTS AND DISCUSSION

This classroom action research (PTK) is carried out in two cycles through four stages, starting from planning, implementation, observation, and reflection. This research has been carried out at SMK N 1 Bolaang, especially in class x nursing assistants, whose number of students is 30 students with Human Taste Sense material, in August the 2024/2025 school year. The results of the research are as follows.

Cycle I

After the implementation of cycle I, a description of the student's learning outcomes was obtained with a recapitulation of the student's learning outcomes attached as follows.

Table 1. Recapitulation of Student Learning Outcomes Cycle I

Learning Completeness	Number of Students	Number of Students
Complete	9	30%
In complete	21	70%
Total	30	100%

If viewed based on Table 1, it is known that in the first cycle, 9 students completed with a percentage of 30%, while those who did not complete there were 21 students, and the percentage was 70%. The learning outcomes that students have achieved include: (1) The highest score is 85, (2) The lowest score is 45, (3) The average score is 63.00.

The assessment results of the first cycle of mind mapping, which were carried out in groups (see attachment 12 page 78), displayed the written data; namely, 4 students got very good scores. In comparison, 4 students got good scores, 5 students got quite good scores, and 17 other students got bad scores; from here, it is known that many still do not understand the process of mind mapping. Students have not reached the requirements based on these learning results and mind-mapping assessments. Therefore, this research continues to the next cycle, namely cycle II.

Cycle II

The implementation of cycle II was carried out, and then a recapitulation of learning outcomes and learning evaluation results of students in cycle II was obtained, which is attached in Table 2.

Table 2 Recapitulation of Student Learning Outcomes Cycle II

Learning Completeness	Number of Students	Percentage
Complete	27	90%
Incomplete	3	10%
Total	30	100%

In this second cycle of learning, it is known that based on Table 2 above, the value of the learning outcomes obtained is 3 students who have not completed with a classical percentage of 10%. A total of 27 students have reached the set classical completeness standard, which is 90%. The learning outcomes obtained include: The highest score is 95, the lowest score is 65, and the average score is 82.50.

From the above, it is known that the class action research in cycle II has been successful. Handling for students who have not completed is remedial. As for the assessment of mind mapping carried out per group, it shows that as many as 13 students got very good scores. In comparison, 17 other students got good scores, so it can be known that all students already know how to make this mind mapping and have an impact on increased learning outcomes. Table 3 lists the learning outcomes that have increased from cycle I to cycle II.

Table 3. Recap of Cycle I and Cycle II Learning Outcomes

Description	Cycle I	Cycle II
Total Amount	1.890	2.475
Average Score	63,00	82,50
Maximum Value	85	95
Minimum Value	45	65
Completed Students	9	27
Students Who Have Not Yet Complete	21	3
Completion Percentage	30%	90%

The overall score of students in the first cycle was 1,890, with an average score of 63.00. The highest score obtained by students was 85, and the lowest score was 45. There are 21

students who have not completed and 9 students who have completed their learning results, with a completion percentage of 30%.

In cycle II, the total number of learning outcomes was 2,475 and the average score was 82.50. The highest score obtained by students of 95 is in contrast to the lowest score, which is 65. A total of 3 students have not completed (held remedial), and 27 students have completed their learning results with a classical percentage of 90%. From the percentage of completeness of cycle I to cycle II in Table 3, it can be seen that there is an increase in learning outcomes of 60%. This cycle II has reached the set classical percentage of 80% with classical achievement of 90%. So, this cycle also stopped because it had achieved classical provisions and increased learning outcomes.

This class action research seeks to enhance the educational experience in Class X of the SMK N 1 Bolaang Nursing Assistant program. Enhancing the learning process necessitates meticulously planned measures to optimise outcomes. Optimal outcomes are not achieved in a single cycle but should be pursued through multiple cycles. The number of cycles in PTK (Classroom Action Research) is contingent upon the presence or absence of improvement in individual learning outcomes, particularly the classical percentage. If accomplished, the cycle ceases. According to the appendix, the learning outcomes of cycle I have not achieved the requisite percentage of classical completeness. Consequently, this study proceeds to Cycle II. In Cycle II, the learning outcomes have achieved or surpassed the % of traditional completion; hence, this cycle is concluded. Table 3 indicates an increase in completion percentage from Cycle I to Cycle II.

Cycle I will occur on August 20 and August 22, 2024, featuring the offered material on the human sense of taste. According to Table 1 and Attachment 11, page 77, the initial cycle yielded unsatisfactory results and tended to low performance. The data indicates that the number of pupils who have not completed their work individually exceeds those who have, with a classical completion rate of 30%. According to the data in attachment 12, page 78, the mind mapping assessment reveals that 4 students achieved very good scores, 4 received good scores, 5 obtained satisfactory scores, and 17 performed poorly. Thus, it can be concluded that many students do not comprehend the process of creating mind maps.

The learning outcomes in the initial cycle have been unsatisfactory due to pupils' lack of attentiveness to the teacher's explanations. Only a few groups comprehended symbols, illustrations, and curved lines for mind-mapping tasks despite these elements being part of the assessment criteria. While some students exhibit engagement, most remain passive due to embarrassment and apprehension in seeking clarification during the learning process. Consequently, in the forthcoming cycle, the author emphasizes the necessity for enhanced focus on the teacher's elucidations, the provision of requisite materials, and the encouragement of inactive students through motivation and constructive feedback, particularly in relation to their mind-mapping endeavors. This reflection is valuable for identifying deficiencies in the implementation of the initial cycle, facilitating improvement, and serving as a guideline to minimize these flaws in the subsequent cycle.

The second cycle, conducted on August 27 and August 29, 2024, involved human sensory evaluation materials. According to Table 4.2 and Attachment 13, page 79, the results indicate that 27 pupils achieved an average score of 82.50, corresponding to a classical completeness percentage of 90%. Those who have not completed assessments for at least three pupils will receive a remedial program, administering identical questions to the three students to ensure they all attain a KKM score of 75. Attachment 14, page 80, indicates favorable outcomes, with 13 pupils achieving excellent grades and 17 others obtaining good scores. All students can create mind maps, which positively influence learning results. The execution of cycle II was deemed successful.

The results of this study indicate that implementing mind mapping might enhance students' learning outcomes in Biology, particularly with human taste sensory materials in class X of Nursing Assistant at SMK N 1 Bolaang. The research findings about the application of mind mapping align with those of Pramuni, B. E. (2022), which indicate that mind mapping enhances the learning engagement of science students in Class VIII H at SMPN 1 Gondang Mojokerto. Putra, A. A. (2022) asserted that mind mapping research could enhance cognitive abilities at Katumbangan

Lemo State Junior High School. Sihombing, Y. Y. (2021) demonstrated enhanced student learning results in Class VII-1 SMP Negeri 1 Batangtoru, achieving a classical percentage of 94.12% through the implementation of mind mapping.

It is evident from the aforementioned explanation that mind mapping is advisable for implementation in educational settings, considering the circumstances and conditions present in the classroom. Mind mapping enhances the efficiency, creativity, engagement, and effectiveness of the teaching and learning process, promoting student participation. This study enhances the educational outcomes of students in Class X of Nursing Assistant at SMK Negeri 1 Bolaang.

CONCLUSION

The conclusion of the results of this study is that implementing mind mapping can improve students' learning outcomes in Biology subjects, especially in the sensory materials of human taste in class X students at SMK Negeri 1 Bolaang. The suggestions that can be given in this research that have been carried out are that biology learning, especially the human sense of taste with mind mapping, can produce increased learning outcomes in students, so it is hoped that teachers can implement and develop mind mapping that is adapted to the conditions in the school.

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