# Mind mapping by canva as a digital media: A Class Action Research (CAR) in geography learning

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## Abstract

The Mind Mapping learning model is designed to help students recognize, understand, and retain information more efficiently. This classroom action research aims to evaluate the impact of this model on student learning outcomes, teacher activities, teaching effectiveness, and student responses. This study used a classroom action research method with a process of two cycles of learning activities. The study involved 33 students from at SHS 1 Tapaktuan, South Aceh, Indonesia with data collected through pre-tests and post-tests, teacher and student activity observations, teacher skill assessments, and student response questionnaires. Simple analysis such as percentages were used in processing the data obtained. The findings indicate that individual learning mastery increased from 75% in Cycle I to 93% in Cycle II, while class-wide mastery improved from 60% to 90%. Additionally, teacher and student engagement showed a significant improvement, rising from 63.3% in Cycle I to 100% in Cycle II. Teaching effectiveness also improved, with teacher performance scores increasing from 3.25 (good) in Cycle I to 3.5 (very good) in Cycle II. Students responded very positively to the Mind Mapping model assisted by Canva media, with 86% of students stating that this method helped them understand the material better. Based on these findings, the Mind Mapping model, integrated with Canva media, has been proven to be an effective approach for enhancing Geography learning outcomes among Class X-B students.

**Keywords:** Canva, class action research, digital media, Mind Mapping

## Introduction

Improving the quality of education remains an ongoing challenge in the academic landscape. Various obstacles in the learning process can hinder students' academic achievement, preventing them from reaching their full potential. Several factors contribute to this issue, including lack of student focus, ineffective note-taking methods, inappropriate learning models, and limited use of

learning media (Munthe, 2020; Suleman & Idayanti, 2023). Innovative learning methods are essential to address these challenges to enhance student learning effectiveness. One strategic approach to improving educational quality is developing teacher competence. Innovative and creative teaching strategies have been shown to enhance student learning outcomes significantly (Siahaan et al., 2023). Moreover, learning models should be aligned with subject characteristics to foster engaging and interactive classroom experiences.

Interviews with Geography teachers at SHS 1 Tapaktuan revealed persistent challenges in student learning outcomes. Many teachers rely on traditional lecture-based instruction, which is often ineffective and monotonous, leading to low student participation. Studies suggest that appropriate learning media can enhance student engagement and comprehension (Tasrif et al., 2023). Given that Geography encompasses extensive and concept-heavy material, students benefit more from conceptual understanding rather than rote memorization. A promising instructional method that facilitates this process is Mind Mapping. This approach enables students to organize information visually while recognizing relationships between concepts (Akbar et al., 2024; Purnama & Rohartati, 2023; Syam & Ramlah, 2015). Furthermore, Mind Mapping fosters active learning and memory retention, contributing to deeper conceptual understanding (Arlina et al., 2023; Syarifa et al., 2024; Yolanda Putri & Suasti, 2024).

Integrating digital learning tools such as Canva is an effective strategy to further enhance the effectiveness of the mind mapping model. Canva, a widely used graphic design platform, has been recognized for its ability to make learning more engaging and accessible (Yuliana et al., 2023). Research indicates that Canva's visually appealing design enhances student interest and motivation in learning (Purba & Harahap, 2022; Putra et al., 2023; Yuliana et al., 2023). Therefore, combining Mind Mapping with Canva media represents an innovative pedagogical approach to improving student learning outcomes in Geography education.

Numerous studies have explored the Mind Mapping model as an effective approach to enhancing students' understanding and retention of knowledge. According to Syarifa et al. (2022), Mind Mapping is a valuable tool for note-taking, allowing students to become more creative, confident, and proficient in grasping lesson content (Syarifa et al., 2024). Additionally, a study conducted by Arlina et al. (2023) highlights that By incorporating visual aids such as diagrams and structured concept representations, Mind Mapping simplifies complex topics and improves students' conceptual understanding. By breaking down key information, students can identify essential concepts and gain a deeper understanding of the subject matter.

Previous research has also demonstrated the effectiveness of Mind Mapping across various academic fields. A study by Syam and Ramlah (2015) found that applying Mind Mapping significantly enhanced learning outcomes in social studies among fourth-grade students at SDN 54 Parepare City. Similarly, Akbar et al. (2024) reported that Mind Mapping actively engages students in learning, leading to better comprehension and retention, particularly in Islamic studies.

In Geography education, research by Surtikanti (2019) demonstrated that implementing the Mind Mapping method significantly enhances student learning outcomes. Students who utilized Mind Mapping exhibited a stronger conceptual understanding than those taught using conventional learning methods (Anwar et al., 2021). These findings align with the research of Putri et al. (2024), which emphasizes the effectiveness of Mind Mapping in enhancing student comprehension and engagement in Geography education. Implementing the Mind Mapping approach provides several advantages, such as deepening students' understanding of geographic concepts, improving memory retention, encouraging critical thinking, and fostering independent learning (Yolanda Putri & Suasti, 2024).

Additionally, integrating digital learning media, such as Canva, has been shown to enhance learning effectiveness. According to Yuliana et al. (2023), Canva enables students to create engaging visual representations of concepts, increasing their motivation to learn. The results showed that Canva had a very large and significant effect (g = 1.703, p < .001) on students' academic achievement (Astaño, 2025). Further evidence supporting this approach comes from Putra et al. (2023) and Harahap (2022), who found that Canva enhances interactive learning experiences by enabling visually appealing content presentation, making lessons more engaging for students and teachers (Purba & Harahap, 2022; Putra et al., 2023). who found that Canva enhances interactive learning experiences by enabling visually appealing content presentation, thereby making lessons more engaging for both students and teachers.

## Method and study area

### Research site

A classroom action research design was implemented at SHS 1 Tapaktuan, South Aceh Regency, during the 2024/2025 academic year to examine the effectiveness of the applied learning strategies. The research timeline was aligned with the school's academic calendar to ensure that the teaching and learning process was conducted optimally across multiple cycles.

### Research procedure
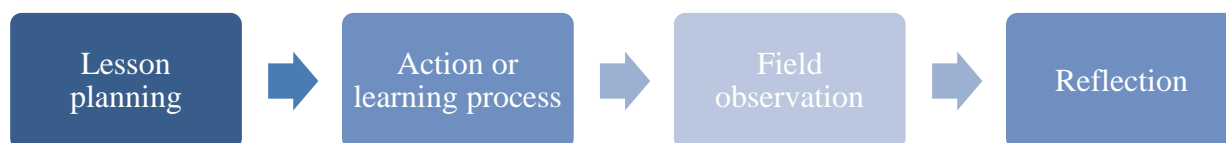


**Figure 1.** Research procedure

This research was conducted in several cycles consisting of:
1) Phase 1 (Learning planning), starting with preparing lesson plans, making observation sheets, and compiling pre-test and post-test questions.
2) Stage 2 (Action or learning process), in this process the teacher implements learning with the Mind Mapping model assisted by Canva.
3) Stage 3 (Field observation), at this stage we observe the implementation of learning and record the obstacles that arise.
4) Stage 4 (Reflection), evaluate the results of actions and improvements for the next cycle. If the results have met the target, the cycle can be stopped.

### Research subject & data collection

The study involved 33 students from Class X-B at SHS 1 Tapaktuan during the 2024/2025 academic year. Data were collected using the following techniques:
1) Observation: Monitoring teacher and student activities during the learning process (Fraenkel et al., 2019).

2) Testing: Pre-test and post-test assessments to measure students' learning improvement after implementing the Mind Mapping model assisted by Canva (Sugiyono, 2022).
3) Questionnaire: Collecting student feedback and perceptions regarding the applied learning methods  (Fraenkel et al., 2019; Sugiyono, 2022).
4) Documentation: Gathering photographic evidence, written records, and field notes throughout the research process (Fraenkel et al., 2019).

*Research instrument*

The instruments used in this study include (1) Pre-test and post-test test sheets (Multiple-choice assessments designed to measure students' learning progress); (2) Observation sheets (Used to evaluate teacher and student activities during the learning process); (3) Teacher skill assessment sheets (Measuring the effectiveness of teaching strategies and classroom management); (4) Student response questionnaires (Collecting feedback on students' experiences with the Mind Mapping model assisted by Canva).

*Indicators of success and data analysis*

The success of this study was evaluated based on classroom action research (CAR) success indicators, using predefined data analysis parameters (Table 1)

**Table 1.** Indicators of success and data analysis

| Stage | Indicators of success | Data analysis | References |
|---|---|---|---|
| 1 | Student learning completeness is at least 75 | $Score = \frac{The\ number\ of\ correct\ questions}{Total\ number\ of\ questions} \times 100\%$ | Ministry of Education and Culture (2016) |
| 2 | Classical completeness is at least 85% of students achieving above the minimum score | Formulation:<br><br>$P = \frac{F}{N} \times 100\%$<br><br>Describe:<br>P = Percentage sought<br>F = Number of students who completed<br>N = Total number of questions<br><br>Categorization of the final results in taking learning outcome scores:<br>Score 0% - 39%     = Very Poor<br>Score 40% - 54%    = Poor<br>Score 55% - 69%    = Fair<br>Score 70% - 84%    = Good<br>Score 85% – 100% = Very Good | Sudijono (2018); Mollambasi et al., (2023) |

| Stage | Indicators of success | Data analysis | References |
|---|---|---|---|
| 3 | Teacher and student activities are in accordance with the set time standards | Formulation:<br><br>$P = \frac{F}{N} \times 100\%$<br><br>P = Percentage rate<br>F = Frequency<br>N = Total number of students<br><br>The achievement of the final results that will be obtained can be grouped into several categories as follows:<br>Score 70% - 100% = Good<br>Score 50% - 69% = Fair<br>Score 0% - 49% = Poor | Mollambasi et al., (2023) |
| 4 | Teacher skills in learning are categorized as good if they are in the score range 2.60 - 3.50 | Formulation:<br><br>$N = \frac{P1+P2}{2}$<br><br>Describe:<br>X = Avarage<br>P1 = Score observation 1<br>P2 = Score observation 2<br>2 = Fixed number | Sudjana (2020); Sudijono (2018) |
| 5 | Then after obtaining the X value, the Y value will be found | Formulation:<br><br>$Y = \frac{Sum\ of\ all\ x\ values\ in\ each\ activity}{Total\ number\ of\ activities\ in\ each\ aspect}$<br><br>Then, the score that has been obtained can be concluded with the average score as follows:<br>Score 1.00 – 1.69 = Poor<br>Score 1.70 – 2.59 = Fair<br>Score 2.60 – 3.50 = Good<br>Score 3.51 – 4.00 = Very Good | Sudjana (2005) |
| 6 | Student response is said to be positive if the percentage reaches ≥ 65% | Formulation:<br><br>$P = \frac{F}{N} \times 100\%$<br><br>Describe:<br>P = Presentation sought<br>F = Frequency of student response<br>N = Number of students | Sudijono (2018); Ridwan & Akdon (2020) |

| Stage | Indicators of success | Data analysis | References |
|---|---|---|---|
| | | After the results are obtained, the data shows that each percentage rating has its own criteria.<br>Score 0% - 20%   = Very Poor<br>Score 21% - 40%  = Poor<br>Score 41% - 60%  = Fair<br>Score 61% - 80%  = Good<br>Score 81% - 99%  = Very Good<br>Score 100%        = Complete | |

## Results and discussion

In this study, an observer monitored the researcher, who assumed the role of a teacher during the learning process. The teacher conducted lessons following the structured procedures outlined in the classroom action research (CAR) framework. Observations focused on teacher and student activities, as well as teacher effectiveness in managing the learning process. These observations were conducted in real-time to assess the effectiveness of the implemented learning model.

*Cycle I research follow-up*

The study was conducted in Cycle I based on the initial research plan. The researcher acted as the teacher, while two observers recorded classroom activities. Students' learning outcomes were evaluated through a pre-test and post-test, each comprising 10 multiple-choice questions, administered after implementing the Mind Mapping model with Canva support. The analysis revealed that individual learning completeness reached 75%, with 8 out of 33 students failing to meet the Minimum Completion Criteria (MCC). However, class-wide learning completeness only reached 60%, indicating the need for further improvements in the learning process (Sudjana, 2025). Studies suggest time constraints and lack of coordination in learning activities can hinder teaching effectiveness (Zainuddin, 2019). Therefore, effective time management and coordination are essential for improving the teaching-learning process (Wahidaty, 2021).

These time-related challenges and coordination issues were identified as the primary obstacles that must be addressed in the next cycle. Regarding teacher skills, the evaluation showed the following scores: the initial stage (3.25, good); the core stage (3.5, good); the final stage (3.25, good), an overall average score (3.3, good). Based on a reflection on identified weaknesses, the following improvements were planned for cycle II:
1)  Enhancing teaching effectiveness by improving teachers' mastery of subject matter and classroom management skills (Wahidaty, 2021; Wirastuti, 2020).
2)  Adjusting time management and classroom structuring to create a more organized and structured learning process (Wahidaty, 2021).
3)  Optimizing teacher skills in managing learning activities to better align with instructional planning (Mawardi, 2019; Puspitorini, 2022; Sugiyono, 2022).

*Cycle II research follow-up*

This cycle was designed to address the weaknesses identified in Cycle I (Arikunto et al., 2021). The analysis results (Figures 2, Figure 3, Figure 4, Figure 5, and Figure 6) indicate a significant improvement in student learning completeness, both individually and class-wide.
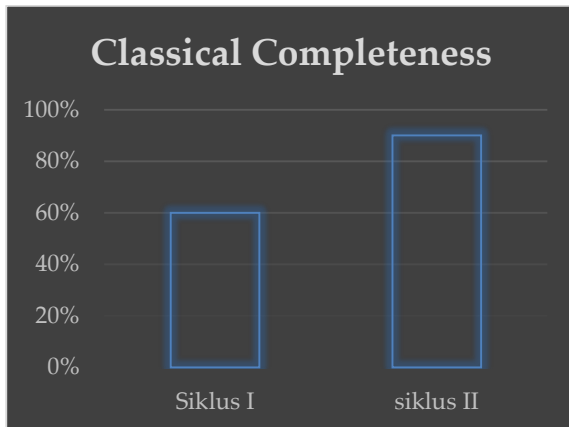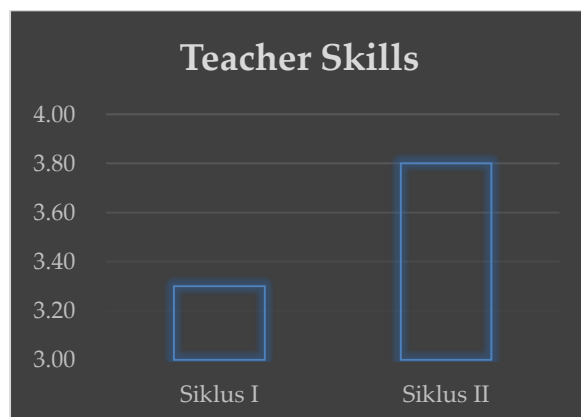


**Figure 2.** Graph of classical completeness
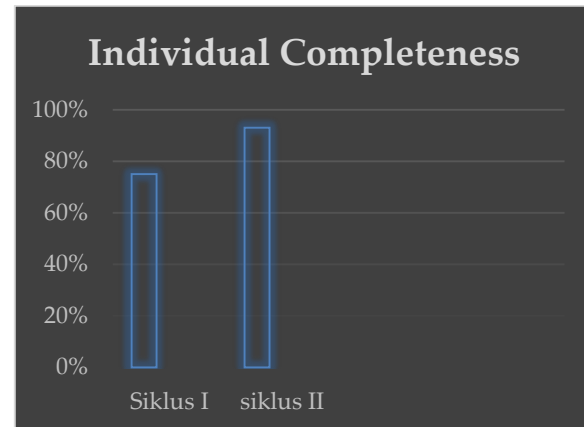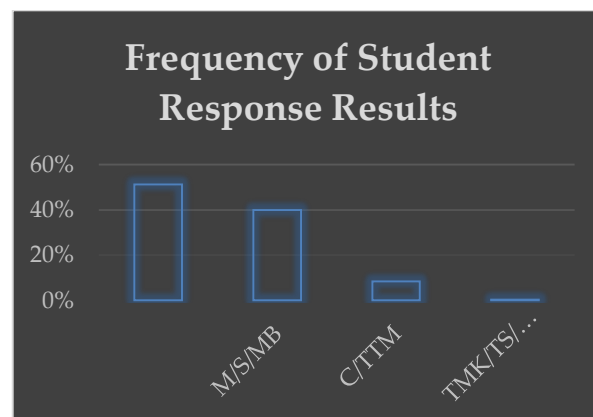


**Figure 3.** Graph of individual completion
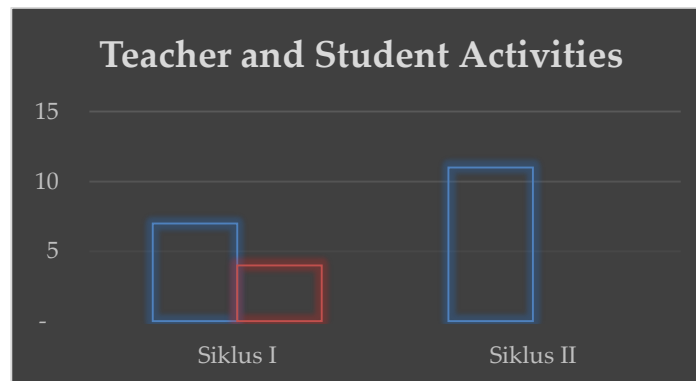


**Figure 4.** Graph of teacher and student activities (For colour blue: Interesed; red: no interesed)
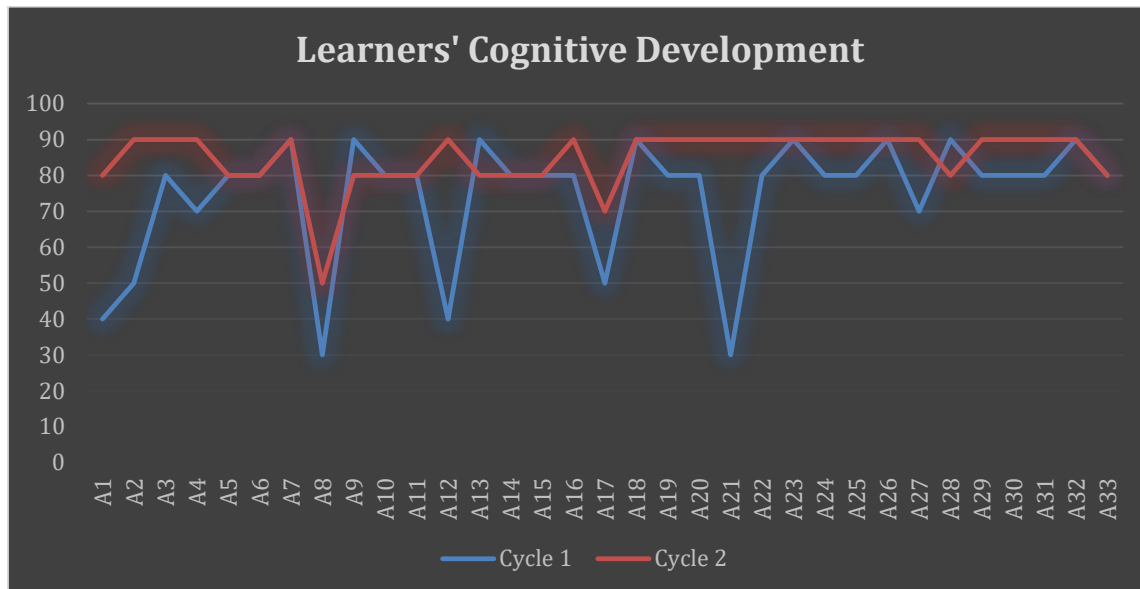


**Figure 5.** Graph of teacher skills



**Figure 6.** Graph of student response percentage

As shown in Figure 2, individual learning completeness increased to 93%, while classical completeness reached 90%, surpassing the minimum required threshold of 85% (Suryobroto, 2009). Furthermore, individual competence increased from 74.5 to 84.8 or an increase of 10.3 (Figure 3). This can be seen in the specification of cognitive development of each learner (on Figure 7) and an process of activity learning (Figure 8).



**Figure 7.** Graph of individual completion

Additionally, teacher and student activities (Figure 4) demonstrated an improvement in time management and classroom engagement. The evaluation of teacher skills (Figure 5) also showed progress, with scores increasing to 4.0 (Very Good) in the initial stage, 3.5 (Good) in the core stage, and 4.0 (Very Good) in the final stage, resulting in an overall average score of 3.8 (Very Good). Given the significant improvements in student learning outcomes, teacher skills, and classroom activities, the study was concluded after Cycle II, as the research objectives had been successfully met (Arikunto et al., 2021).

Following the completion of learning activities, student responses (Figure 6) to the Canva-assisted Mind Mapping model were measured through a post-learning questionnaire. The analysis revealed that 86% of students responded positively, indicating that this learning model: enhanced their understanding of the material, increased engagement in the learning process, and made learning more interactive and enjoyable (Fraenkel et al., 2019). The findings confirm that the Mind Mapping model integrated with Canva is an effective instructional approach for improving students' learning outcomes and experiences (Cahyani & Hardini, 2024; Deliana et al., 2023; Sumarno et al., 2023). Moreover, this integrated approach fosters creativity and motivation, further enhancing student engagement (Khasanah et al., 2024; Kurniawan & Sriyanto, 2022; Ulum, 2023).

**Discussion**

Previous studies have demonstrated that mind-mapping-based instruction has a greater positive impact on students' cognitive learning outcomes compared to traditional teaching methods (Shi et al., 2023). Research has also shown that incorporating mind-mapping techniques into reading activities fosters a positive learning experience, which, in turn, enhances reading comprehension, self-efficacy, and overall academic performance (Quan et al., 2024). Additionally, during the COVID-19 pandemic, the mind-mapping method significantly improved students' critical thinking skills when implemented in an online learning environment (Alsuraihi, 2022).



**Figure 8.** (a) The process of apperception at the beginning of learning; (b) The process of making mind mapping using Canva media; (c) The process of presenting the results of mind mapping; (d) The process of question and answer

At a school in China, the mind-mapping approach effectively enhanced students' computational skills (Zhao et al., 2022). Our findings indicate that integrating mind mapping with digital graphic tools such as Canva further enhances students' creativity (Kokotovich, 2008; Dong et al., 2021; Pedroso et al., 2023; Hinchcliff et al., 2023; Novitasari et al., 2024), making learning more engaging, interactive, and efficient (Hasriadi et al., 2023). Additionally, this integration was found to increase student motivation (Efendi et al., 2023) and promote critical thinking skills (Pulungan et al., 2024; Suputra et al., 2023; Kurniawan et al., 2024). These findings align with prior research emphasizing the importance of integrating mind mapping with digital media to enhance learning effectiveness (Kocaarslan, 2024). However, as highlighted by Said & Shaari (2021), teachers play a key role in the effective application of such instructional strategies to foster meaningful improvements in the learning process

In Ukraine, Canva offers a versatile, easily accessible platform to make learning more engaging which can significantly improve student engagement and learning outcomes (Ковтанюк, et al. 2025). Some of the previous research results, we also correlated with the theory of Dale's Cone of Experience (Figure 9).
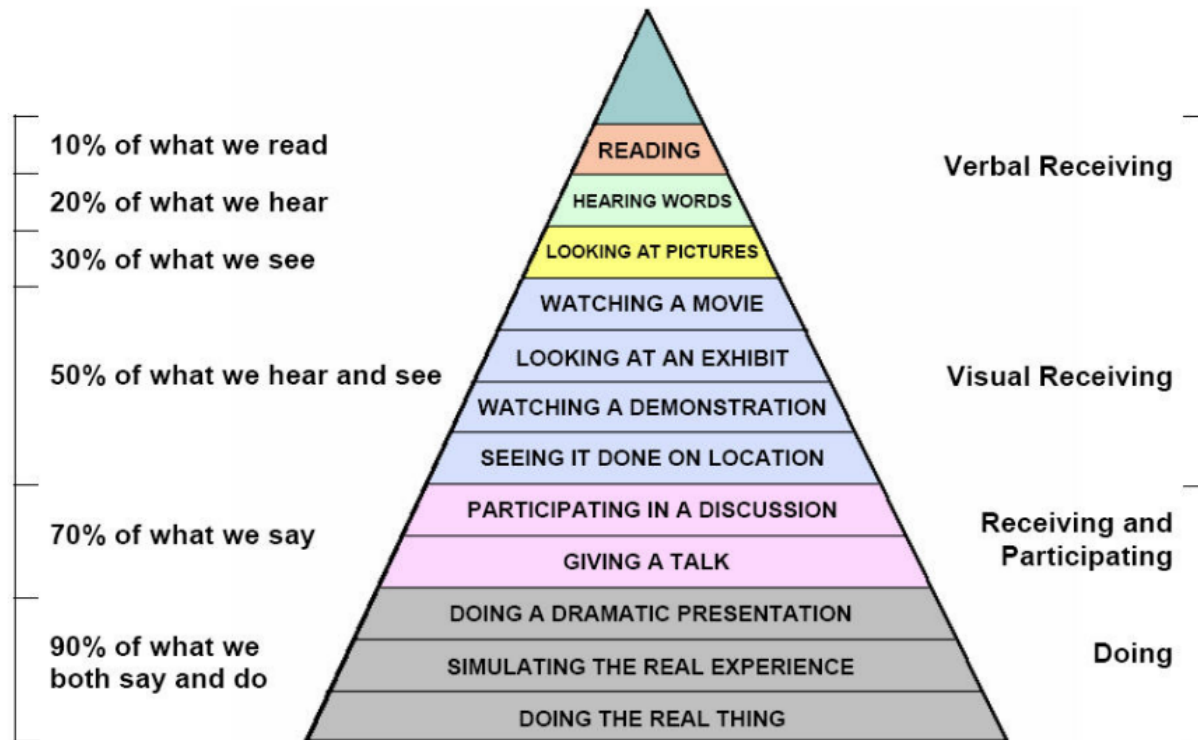


Source: Molend, 2003

**Figure 9.** Dale's cone of experience

If we look at Figure 9, if the activity in integrated learning between mind mapping and Canva media is a category that is in simulating the real experience with a level of 90% of what we both say and do. In addition, we need to emphasize that Canva is a supporting media especially for geography subjects, given the emphasis of the subject on spatial and visual understanding (Husna & Dora, 2025). In a different innovation, canva-based flipbook media is not only a learning tool, but also a tool that can improve students' critical thinking and analysis skills in understanding science concepts (Purwanti et al., 2025). So, we draw a conclusion in this discussion, if Canva media in constructing students' understanding through mind mapping models in geography learning makes a positive contribution to the cognitive development of students in the classroom and the role of learning is a simple way for teachers to create learning effectiveness without expensive costs in the era of VR (Virtual Reality), AR (Augmented Reality) and MR (Mixed Reality) based media is becoming a trend in Indonesia. So there is no need to be inferior, all effective learning activities depend on the teacher and the environment.

## Conclusion

The two-cycle classroom action research results indicate that the Mind Mapping learning model, integrated with Canva media, has significantly enhanced student learning outcomes. While individual and class-wide learning completeness remained relatively low in Cycle I, targeted adjustments in classroom management, time management, and teacher instructional skills led to substantial improvements in Cycle II. Both teacher and student activities demonstrated positive progress, with learning sessions becoming more structured, interactive, and effective. The study also observed a notable enhancement in teacher skills, particularly in managing the learning process, from the first to the second cycle. Furthermore, students responded positively to this learning approach, reporting that it helped them better understand the material and boosted their motivation to learn. Given these successful outcomes, the research was concluded after the second cycle, having achieved the expected learning improvements. The findings confirm that the Mind Mapping model, integrated with Canva media, is an effective instructional approach for enhancing students' conceptual understanding, engagement, and learning experiences.

The study has limitations on the sample used so future testing by conducting practice experiments with larger and more diverse samples and examining the impact on other dimensions of learning, such as collaboration, creativity, and problem solving. In addition, the use of media is very simple media innovation used amid the trend of using AR, VR and MR. However, the advantage is that this research can be conducted or applied in a variety of educational environments including those with limited technological infrastructure. Thus, we recommend for future research and implication in teaching practice to develop metaverse-based media with artificial intelligence to support meaningful learning, joyful learning and deep learning. Additional recommendations we suggest to elaborate learning activities in supporting several SDG's points not only improving the quality of education, but can elaborate to apply environmental issues such as global climate change, sustainability of land and marine ecosystems and others.

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