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The Six HATS of HOTS: Enabling Teachers to Use Six Thinking Hats for Reading Enhancement

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Abstract
Aim: This study aimed to assist teachers in designing lesson guides and instructional materials using Edward de Bono's Six Thinking Hats framework and to determine its effectiveness in enhancing learners' reading skills and teachers' questioning techniques.
Methodology: A sequential mixed-methods design was employed. Qualitative data were collected through focus group discussions, collaborative expertise sessions, classroom observations, and field notes, while quantitative data were gathered through a survey checklist.
Results: Findings revealed that teachers effectively integrated the Six Thinking Hats framework into reading activities, which promoted critical thinking, class participation, and learner motivation. Five themes emerged from the qualitative analysis: Engaged Creativity, Enhanced Critical Thinking, Improved Art of Questioning, Active Participation, and Enrichment Training. Quantitative results showed a significant effect on learners' performance, with an overall mean score of 3.97 ("strongly agreed").
Conclusion: The study concludes that the Six Thinking Hats framework is an innovative approach that enhanced pupils' reading comprehension and improved teachers' questioning techniques. By fostering critical thinking and engagement, it contributed to better classroom outcomes, with no non-readers identified at the end of the school year.
Keywords: *Six Thinking Hats, higher order thinking skills, reading enhancement, questioning techniques*

INTRODUCTION

The proximity with which information is shared highlights the rapid pace of events shaping people's lives. Staying informed in this fast-paced digital age is not just a choice but a necessity. As everyone inquires into today's news, it is essential to approach the flood of information with a discerning eye. Teachers must be equipped to guide students in evaluating information, as the evolving landscape of breaking stories demands attention, urging individuals to sift through the noise and seek credible sources. In the aftermath of the COVID-19 pandemic, when "today's news" unfolds on screens rather than books and other reading materials with unprecedented speed, the responsibility to stay informed and critically evaluate the narratives presented becomes paramount. The COVID-19 pandemic had a great impact on education worldwide, which resulted in significant learning losses, particularly in reading (Fine, 2023; Carvajal et al., 2025).

A path forward on the road to revitalizing reading comprehension achievement is needed. Many researchers are interested in addressing the obstacles students encounter in reading comprehension and in implementing solutions that assist learners in overcoming these difficulties. The ultimate goal of reading instruction is to develop the ability to cognitively understand printed words by combining new and prior knowledge. Thinking skills and reading abilities are interconnected, and higher-order thinking skills (HOTS) enhance reading comprehension. In reading, it is important to ask learners a variety of questions, from simple to complex, while considering their levels, the topic of the text, and their thinking styles. This structured approach to questioning guides learners along a specific cognitive pathway (Bontuyan, 2025).

Reading is a fundamental skill in basic education. It enables individuals to find and convey information, making it essential to develop from a very young age. One of the most important strategies in enhancing learners' reading

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ability is the integration of HOTS. Higher-order thinking skills help students form deeper connections with information, think critically, and solve problems. These skills promote creativity and analytical reasoning, equipping learners to make wise decisions. New techniques must therefore be developed to engage learners in reading and transform them into critical, creative, and reflective thinkers. Supervisors are encouraged to motivate teachers to apply innovative questioning strategies such as Edward de Bono's Six Thinking Hats, which enhances learners' ability to respond to higher-level comprehension questions (Main, 2024; Al-Salameen & Abdelrahman, 2023).

Thinking skills are extremely important in all aspects of life. Most educationists believe that the teaching of thinking skills should be a vital goal of education (Kumari, 2022). Developing thinking skills in elementary learners is particularly significant, as it lays the foundation for lifelong learning. Critical thinking is deemed necessary for reading comprehension, and teachers must adopt strategies that improve these skills. The Six Thinking Hats framework provides one such avenue. As noted by Kumari (2022), this strategy enhances parallel thinking, lateral thinking, creativity, and critical reasoning through six metaphorical hats. Each colored hat focuses on a particular type of thinking, enabling learners to approach problems systematically and objectively. This method is both engaging and effective in cultivating multiple forms of thinking (Amihan et al., 2023).

The Six Thinking Hats of Edward de Bono was also tested as an intervention for improving reading comprehension skills among students with learning disabilities, proving to be effective in strengthening critical and creative thinking (Hightower, 2019). Similarly, Karmakar and Chattopadhyay (2024) emphasized its role in cultivating advanced cognitive abilities, including analytical and innovative thinking. Their study highlighted its versatility across disciplines, showing that the Six Hats strategy not only supports subject-specific learning but also promotes autonomy and lifelong learning among students. In a related study, Setyaningtyas and Radia (2019) affirmed that the hats, with their symbolic colors and specific cognitive functions, are powerful tools for training learners in structured thinking.

In 2024, the Department of Education launched "Catch-Up Fridays" through DepEd Memorandum No. 1, series of 2024, which aimed to strengthen the MATATAG Agenda by enhancing learners' skills in reading, values education, and mental health education, among others. This initiative was further expanded in 2025 with DepEd Memorandum No. 008, which emphasized the development of HOTS by linking critical thinking, problem-solving, and decision-making with emotional regulation and interpersonal skills. These policies reflect the continuing efforts of the Department of Education to address learning gaps caused by the pandemic and to promote holistic education. Such initiatives echo the call for sustained quality assurance and educational innovations to prepare learners for the demands of the 21st century (Amihan et al., 2023).

Statement of the Problem

Reading comprehension remains a critical challenge in Philippine basic education, particularly in the post-pandemic era where teachers are expected to address learning gaps through innovative and responsive strategies. While Higher Order Thinking Skills (HOTS) have been recognized as essential for fostering deeper understanding, many teachers continue to struggle with integrating HOTS-based questioning into their reading lessons. In Fernando A. Quisumbing Elementary School, observations revealed that teachers had difficulty formulating questions that promote critical and creative thinking, thereby limiting opportunities for learners to develop strong reading comprehension skills.

The Six Thinking Hats framework developed by Edward de Bono has been used internationally to cultivate cognitive flexibility, creativity, and problem-solving, but its application in the Philippine elementary context, specifically for reading enhancement, has not been widely explored. This gap underscores the need to investigate how this framework can be adapted to improve both teachers' questioning techniques and learners' reading performance. Addressing this problem is significant not only for enhancing the literacy foundation of pupils but also for capacitating teachers with practical tools that align with current educational reforms and DepEd initiatives on learning recovery.

Research Objectives

General Objective

- To examine the use of the Six Thinking Hats framework as an innovative strategy to enhance teachers' questioning techniques and improve learners' reading performance.

Specific Objectives

1. To determine how the Six Thinking Hats framework helps teachers apply Higher Order Thinking Skills (HOTS) in reading instruction.

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2. To assess the effects of the Six Thinking Hats framework on learners' reading performance.
3. To identify and describe the teacher-made reading materials designed using the Six Thinking Hats framework.

Research Questions

1. How does the Six Thinking Hats framework help teachers apply Higher Order Thinking Skills (HOTS) in enhancing learners' reading?
2. What are the significant effects of applying the Six Thinking Hats framework on learners' reading performance?
3. What teacher-made reading materials were designed by teachers using the Six Thinking Hats framework to enhance learners' reading?

METHODS

Research Design

This study employed a sequential exploratory mixed-methods design, beginning with the qualitative phase followed by the quantitative phase. The qualitative findings were used to develop the quantitative instrument, ensuring that the survey reflected the actual experiences and perspectives of the teachers. This design was considered most appropriate as it provided deeper insights into teachers' knowledge and confidence levels, which were then quantified to measure the broader effectiveness of the Six Thinking Hats of Higher Order Thinking Skills (HOTS) in enhancing pupils' reading comprehension. Mixed-method approaches are particularly valuable in education, as they integrate in-depth narratives with measurable patterns, thereby providing a comprehensive perspective on teaching practices (Amihan & Sanchez, 2023).

Population and Sampling

The participants of the study were 14 teachers, consisting of 13 Teachers and 1 Master Teacher from Fernando A. Quisumbing Elementary School, Division of San Pablo City, Laguna, Philippines. They had undergone training through the School Learning Action Cell (SLAC) sessions during School Year 2023–2024 and School Year 2024–2025 on the use of the Six Thinking Hats strategy for reading enhancement. A census method was applied since all teaching personnel of the school were included as participants. The use of a census ensured inclusivity and reliability of results, as it allowed the study to capture the perspectives of all educators in the institution (Pangilinan, 2025).

Instruments

For the qualitative phase, data were gathered using an open-ended questionnaire, classroom observations, field notes, and Focus Group Discussions (FGDs). For the quantitative phase, a self-assessment survey checklist was developed based on the salient themes that emerged from the qualitative findings. This checklist measured the effects of applying the Six Thinking Hats of HOTS in classroom and remedial teaching. The instruments underwent content validation by three experts in education and research to ensure clarity, relevance, and appropriateness. As noted in prior studies, the careful validation of instruments by qualified experts is critical to guarantee the credibility and trustworthiness of data collection (Bontuyan, 2025).

Data Collection

Data were collected in two phases. In the qualitative phase, the teachers answered open-ended questionnaires and participated in FGDs facilitated by the school head. Classroom observations and field notes were also conducted during lesson delivery. Transcriptions of the FGDs and observation notes were prepared for analysis. In the quantitative phase, the validated survey checklist was administered to the same participants to measure their knowledge, confidence, and perceived effectiveness of the Six Thinking Hats strategy. Systematic data gathering across phases allowed triangulation, ensuring that emerging themes were substantiated by quantifiable measures (Carvajal et al., 2025).

Data Analysis

The qualitative data were analyzed using thematic analysis, where transcriptions and field notes were coded, categorized, and clustered into themes. These themes served as the basis for developing the quantitative survey instrument. The quantitative data were analyzed using measures of central tendency to summarize teachers' responses. Integration of findings from both phases allowed the researchers to corroborate qualitative insights with quantitative trends, leading to a more comprehensive understanding of the outcomes. The integration of thematic and statistical

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results further reinforced the robustness of the conclusions, aligning with reflective practices in teacher research (Abenojar et al., 2025).

Ethical Considerations

This study adhered to the provisions of the Data Privacy Act of 2012. Participants' identities were protected by assigning numerical codes during data transcription, analysis, and reporting. Informed consent was obtained from all participants prior to data collection. They were assured of confidentiality, voluntary participation, and the right to withdraw from the study at any time without penalty. All data were treated with utmost care to maintain academic integrity. Ethical responsibility in research is vital in sustaining the trust of participants and ensuring integrity in reporting (Sanchez, 2025).

RESULTS and DISCUSSION

A. Respondents

Table I: The Participant-Respondents

Position	Total Number
Master Teacher	1
Teacher III	6
Teacher II	2
Teacher I	5
TOTAL	14

The table presents the number of respondents based on their positions. All 14 participants in this action research were female teachers from Fernando A. Quisumbing Elementary School.

B. The Six Thinking HATs of HOTS and the Teachers' Perceptions

This section analyzes and interprets the data gathered from participants regarding how the Six Thinking Hats strategy supports the use of Higher-Order Thinking Skills (HOTS) to enhance learners' reading comprehension.

Table II. The Six Thinking HATS and Teachers' Ability to Use HOTS

Code	Category	Theme
The Six Thinking Hats Method helps teachers to become more creative in presenting the activities.	Diverse ways of executing the idea of using 6 HATS of HOTS	Engaged in Creativity
It helps the teacher to train learners to think critically and develop problem-solving skills.	Critical thinking skills and problem-solving skills were developed	Enhanced critical thinking
It helps the teachers to organize and ask questions to pupils that need specific answer/s and insights in each colored HAT.	The art of questioning that encourages deeper insights	Improved art of questioning
It helps driving through the teaching and learning process during class discussion because all pupils are motivated to participate.	Holistic participation of the pupils in class discussion	Engaged participation
The six thinking hats framework is very helpful in constructing questions, the white hat question is the easiest to construct because it just asks about the facts and information of the text, but teachers find difficulty in doing the black hat questions because it seems that it is a negative one.	White Hat question is the easiest to apply but the Black hat question is the most difficult.	Enrichment Training

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The analysis revealed five major themes from the qualitative data: **Engaged in Creativity, Enhanced Critical Thinking, Improved Art of Questioning, Engaged Participation,** and **Enrichment Training.**

Engaged in Creativity. Teachers reported becoming more creative in delivering lessons using the Six Thinking Hats. For example, some used real hats with written questions inside, while others created origami hats, clipart, or cut-out colored hats that aligned with each thinking role. This strategy motivated learners to engage actively with excitement. Vedawal et al. (2024) concluded that the Six Thinking Hats framework is a creative method that effectively supports the development of students' critical thinking skills.

Enhanced Critical Thinking. Teachers emphasized that the method improved their own critical thinking and problem-solving abilities while also training pupils to think critically. Activities based on the Six Hats provided structured opportunities for learners to analyze and evaluate texts. Consistent with these findings, Oktaviani et al. (2024) demonstrated that the Six Thinking Hats model significantly enhances students' critical thinking skills in various subjects.

Improved Art of Questioning. The Six Thinking Hats served as a guide for teachers to construct comprehensive HOTS questions, which led to improved learner performance in reading comprehension. Teachers observed that pupils were able to answer more meaningfully. This finding aligns with Ylarde and Villocino (2025), who revealed that implementing HOTS-based questioning techniques transforms instructional practices into more student-centered and cognitively engaging approaches.

Engaged Participation. Teachers reported that the Six Thinking Hats created a lively classroom atmosphere where pupils were actively engaged and motivated to share ideas. Learners became more confident in expressing thoughts and feelings during discussions. Similarly, Mahoney et al. (2022) emphasized that the Six Thinking Hats strategy promotes collaboration and participation by enabling both general and special education teachers to deliver interactive and engaging lessons.

Enrichment Training. While the method was effective, teachers expressed the need for additional training, especially in constructing Black Hat questions, which were perceived as more challenging. Putri and Dafit (2022) stressed that many teachers initially rely on recall-type questioning, but with consistent training, they can adopt higher-order questioning strategies that enhance critical and analytical skills.

C. The Performance of the Learner in the Application of Six Thinking HATs of HOTS

Table III : The Significant Effects of Six Thinking HATS of HOTS to Learners

Indicators : The Six HATS of HOTS Method of teaching ...	AVE	Verbal Interpretation
1. cultivates a collaborative among pupils in classroom environment.	4	Strongly Agreed
2. a collaborative thinking methodology that simplifies and streamlines the thinking process.	4	Strongly Agreed
3. helps children focused on their assigned colored "thinking hat" and children break down thinking roles among themselves.	4	Strongly Agreed
4. ensures a focus on one mode of thinking at a time of the pupils.	4	Strongly Agreed
5. engages the pupils in parallel thinking, which facilitates a more organized and efficient approach to discussions and decision-making.	4	Strongly Agreed
6. allows groups to switch thinking styles without confrontation, encouraging a positive approach and the exploration of all possible angles of a situation among learners.	3.929	Strongly Agreed

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7. makes class discussions more productive, which harnesses diverse thinking skills, and encourages lateral and critical thinking.	4	Strongly Agreed
8. nurtures well-rounded pupils capable of analyzing problems comprehensively and making informed decisions	4	Strongly Agreed
9. enhances communication, as pupils learn to switch in thinking modes and considers issues from multiple angles.	3.929	Strongly Agreed
10. reinforces the overall development of critical thinking.	4	Strongly Agreed
11. enables pupils to focus on one aspect of thinking at a time.	4	Strongly Agreed
12. significantly simplifies complex discussions and children were able to express their responses with clarity.	3.929	Strongly Agreed
13. enhances their understanding of the content of what they read and develop their critical thinking ability.	4	Strongly Agreed
14. helps children not only stating the facts but actively contributing an aware comprehension of circumstances.	3.929	Strongly Agreed
15. ensures that pupils appreciate all emotional reactions during discussions.	3.929	Strongly Agreed
16. streamlines decision-making by letting the children in looking at issues from various viewpoints in their reading material.	3.929	Strongly Agreed
17. stimulates creative thinking, avoiding boxed thinking among pupils	4	Strongly Agreed
18. prevents dominance of single viewpoints, ensuring a balanced discussion about their reading material.	3.929	Strongly Agreed
19. enhances engagement of pupils in reading and reflective thinking skills.	3.929	Strongly Agreed
20. promotes well-rounded pupils, and positive and collaborative classroom atmosphere.	4	Strongly Agreed
OVER-ALL AVERAGE	**3.971**	Strongly Agreed

Legend: 3.500-4.00 -Strongly Agreed; 3.000-3.499(Agreed); 2.500-2.999(Disagreed); 1.500-2.499 (Strongly Disagreed)

The results indicate that the application of the Six Thinking Hats of HOTS had a significant positive effect on learners' performance. The overall average rating was **3.971** (Strongly Agreed). Of the 20 indicators, 12 received a perfect rating of **4.00**, while 8 indicators received **3.929**. These findings suggest that the Six Thinking Hats methodology cultivated collaboration, simplified complex discussions, encouraged creative and critical thinking, and enhanced comprehension. Teachers from Fernando A. Quisumbing Elementary School effectively applied this strategy from January 2024 to March 2025 to improve learners' reading comprehension.

D. The Teaching Materials Designed by Teachers

Teachers also designed digital stories and video comics, referred to as FAQES All-in-One Digital Stories (FADS), which were integrated with the Six Thinking Hats framework. These materials served as remediation tools and were incorporated into lesson exemplars.

Table IV. The Number of FADS (FAQES All-in-one Digital Stories) with 6 HATS of HOTS

Teacher	Number of FADS	Subjects
Teacher 1	32	Kinder Subjects
Teacher 2	32	Grade 1- Mathematics, Mother Tongue, Reading/Literacy
Teacher 3	27	Grade 1- Mathematics, MAKABANSA, GMRC
Teacher 4	32	Grade 2-Mathematics , Filipino, Araling Panlipunan
Teacher 5	32	Grade 2-Mathematics, Filipino,Araling Panlipunan
Teacher 6	32	Grade 3-Mathematics, ESP, Filipino
Teacher 7	32	Grade 3-Mathematics, Science, English, ESP

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Teacher 8	32	Grade 4 English and Filipino, Grade5 English, GMRC; all with Math Integration
Teacher 9	32	Grade 4 Mathematics, Grade 6 Mathematics, EPP, Grade 4 AP
Teacher 10	32	Grade 4 AP, Grade 5 AP, Grade 6 AP, G5&6 ESP, with Math Integration
Teacher 11	32	Grade 4-6 Science, G4-5 EPP, with Math Integration
Teacher 12	32	Grade 5-6 MAPEH, Grade 6 EPP with Math Integration,
Teacher 13	22	Grade 4 Music, Arts, PE, Health; Grade 6 EPP with Math Integration
Teacher 14	40	Grade 6 English, ESP, Filipino; all with Math Integration
TOTAL	**352**	**All were submitted to LRMDS Coordinator for validation.**

A total of **352 FADS** were developed and submitted to the Division of San Pablo City for evaluation and validation in March 2025. These materials were used during **Catch-Up Fridays** and remedial classes, demonstrating the teachers' commitment to integrating innovative strategies in reading instruction (Tiquis, 2023).

Conclusion

The study concluded that the Six Thinking Hats of HOTS improved teachers' creativity, questioning strategies, and learner engagement in reading comprehension. Learners demonstrated enhanced critical thinking and participation, though constructing Black Hat questions remained a challenge. The integration of teacher-made digital stories further supported comprehension and reduced the number of struggling readers.

Recommendations

1. Teachers may integrate Science, Mathematics, and Language subjects with the Six Thinking Hats framework to reinforce reading comprehension and critical thinking.
2. School administrators may provide enrichment training focused on constructing effective Black Hat questions.
3. Parents may be given resources to reinforce reading skills at home, strengthening school–home partnerships.
4. Future research may explore the combined effects of the Six Thinking Hats and digital stories in cross-disciplinary reading enhancement.

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