
Effectiveness of Higher Order Thinking Skills (HOTS) to the Performance of Grade 4 Pupils in Reading Comprehension

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ABSTRACT

In reading comprehension, applying critical thinking in reading activities is crucial aspect to develop the pupils' capability in catching the sense of the passages read. Critical reading is not the same as the other kinds of reading like skimming or scanning the text, but rather using the higher order thinking skills. Higher order thinking skills (HOTS) play an important role in developing and improving the reading comprehension of the pupils. Hence, this study was formulated to evaluate the effectiveness of higher order thinking skills (HOTS) to the performance of Grade 4 pupils in reading comprehension skills. Utilizing a 20-item researcher-made reading comprehension test emphasizing the inclusion of HOTS questions administered to the Grade 4 pupils before and after the integration of higher order thinking skills in teaching reading comprehension. Simple percentage and t-test of mean difference were the statistical tools used to interpret the result of the study. The study revealed a significant difference in the performances of Grade 4 pupils before and after the integration of higher order thinking skills in teaching reading comprehension. The higher order thinking skills through the art of questioning of the teacher in developing the competencies in reading comprehension stimulated the pupils to be able to understand the content of the text and in the application of critical thinking skills in arriving at the correct answers to the questions based on the passages presented. By using higher order thinking skills, pupils can think creatively and critically. The pupils can activate their prior knowledge, apply their higher-level thinking, and enhance their interest and participation in the learning and teaching process. Thus, making the intervention effective strategy to improve the reading performance of the pupils.

Keywords — Effectiveness, Higher Order Thinking Skills, Performance, Grade 4 Pupils, Reading Comprehension

I. INTRODUCTION

Education plays a significant role in improving the quality of life of every individual. It provides knowledge, skills, attitudes, and experiences which enable people to gain success and prosperity. Idris et al. (2012) mentioned that education brings huge impact in creating economic wealth, social prosperity, and political stability. With the massive impact that education offers, it is undeniable that education is expected to support the government's effort in preparing young generations to face the recent development of every country.

In fact, in Philippine education system, the government has provided free basic education to all Filipino children. Government state colleges and universities also offer free college education. Some government organizations offer

scholarship programs for deserving students who can help improve society. The efforts that the Philippine government provided to the people must be treasured in preparing young generation battle the challenges that the world is given.

In preparing young generation in this century, education requires students to master several skills that are formulated under the name 21st century skills which cover the skills of critical thinking and problem solving, creativity and innovation, collaboration, question formulation, global awareness, communication skills, and technology skills (Harvard Advanced Leadership Initiative, 2014). These skills are widely acknowledged as the provision to deal with the current global challenges. Thus, it is no wonder that 21st century skills are included in many educational policies most especially in the Philippines.

Developing reading comprehension skills among pupils poses lots of challenges. The reason of having literacy issues among pupils in the school as it was revealed in the first two months of the opening of the current school year. Reading comprehension is the goal when teaching the child to read. After all, when a child struggles with comprehension, reading can be a miserable chore. There are some pre-requisite skills for learning reading comprehension skills. These are decoding skills, fluency, vocabulary, and background knowledge. But even when these foundation skills are present, reading comprehension is not necessarily automatic. Some important strategies may still be required, and one of these is through developing higher order thinking skills (HOTS).

The implementation of higher order thinking skills (HOTS) in the classroom would be beneficial for both the pupils and teachers as well. Applying the critical thinking in reading activity is such a very important aspect to develop the pupils' capability in catching the sense of the text to enable them to understand the concepts conveyed in it.

It was observed in the class that even simple questions about the story or text read, pupils found difficulties on it. Teachers must provide varied activities and reading materials to help the pupils fully understand the text. Knowing the alternative strategy or approach in teaching reading comprehension skills, developing higher order thinking skills (HOTS) is one of them. HOTS strategies usually required for those who want to develop their thinking skills. Therefore, good readers need higher order thinking strategies to think of, and direct their perception before, during and after reading the passages. Beneath all, pupils need to acquire the HOTS strategy to improve their abilities in thinking process instead of thinking simply of the passage they read.

Teaching critical thinking and thinking critically are strongly emphasized in all areas of life today. Critical thinking is one of the most important academic skills in the learning process. It involves the incorporation of 4Cs aspects in reading: communication, collaboration, critical thinking, and creativity. The education system recognizes the importance of these four aspects, including communication and critical thinking. The schools also emphasized the integration of more advanced thinking skills and literacy aspects to offset the demand for 4C. Therefore, critical thinking is not just for college students but for all grade levels even in elementary. Currently, we are emphasizing and encouraging elementary and junior high school, and high school students (Ariani, 2020) to adopt and implement higher order thinking skills in teaching reading comprehension skills.

Thus, it is in this premise that the researcher decided to conduct this study to evaluate the effectiveness of higher order thinking skills (HOTS) to the performance of Grade 4 pupils in reading comprehension skills. A proposed improvement plan was formulated based on the findings of the study.

It is in the rationale that the researcher who is currently a grade 4 teacher in the above mentioned local, would like to delve worthy research undertaking that will benefit herself, the school she is currently teaching and that of her Graduate Program she is enrolled at.

This study evaluates the effectiveness of higher order thinking skills (HOTS) to the performance of Grade 4 pupils in reading comprehension skills in Mas-In Integrated School, Ormoc District IX, Ormoc city Division for School Year 2023-2024. The findings of the study were the basis for the proposed improvement plan.

Specifically, this study sought to answer the following questions:

1. What is the performance of the Grade 4 pupils in reading comprehension before the integration of higher order thinking skills (HOTS)?
2. What is the performance of the Grade 4 pupils in reading comprehension after the integration of higher order thinking skills (HOTS)?
3. Is there a significant difference in the performances of the Grade 4 pupils in reading comprehension before and after the integration of higher order thinking skills (HOTS)?
4. What improvement plan can be proposed based on the findings of this study?

II. METHODOLOGY

Design. This study employed the quasi-experimental research design utilizing the pre-test and post-test to evaluate the effectiveness of higher order thinking skills (HOTS) to the performance of Grade 4 pupils in reading comprehension skills. Mas-In Integrated School, Ormoc District IX, Ormoc city Division is the main locale of the study. The 26 Grade 4 pupils enrolled in the said locale for School Year 2023-2024 are the main respondents of the study. A 20-item researcher-made reading comprehension test emphasizing the inclusion of HOTS questions were administered to the Grade 4 pupils before and after the integration of higher order thinking skills in teaching reading comprehension. Moreover, the researcher also prepared lesson plans integrating the higher order thinking skills questions in the reading comprehension passages presented. The researcher utilizes the 2nd quarter Most Essential Learning Competencies (MELCs) in English. The researcher formulated differentiated activities which developed the higher order thinking skills of the pupils. The materials crafted were submitted to the District Coordinator and Quality Assurance Team for evaluation, validation, and adjustments before it was utilized by the learners in the classroom. This research focused on evaluating the effectiveness of higher order thinking skills (HOTS) to the performance of Grade 4 pupils in reading comprehension skills through the pre-test and post-test and its significant difference. A Proposed Improvement Plan based on the findings of the study is the output.

Sampling. There are 26 Grade 4 pupils involved in this study. The research instruments were administered face-to-face with consent from the Local IATF and strictly following the prescribed Health Protocol during the face-to-face classes.

Research Procedure. The researcher prepared the research design and tools utilized in the study. Approval and recommendation from the Panel of Examiner of the Graduate Studies was sought. A letter request to conduct this study was forwarded to the Office of the Schools Division Superintendent. Upon approval, permission from the District Supervisor and School Head was secured before the actual gathering of data. Orientation of the participants and administration of the pre-test was done face-to-face after the approval of the permit from the parents of the respondents. Data privacy was emphasized also in the meeting. After accomplishing the pre-test, intervention was given within four weeks. The implementation of higher order thinking skills in improving the reading comprehension skills of Grade 4 pupils was emphasized in the study. After the four-week intervention, the post-test was administered. Results of the tests were collected. Data were tallied and submitted for statistical treatment. Analysis and Interpretation of Data. Making of Proposed Improvement Plan followed.

Ethical Issues. The researcher properly secured the permission to conduct the study from the authorities through written communication. In the formulation of the intervention materials that was used in the study, the use of offensive, discriminatory, or other unacceptable language was avoided. The respondents' names and other personal data were not included in this study to protect their privacy. Participation of the respondents was also voluntary. Orientation was conducted for the respondents with their parents. In the orientation, issues and concerns were addressed and consent to be included in the study were signed. The researcher-maintained objectivity in analyzing and discussing the results. All authors whose works were mentioned in this study were properly quoted and were acknowledged in the reference.

Treatment of Data. Simple Percentage was employed to evaluate the performances of the grade 4 pupils in reading comprehension before and after the integration of higher order thinking skills in teaching. **t-Test of Mean Difference** was used to determine the significant difference in the performances of the grade 4 pupils in reading comprehension before and after the integration of higher order thinking skills in teaching.

III. RESULTS AND DISCUSSION

TABLE 1

PERFORMANCE OF GRADE 4 PUPILS IN READING COMPREHENSION BEFORE THE INTERVENTION

Score Range	Description	PRETEST	
		Frequency	%
17-20	Excellent	0	0
13-16	Very Good	2	8
9-12	Good	3	12
5-8	Fair	4	15
0-4	Poor	17	65
Total		26	100
Weighted Mean		5.55	Fair

Table 1 presents the performance of Grade 4 pupils in reading comprehension before the integration of higher order thinking skills. It was revealed on the table that among the 26 Grade 4 pupils tested, 17 or 65% got a score of 0-4 which is interpreted as poor. This means that these pupils are struggling in reading comprehension. They lack the technique and knowledge to understand the text they are reading. They are the pupils who are considered frustrated readers. They can decode words but cannot comprehend. This implies support and guidance from the teacher through the formulation of intervention activities. Reading comprehension is one of the most crucial abilities in teaching and learning. Students will be unable to comprehend the lesson if they are unable to read and comprehend the material. Students should be taught to read critically and reading methods should be highlighted. To have a meaningful reading experience, students must engage in higher-order cognitive processes (Freakhat & Smadi, 2014) hence, integration of higher order thinking skills is the intervention formulated to address the poor performance of the Grade 4 pupils.

Moreover, the table shows that 4 or 15% of the Grade 4 pupils got a score of 5-8 which is interpreted as fair before the integration of higher order thinking skills in reading comprehension lessons. This means that these pupils have limited understanding of the passages read. The pupils with fair performance in reading comprehension skills can grasp the literal meaning of the text and the competencies are identifying characters, events, and basic plots of the story. This implies

remembering the level of reading comprehension is attained by these group of pupils, hence, more activities will be provided to the pupils and teachers must be patient enough in teaching reading comprehension skills utilizing the higher order thinking questions. According to Williams, Pollini Nubla-King, Snyder, Garcia, Ordynans, Atkins, & Graesser, (2014), children should be taught comprehension skills from the very beginning of their educational careers so that a foundation is solidly established upon which children are able to build as they become fluent decoders.

Further, the data also shows that 3 or 12% of the Grade 4 pupils tested got a score of 9-12 which is interpreted as good. This means that the pupils possess the ability to understand and grasp the explicit information presented in the text. It involves basic comprehension skills like identifying the main ideas, understanding details, and making straightforward inferences. Hence, this result implies appropriate intervention activities to be provided to the pupils and teaching comprehension skills must be a regular activity of the teacher in his/her day-to-day activities. The integration of higher order thinking skills must be introduce to the pupils while learning the reading comprehension skills. According to Thamrin, Widodo & Margana (2018), as the reading comprehension, applying the critical thinking in reading activity is such very important aspect to develop the students' capability in catching the sense of the text. Critical reading is not the same as the other kinds of reading like skimming or scanning the text, but rather using the higher thinking skills. This is the useful strategy to the information placement and enhance a general feel of the subject. Anyhow, it usually found in narrower reading material.

Additionally, the data shows that among the 26 Grade 4 pupils tested, 2 or 8% got a score of 13-16 which is interpreted as very good before the integration of higher order thinking skills in teaching reading comprehension. This means that the pupils excel in grasping main ideas, comprehending details, and making insightful inferences within the scope of the presented information. This implies a high level of proficiency in understanding and interpreting the explicit content of a text despite that higher order thinking skills were not yet introduced.

Finally, the data shows that the performance of the Grade 4 pupils in reading comprehension before the integration of higher order thinking skills got an average weighted mean of 5.55 which is interpreted as poor. This means that most of the Grade 4 pupils have difficulty in understanding and extracting meaning from the text. They are struggling with the basic skills in reading comprehension such as identifying the main ideas, grasping the details in the story, and the meaning of words used in the story. Hence, the result of the pre-test performance implies to provide interactive learning activities through the integration of higher order thinking questions aside from the basic skills in learning reading comprehension skills. Pupils must be taught to answer higher order thinking skills at an early age through the art of questioning of the teacher or the parents. Educators must not wait until the pupils learn to read fluently before teaching the reading comprehension skills. It has been shown that waiting until children are fluent readers to teach comprehension will affect the child's progress in comprehension (Dickey, 2018; Dolean et al, 2021; Dooley, 2010; Paris, 2003). Children should be taught comprehension skills from the very beginning of their educational careers so that a foundation is solidly established upon which children are able to build as they become fluent decoders (Dooley, 2010; Williams, Pollini Nubla-King, Snyder, Garcia, Ordynans, Atkins, & Graesser, 2014).

TABLE 2
**PERFORMANCE OF GRADE 4 PUPILS IN READING COMPREHENSION
 AFTER THE INTERVENTION**

Score Range	Description	POST TEST	
		Frequency	%
17-20	Excellent	4	15
13-16	Very Good	5	19
9-12	Good	8	31
5-8	Fair	8	31
1-4	Poor	1	4
Total		26	100
Weighted Mean		13.09	Very Good

Table 2 presents the performance of Grade 4 pupils in reading comprehension after the integration of higher order thinking skills. It was revealed on the table that among the 26 Grade 4 pupils tested, 1 or 4% got a score of 1-4 which is interpreted as poor. This means that this child was not able to achieve the desired competency level because aside from having difficulty in understanding the context of the passages read, he also has difficulty in decoding complex words. This implies further learning and infusion of intervention activities. The teacher must design an intervention which is suited to the learning ability of the child.

Moreover, it was also revealed on the table that 8 or 31% got a score of 5-8 which is fair after the integration of higher order thinking skills. This means that these learners had started grasping the details of the story and started to answer simple HOTS questions. The teacher must exert more efforts in crafting developmental activities which focus on the development of the critical thinking of the pupils. The result of the study implies further intervention which are suited to the needs of the pupils.

Further, it was shown on the table that 8 or 31% got a score of 9-12 in reading comprehension after the integration of higher order thinking skills and this is interpreted as good. This means that these are the pupils who achieved not only the ability to understand the text but also engaged in advanced cognitive processes in reading comprehension skills. This implies a strong foundation in basic reading skills, enabling the pupils to apply the higher order thinking skills in understanding the text read.

Additionally, the data shows the performance of Grade 4 pupils after the integration of higher order thinking skills as shown on the table that 5 or 19% got a score of 13-16 which is interpreted as very good. Very good reading comprehension performance after the integration of higher order thinking skills means that these pupils possess exceptional ability to not only grasp the content but also allows the pupils to engaged in advance cognitive processes such as critical analysis, creative synthesis, and insightful evaluation of information with a high degree of proficiency. This implies that integration of higher order thinking skills in teaching reading comprehension is effective through the art of questioning of the teacher and the reading materials provided to them. After the integration of HOTS in the lesson, change of behavior or attitude of the pupils towards reading has change and they started to love reading and develop the habit of reading.

Finally, the table shows that 4 or 15% of the Grade 4 pupils in reading comprehension test got a score of 17-20 which is interpreted as excellent after the integration of higher order thinking skills. This means that the integration of

higher order thinking skills has influenced the pupils to achieve exceptionally in their reading performance. From the art of questioning of the teacher, their critical thinking was developed, and they learn to analyze and synthesize the information and details of the story making them able to understand fully the lessons conveyed in the story read.

With these, the performance of the Grade 4 pupils in reading comprehension attained a very good rating after the integration of higher order thinking skills with a weighted average of 13.09. Even though there are pupils who scored lower as expected for the implementer still lacks knowledge in the formulation of HOTS questions. Despite those challenges, the result is still very good. From the integration of higher order thinking skills, pupils' level of understanding, interpretation, and application of complex concepts is achieved whereby improved reading comprehension is reached. According to Heong et al (2011), teachers should develop students' higher order thinking skills required to think broadly to discover a new challenge. HOTS allows someone to apply new knowledge and information to be able to respond in a new condition. Brookhart (2010) states that HOTS is conceived as the top end of Bloom's cognitive taxonomy. Being able to think means students can implement the skill and knowledge they develop during their learning of a new topic. Limbach & Waugh (2010) propose five steps to develop the ability to think critically, namely determining the learning objective of reading class, teaching through questioning, ordering students to practice, reviewing refining and improving understanding, and practicing feedback and assessing learning. All these five steps should be integrated to optimize critical thinking.

TABLE 3

TEST OF DIFFERENCE BETWEEN THE SCORES IN THE PERFORMANCES OF GRADE 4 PUPILS IN READING COMPREHENSION BEFORE AND AFTER THE INTERVENTION

Aspects	Test Scores		Computed T	Critical T	Decision	Interpretation
Grade 4 Pupils in Reading Comprehension	Pre	5.55	1.764	0.423	Reject H ₀	Significant
	Post	13.09				

Table 3 presents the test of difference in the performances of the Grade 4 pupils in reading comprehension before and after the integration of higher order thinking skills. It was revealed on the table that the performance of the Grade 4 pupils in reading comprehension before the integration of higher order thinking skills got a weighted mean of 5.55 which increases to 13.09 in the post-test. From that data, it resulted to 1.764 computed value of t which is greater than the critical value of t of 0.423, so null hypothesis is rejected. This means that there is a significant difference in the performances of Grade 4 pupils before and after the integration of higher order thinking skills in teaching reading comprehension skills. The higher order thinking skills through the art of questioning of the teachers in developing the competencies in reading comprehension stimulated the pupils to be able to understand the content of the text and in the application of critical thinking skills in arriving at the correct answers to the questions based on the passages presented. By using higher order thinking skills, pupils can think creatively and critically. The pupils can activate their prior knowledge, apply their higher-level thinking, and enhance their interest and participation in the learning and teaching process. Thus, making the intervention effective strategy to improve the reading performance of the pupils. This finding is in line with the result of study done by Acosta (2010) who also used higher order thinking skills in teaching reading. He found that by using higher order thinking skills, his students could activate their prior knowledge, apply their higher-level of thinking, and enhance their interest and participation in the learning and teaching process. Furthermore, another previous study

conducted by Sheif (2013) also obtained similar findings. She states that there was a significant difference in her students' ability in reading comprehension after they were taught higher order thinking skills. Further, Samelian (2017) states that higher-order questions and critical thinking can improve understanding and support students in high-level thinking to strengthen their comprehension of reading.

IV. CONCLUSION

The study revealed a significant difference in the performances of Grade 4 pupils before and after the integration of higher order thinking skills in teaching reading comprehension. The higher order thinking skills through the art of questioning of the teacher in developing the competencies in reading comprehension stimulated the pupils to be able to understand the content of the text and in the application of critical thinking skills in arriving at the correct answers to the questions based on the passages presented. By using higher order thinking skills, pupils can think creatively and critically. The pupils can activate their prior knowledge, apply their higher-level thinking, and enhance their interest and participation in the learning and teaching process. Thus, making the intervention effective strategy to improve the reading performance of the pupils.

V. RECOMMENDATIONS

1. Utilize the proposed improvement plan formulated.
2. Teachers must see to it that learning objectives is presented to the pupils to make them aware of the competencies learned.
3. School Heads must develop professional development activities for teachers especially in the integration of higher order thinking skills in teaching reading comprehension.
4. School Heads must encourage teachers to craft higher order thinking questions and administer such to the pupils to have the data for improvement and analysis.
5. Teachers must use discussions to train pupils to carry out the text analysis procedures with their peers.
6. Teachers must provide feedback to the pupils and invite pupils to review, refine, and improve understanding of the text read.
7. School Heads must regularly assess the performance of the pupils to have the data for appropriate intervention to be provided to the pupils, and
8. Future researchers should replicate this study to include different locales and include different variables aside from the mentioned in this study.

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