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Level of Cognitive Domains Among Junior High School Students, University of Bohol, Tagbilaran City

MICHELLE I. ESTO*[1]
Graduate School, Junior High School, University of Bohol,
Tagbilaran City, Philippines
ORCID https://orcid.org/0009-0009-9995-7999

Corresponding Author: estomichelle923@gmail.com

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ABSTRACT

Enhancing students' reading comprehension is a pivotal aspect of their academic development. This study focused on assessing the cognitive domain levels among Grades 7, 8, and 9 Junior High School students during the 2020-2021 academic year at the University of Bohol, with a sample size of 212 participants. Employing a descriptive survey design, a researcher-developed questionnaire served as the primary tool to gauge the cognitive domain proficiency of these students. Utilizing a random sampling technique ensured an unbiased selection of participants across the specified grades. The findings revealed that the majority of respondents exhibited a commendable level of reading comprehension. However, the study unveiled noteworthy disparities in mean scores between lower and higher-order cognitive domains among the participants. Furthermore, 52.83% (112 out of 212) of the students reported having diverse general references at home. The research employed a quantitative-descriptive-correlational method. Spearman rho analysis demonstrated a significant correlation ($p < 0.05$) between various levels of the cognitive domain, shedding light on the interconnected nature of these skills. These results provide crucial insights for educators and policymakers, emphasizing the necessity for targeted interventions aimed at enhancing higher-order thinking skills. Aligning with global literacy goals, this research underscores

the importance of addressing cognitive disparities to foster a more comprehensive approach to reading comprehension education.

INTRODUCTION

Reading is an essential tool for students in learning. It is a complex mental process of not only making and getting the meaning but also interpreting symbols drawn from the written text. It is the third of the four macro language skills every student must improve and need to master. Moreover, reading is a need in all subject areas. It serves as a key for each student to learn the various subjects because when a student has difficulty in reading, he may also encounter problems in all subject areas.

Despite the modifications in education and the programs done to improve the quality of the basic schools in the country, the Philippines got a low ranking in the triennial international assessment. The latest Programme for International Student Assessment (PISA) 2018 revealed that the Philippines scored the lowest in reading comprehension and the second-lowest in mathematics and science (OECD, 2018). With the low-ranking results, the Department of Education stressed the urgency of addressing the issues and gaps in attaining quality primary education after the Philippines' low ranking in PISA.

The researcher, an English teacher, is alarmed by the students' poor performance in reading comprehension. The researcher is further interested in determining the reading comprehension level of the students at the University of Bohol Junior High School using the Levels of Cognitive Domain of Revised Bloom's Taxonomy. The data obtained from this study will serve as the basis for formulating a proposed reading program to improve students' reading comprehension levels.

The researcher perceives the need to conduct this research as the basis for designing and creating a Proposed Reading Program, which will be used as a possible solution to the existing problem and put an even sharper focus on the students' reading comprehension.

Related Literature. Reading is understanding. Although understanding has different ways (e.g., comprehension, meaning-making), success with this language process requires that one fully comprehends the message expressed, interprets between and beyond the lines of text, and constructs personal meaning in the text (e.g., elaborating and extending). Those terms, although their interchangeable use could arguably be debated based on semantic differences, will be used in this discussion since they are all used in the literature when describing the same outcome (Shea, 2017).

Reading with understanding requires attention to aspects of the micro and macro processes and all thinking levels. Readers need to initially acquire facts to work with — as grist for engaging in more profound meaning-making levels. The former literal level on the taxonomy is expressed as a verb (i.e.,

remembering) rather than knowledge; the revisions recognize that this thinking involves cognitive processes (Anderson & Krathwol, 2009).
Using Bloom's Revised Taxonomy will give teachers and educators a standard, well-recognized classification system for one's immediate goals. It should also be helpful for guiding instruction and curriculum guidelines generated by their present work (Anderson & Krathwol, 2009). Bloom's Revised Taxonomy defines classifying teaching, learning, and assessing the cognitive dimension of thought. It is central to instruction concerning work in reading comprehension as an aspect of literacy assessment that differs from most current reading comprehension measures.

Related Studies. Hayikaleng (2016) studied Thai students' reading comprehension levels for lower-order thinking skills and higher-order thinking skills questions. The findings indicated that Thai students' mean scores for overall achievement in comprehension are only at an average level. The paired sample t-test suggests that students' mean scores for LOTS questions are significantly higher than for HOTS questions.

Choudhary (2014), in his study, Improving the Teaching-Learning Process using Bloom's Taxonomy and Correlation Analysis. It revealed that those students who scored lower marks in the understanding level also scored lower marks in the creating level. It means that there is a positive correlation between these two levels or there is a statistically significant correlation between understanding and creating levels. Students whose understanding level is good are also good at creating level, and students who are weak in understanding are also weak at creating level. Further, students who get good marks in remembering level also score good marks in evaluating level.

Paz (2018) conducted a study on Reading Comprehension Levels in English among Grade 7 Students at Caraga State University and found that there was no significant relationship between the participants' profile and factors of reading toward their reading comprehension level.

Some studies proved the difference in the reading performance of males and females. Cabardo (2015), in his research on the Reading Proficiency Level of Students: Basis for Reading Intervention Program, stated that the majority of males are less proficient in reading compared to females in both quiet and oral interpretation.

Lazarus (2020), in his study, Socio-Demographic Factors Affecting Reading Comprehension Achievement Among Secondary School Students with Learning Disabilities, showed a significant difference in reading comprehension achievement between male and female students with learning disabilities. It also disclosed that there was no significant observable difference in the reading comprehension achievement of learners with learning disabilities in public and private schools.

This study tried to determine the level of cognitive domain among the Grades 7, 8, and 9 Junior High School students of the University of Bohol school

year 2020 – 2021. The findings of the study served as a basis for proposing a reading program.

Specifically, the researcher sought to answer the following questions:

1. What is the level of cognitive domain as reflected in the results of the different reading texts in the aspects of:

1.1 remembering;
1.2 understanding;
1.3 applying;
1.4 analyzing;
1.5 evaluating; and,
1.6 creating?

2. What type of reading materials are available at home according to the following book classification:

2.1 general references;
2.2 philosophy;
2.3 religion;
2.4 social sciences;
2.5 language;
2.6 natural science;
2.7 technology and applied science;
2.8 fine arts;
2.9 literature;
2.10 history and biography; and,
2.11 textbooks?

3. Is there a significant correlation between any two levels of the cognitive domain in the reading comprehension level of the students?
4. Based on the findings, what reading program could be proposed?

METHODOLOGY

A quantitative-descriptive-correlational design was employed, utilizing a researcher-developed questionnaire as the primary tool to assess students' cognitive domain levels. Random sampling was utilized, selecting Grade seven, eight, and nine students from the University of Bohol – Junior High School during the school year 2020 – 2021. The questionnaire, divided into two parts, gathered data on respondents' profiles and assessed their reading comprehension across five selections: short story, myth, scientific text, letters, and news article, comprising a total of 150 items.

Phase 1 involved obtaining necessary permissions from the Dean of

the Graduate School, UB Vice-President for Academics, and UB – Junior High School. Phase 2 comprised communication with respondents via group chats, calls, or text messages, with online learners completing the questionnaire through Google Forms while offline learners received printed questionnaires. Data collection spanned five days. In Phase 3, the researcher collated and analyzed data, ensuring a high retrieval percentage. Ethical considerations were addressed with an ethics review, permissions from relevant authorities informed consent from parents or guardians for respondents aged below 18, and assent forms from the respondents. Confidentiality was maintained, and data were anonymized.

The normality assumption was rejected at a 0.05 significance level, indicating non-normally distributed variables. Consequently, nonparametric tests were employed. Statistical tools included the Chi-Square test for assessing the relationship between student profiles and reading comprehension, Spearman's rho for correlating reading comprehension across cognitive domains.

RESULTS AND DISCUSSION

Respondents' Level of Cognitive Domain. In terms of remembering, the majority of respondents demonstrated Very Good Reading Comprehension (VGRC), comprising 84.43%, while 12.27% exhibited Good Reading Comprehension (GRC). Notably, none of the students received a score of 5 or below, indicating a complete absence of Very Poor Reading Comprehension (VPRC). The mean score for the remembering domain was 22.47, interpreted as VGRC. An analysis of individual scores revealed that 72.64% scored above the mean, whereas 27.36% scored below.

Moving to the understanding domain, a significant majority showcased Very Good Reading Comprehension (VGRC) at 57.55%, with an additional 32.55% achieving Good Reading Comprehension (GRC). Similar to the remembering domain, none of the students received scores of 5 or below (VPRC). The understanding domain's mean score was 20.15, indicating GRC. A closer examination of individual scores revealed that 66.98% scored above the mean, while 33.02% scored below.

Regarding the application domain, the majority reached Good Reading Comprehension (GRC) at 49.06%, while 37.26% attained Fair Reading Comprehension (FRC). A minimal 0.47% received a Very Poor Reading Comprehension (VPRC) score. The mean score for the applying domain was 15.58, interpreted as FRC. An analysis of individual scores showed that 67.92% scored above the mean, whereas 32.08% scored below.

Results further elucidate the analyzing domain, where most respondents demonstrated Good Reading Comprehension (GRC) at 46.70%, with an additional 42.45% achieving Fair Reading Comprehension (FRC). Consistent with previous findings, none of the students earned scores of 5 or below (VPRC). The mean score for the analyzing domain was 15.32, interpreted as FRC. An examination of individual scores indicated that 64.15% scored above the mean,

while 35.85% scored below.

In the evaluating domain, the findings disclosed that a majority attained Good Reading Comprehension (GRC) at 51.89%, while 35.85% secured Fair Reading Comprehension (FRC). Similar to previous domains, no student earned a score of 5 or below (VPRC). The evaluating domain's mean score was 16.16, interpreted as GRC. An analysis of individual scores showed that 59.43% scored above the mean, while 40.57% scored below.

Turning to the creating domain, the majority of respondents demonstrated Fair Reading Comprehension (FRC) at 62.74%, with an additional 22.17% achieving Good Reading Comprehension (GRC). Notably, no student received a score of 21-25 or Very Good Reading Comprehension (VGRC). The mean score for the creating domain was 13.40, interpreted as FRC. An examination of individual scores revealed that 63.21% scored above the mean, while 36.79% scored below.

In consideration of the overall cognitive domain, the majority of respondents exhibited Good Reading Comprehension (GRC) at 75.47%, while 15.56% demonstrated Fair Reading Comprehension (FRC). Notably, no student obtained a score of 30 and below or Very Poor Reading Comprehension (VPRC). The overall mean score was 103.07, interpreted as GRC, with 65.09% scoring above the mean and 38.21% scoring below. This implies that respondents' mean scores in remembering, understanding, and evaluating domains are significantly higher than the mean scores in applying, analyzing, and creating domains or the higher-order thinking skills questions.

These findings align with Hayikaleng's (2016) study on Thai Students' Reading Comprehension levels for lower-order thinking Skills and higher-order thinking Skills Questions. The study indicates that Thai students' mean scores for overall comprehension are at an average level. The paired sample t-test suggests that students' mean scores for Lower lower-order thinking Skills (LOTS) questions are significantly higher than for higher-order thinking Skills (HOTS) questions.

Type of Reading Materials Available at Home. Findings indicate that 52.83% of respondents (112 out of 212) possess general references at home, encompassing encyclopedias, magazines, journals, and newspapers. Notably, only 8.02% (17 out of 212) have philosophy books, while 67.45% (143 out of 212) have religious texts like the Bible. Additionally, 10.85% (23 out of 212) have social science books, 66.98% (142 out of 212) have language books, and 25.00% (53 out of 212) have natural science books.

Furthermore, 18.40% (39 out of 212) own technology and applied sciences books, 17.92% (38 out of 212) have fine arts books, and 18.87% (40 out of 212) possess literature books. History and biography books are found in 22.17% (47 out of 212) of homes, while 66.51% (141 out of 212) have textbooks.

The majority have religious books, suggesting diverse reading materials at home, potentially influenced by school-provided learning resources. This

finding aligns with Krashen (2004), who asserts that increased access to books promotes literacy and development, emphasizing the significance of shared reading activities in enhancing vocabulary and language understanding.

Table 1. Spearman Rank Correlation Tests among the six levels of Cognitive Domains
n = 212

Variables	Statistical Test Value	p-value	Decision	Interpretation
Remembering and Understanding	0.579	$p < 0.05$	Reject the null hypothesis	There is a significant correlation between remembering and understanding domains.
Remembering and Applying	0.480	$p < 0.05$	Reject the null hypothesis	There is a significant correlation between remembering and applying domains.
Remembering and Analyzing	0.480	$p < 0.05$	Reject the null hypothesis	There is a significant correlation between remembering and analyzing domains.
Remembering and Evaluating	0.481	$p < 0.05$	Reject the null hypothesis	There is a significant correlation between remembering and evaluating domains.
Remembering and Creating	0.316	$p < 0.05$	Reject the null hypothesis	There is a significant correlation between remembering and creating domains.
Understanding and Applying	0.490	$p < 0.05$	Reject the null hypothesis	There is a significant correlation between understanding and applying domains.
Understanding and Analyzing	0.529	$p < 0.05$	Reject the null hypothesis	There is a significant correlation between understanding and analyzing domains.
Understanding and Evaluating	0.545	$p < 0.05$	Reject the null hypothesis	There is a significant correlation between understanding and evaluating domains.
Understanding and Creating	0.300	$p < 0.05$	Reject the null hypothesis	There is a significant correlation between understanding and creating domains.

Applying and Analyzing	0.537	$p < 0.05$	Reject the null hypothesis	There is a significant correlation between applying and analyzing domains.
Applying and Evaluating	0.509	$p < 0.05$	Reject the null hypothesis	There is a significant correlation between applying and evaluating domains.
Applying and Creating	0.310	$p < 0.05$	Reject the null hypothesis	There is a significant correlation between applying and creating domains.
Analyzing and Evaluating	0.473	$p < 0.05$	Reject the null hypothesis	There is a significant correlation between analyzing and evaluating domains.
Analyzing and Creating	0.350	$p < 0.05$	Reject the null hypothesis	There is a significant correlation between analyzing and creating domains.
Evaluating and Creating	0.323	$p < 0.05$	Reject the null hypothesis	There is a significant correlation between evaluating and creating domains.

Results revealed that the correlation between any two of the levels of the cognitive domain using Spearman's rho, where the computed p-value in all variables is less than 0.05, is interpreted as "significant." This result leads to the rejection of the null hypothesis, which means that there is a significant degree of correlation between any two of the levels of the cognitive domains. It implies that those respondents who have high scores in remembering have high scores in understanding, and those who got a low score in remembering also have low scores in understanding.

The result is in line with Choudhary's (2014) study, Improving the Teaching-Learning Process using Bloom's Taxonomy and Correlation Analysis. It revealed that those students who scored lower marks in the understanding level also scored lower marks in the creating level. It means that there is a positive correlation between these two levels or there is a statistically significant correlation between understanding and creating levels. Students whose understanding level is good are also good at creating level, and students who need to improve in understanding are also weak at creating level. Further, students who get good marks in remembering level also score good marks in evaluating level.

CONCLUSIONS

The research indicates strong reading comprehension levels among respondents, with the majority demonstrating Very Good Reading Comprehension (VGRC) in remembering, understanding, and evaluating domains. The application and creating domains predominantly reflect Good and Fair Reading Comprehension (GRC, FRC). No instances of Very Poor Reading Comprehension (VPRC) were observed across domains. The overall cognitive domain scores reveal a significant disparity, with VGRC, GRC, and FRC dominating over lower-order thinking skills.

The availability of diverse reading materials at home is evident, with a notable emphasis on religious texts. Furthermore, Spearman's rho analysis establishes significant correlations between cognitive domains, supporting the rejection of the null hypothesis. This implies a consistent pattern where high scores in one domain correspond to high scores in others and vice versa. The study's findings resonate with previous research on Thai students' reading comprehension levels. The mean scores align with an average comprehension level, with lower-order thinking skills outperforming higher-order thinking skills (Tamrackitkun, 2010).

RECOMMENDATIONS

Based on the previous findings and conclusions of the study, the researcher offers the following relevant recommendations.

1. To sustain the desired reading comprehension level in remembering, understanding, and evaluating domains, teachers handling English shall continue to practice questions during discussions and assessments that test lower thinking skills so with assessing.
2. English teachers shall craft learning activities and provide reading exercises that would allow students to maximize the development of higher-order thinking skills and improve reading comprehension in applying, analyzing, and creating domains.
3. The principal shall organize in-service training that revisits the current teaching practices and student learning outcomes while devising more strategies to improve reading comprehension.
4. Teachers shall keep abreast of the latest trends in teaching pedagogies by attending webinars and workshops, particularly on test construction, teaching strategies, and the art of questioning.
5. Textbooks, examination papers, and thought-provoking questions during discussions and class activities should increase the use of higher-level cognitive domain questions since they promote critical thinking and can improve reading comprehension.
6. The teachers shall assess the reading comprehension level of the students

by providing an appropriate and reliable reading program that helps students improve, most especially those who have fair and poor reading comprehension levels.

7. The students shall actively involve themselves in the conduct of reading programs purposely designed for them, most especially those with fair and poor reading comprehension levels.
8. Parents shall monitor their children's reading comprehension. They shall be supportive of the school's reading program to help their children achieve a very good reading comprehension level.
9. Future researchers may conduct further studies that use and evaluate the implementation of the reading program.

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