A DEEPER UNDERSTANDING ON THE JUNIOR HIGH STUDENTS' COGNITIVE ABILITY AND CRITICAL THINKING SKILLS

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ABSTRACT

This paper aimed to find out the cognitive ability as well as the correlation between the teachers' teaching performance with the students' critical thinking skills. This was participated by 372 Junior High school students from selected secondary schools in the Division of Zamboanga City, Philippines. Standardized instruments were used to gather data as basis for the answering the research questions. The result on the National Achievement Test (NAT) was also utilized to determine the level of the cognitive and critical thinking skills of the students. Ethical consideration was also done to ensure that respondents' rights were not violated during the data gathering and all through-out the research process. The result reveal that students have not achieved mastery in all subject areas covered in the National Achievement Test. It can be deduced from the result that there is no significant relationship between the dimensions of teachers' performance and the performance of the students in the National Achievement test in critical thinking. Hence, this paper recommends for the alignment of hands-on training and seminars related to the enhancement on the teaching of the core subjects and intensifying the teaching on the least learned topics on the core subjects.

Keywords: *National Achievement Test, cognitive ability, critical thinking skills, teachers' teaching performance,*

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INTRODUCTION

According to McGue and Bouchard (1998) cognitive ability is one of the primarily explored topics in the field of behavioral genetics. Other sources have described it as having "general intelligence," which is essential for human survival and adaptability. Plomin (1990) defined cognitive ability as having the ability to address problems, comprehend complex data, generate ideas, prepare, analyze, grasp information quickly, and learn from experiences. Human mental capacity is the ability of a person to analyze a circumstance, to ponder what is required, and to plan a course of action, rather simply recalling or imitating.

In most cases, students' cognitive ability of the students is often correlated to the ability of the teachers to develop the students' holistic skill or the school performance as whole. That is why, different forms of school evaluations are being conducted by the Department of Education for the purpose of looking into the abilities of teachers, students and even the school programs that were implemented.

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The National Achievement Test (NAT), which measures learners' knowledge, skills, and learning capabilities or abilities, can be used to evaluate school performance. A yearly test called NAT is used to gauge the proficiency of pupils in both public and private schools. The NAT results serve as a reference for policymakers as they develop plans for student advancement and promotion, particularly in the public education system. These will also reveal the shortcomings of kids who require additional help. As DepEd has emphasized, NAT is only a small component of DepEd's overall evaluation of the educational system. The results of this indicator will support them in creating effective interventions with the goal of improving the educational system.

Batigas et al claimed that educators are unquestionably regarded as one of the most important individuals in the education system. They are expected to carry out a variety of important responsibilities that will help mold the youth into contributing members of the community. As a result, they are crucial elements for learning. The book of Bilbao, Corpuz, Llagas, and Salandanan (2006) emphasizes how crucial teachers' passion and attention to their jobs are. According to this notion, their fieldwork performance should be evaluated to determine whether it is high or low. However, several things may have an impact on how well they work. Additionally, it is highlighted that productive classrooms are linked to improved student development and results. Effective and outstanding performance of educators, along with several other factors, are thought to contribute to teachers' effectiveness (Holley et.al., 2019; Kane et.al., 2011; Pitogo and Ecle, 2021).

Given that there is ongoing support for teachers' professional development, it is also important to emphasize that DepEd is paying attention to how students' critical thinking is developing, as there is a strong correlation between the two in many studies. In accordance with a 2015 article by Watanabe-Crockett, critical thinking is the capacity to reason in order to develop an analysis, an evaluation, and a conclusion regarding a problem. It is crucial for students to learn and to critically think. Children need to be competent critical thinkers to handle the various complex situations they may encounter in the future. Critical thinking also promotes curiosity and aids in kids' problem-solving abilities since students who can think critically tend to be instinctive problem solvers. These are just a handful of the key causes for developing critical thinking abilities.

It is in this premise that the researchers were very interested to look into students' cognitive ability and critical thinking skills and look into the teachers' teaching performance which may influence these skills.

RESEARCH QUESTIONS

1. What is the students' cognitive ability as shown in their score in the National Achievement Test?

2. Is there a significant relationship on the level of teachers' performance and the Students' critical thinking skills?

RELATED LITERATURE AND STUDIES

Teachers' teaching performance has been very notable as a widely- researched topic around the globe. In the Philippines, Verceles and Rivera (2010) as cited in Nochefranca (2022) conducted a study on faculty teaching performance profile of Don Mariano Marcos

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Memorial State University – College of Education. The results indicated that the faculty has a very satisfactory performance. In addition, they found out that gender and educational attainment did not affect their teaching performance. Relevant to this, Campos (2013) conducted a study on the organizational climate and teachers' performance among faculty members of State Universities and Colleges in Zamboanga City. The survey questionnaire was used in gathering data. The findings indicated that the faculty members of SUCs have excellent in their job performance in organizing lessons and in communication but they only have very satisfactory performance in questioning techniques and routine classroom activities.

Even the would-be coaches, their readiness to their main tasks has also need to be assessed in the formative years. Jimeno (2019) noted in her study that coaches were generally found to be ready when it comes to sports injuries prevention for their athletes, as computed from the overall means of their ratings under three indicators namely, (a) periodization, (b) nutrition, and (c) first aid. Findings also reveal the coaches' broad use of four (4) communication strategies in regulating the emotions of their athletes aimed to prevent sports injuries with psychological antecedents, although their use of each strategy varied in extent. However, it was noted that "Cognitive Change" is the least used communication strategy by the coaches.

Eyo (2013) on the other hand, look into the instructional leadership of school principals and teachers' teaching performance in Sta. Maria District. The respondents were the randomly selected teachers. The data were analyzed using weighted mean, standard deviation and Pearson Product Moment Correlation Coefficient. The findings indicated that elementary school teachers were excellent in organization of lessons and routine classroom activities and very satisfactory in communication and questioning techniques. Gamez (2013) made a study on the organizational climate and teaching performance of teachers in Putik District. The respondents were randomly selected teachers. The data were analyzed using weighted mean, standard deviation and Pearson Product Moment Correlation Coefficient. The findings indicated that teachers had very satisfactory performance as manifested in their Performance Appraisal System for Teachers.

Aside from the teachers' teaching performance, researchers are also looking into the students' cognitive ability. In order to properly assess the said ability, the Department of Education annually conducts the National Achievement Test (NAT) in the quest to evaluate the level of achievement of the students in the elementary and secondary level among the public schools. Sangalang (2017) studied on the other related factors do not affect the NAT performance of schools in Araling Panlipunan. Based on the summary of the findings, the participants' schools did not perform well in the 2012-2015 National Achievement Test (NAT). Most of them are placed in the bottom half of the rankings and did not meet the passing rate of 75%. The same result was noted in the study of Saavedra (2020) wherein the low level of NAT result specifically in English was hypothesized to might have been influenced by their poor reading skill in English. The students poor reading comprehension in English was hypothesized to be a factor in their low performance in the NAT.

Aside from the reading skill, Saavedra & Barredo (2020) also noted the poor writing skill

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of the elementary pupils which was contributed by different factors such as brought by The data revealed that there are five factors that language teachers considered to have influenced the poor English and Filipino writing skills of the elementary pupils. Based on their experiences and observations while teaching writing to the pupils, the following was recorded: 1) lack of vocabulary in the target language; 2) difficulty in conveying and organising ideas; 3) pupils' perception that writing is a hard task; 4) lack of motivation and interest in writing; and 5) the difficulty in spelling, grammar and sentence construction are the reasons why many elementary pupils have poor writing skills in English and Filipino.

Students' cognitive development is always linked to their skill in critical thinking. Although developing students' critical thinking skill takes quite time, but it is better to start on their earlier years (Martinez, 2022). According to Wulandari et al. (2021) higher level performance in the classroom is linked to critical thinking. Critical thinking is the capacity to reason logically and realistically, which helps one grasp concepts and approach situations in the right way. Chikiwa and Schäfer (2018) claim that critical thinking can help students to discover new things and to become more efficient in addressing challenging problems. Learning mathematics helps children build their capacity for rational, logical, and critical thought because it has a systematic format and is very simple to comprehend in terms of its function (Aizikovitsh & Amit, 2011).

According to Muhlisin et al. (2016), the traditional classroom teaching approach is to blame for many students' lack of critical thinking abilities. Education of future teachers is significantly more strategic than teaching current teachers since it is difficult to change the mindset and behavior of present educators, so they may learn to think critically (As'ari et al., 2017). (Prahmana et al., 2012). This suggests that teaching future teachers to think critically is a wiser course of action (As'ari et al., 2017). Problem-based learning, according to Rusmansyah et al. (2019), is a significant role in the development of pre-service teachers' critical thinking abilities (PBL). It is an effective instructional approach that gives pupils chances to develop their critical thinking skills. PBL pushes students to address real-world problems in contexts that are information-rich where they should decide on a solution that will result in the most beneficial experience, such as methodologies, processes, and epistemology (Yazar, 2015).

Sandal, Saavedra, Madrazo, & Ramos (2022) emphasized the importance of motivation in every teaching endeavor. In their study conducted during the pandemic, it was stressed out that despite the challenges encountered by the students brought by the COVID 19 pandemic, students still acquire learning despite on their socio-economic status. Aside from reviving the intrinsic motivation among the students, many studies also recommend that students must be exposed and engaged in technology-assisted teaching-learning strategies. This was found out to be effective in developing mastery among the students as well as on their critical thinking skill (Saavedra, 2018 & Saavedra, 2020)

METHODOLOGY

This paper aimed to find out the cognitive ability as well as the correlation between the teachers' teaching performance with the students' critical thinking skills. Junior

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High school students from selected secondary schools in the Division of Zamboanga City voluntarily participated in this study. The performance of teachers was gauged using the survey questionnaires while the students' cognitive ability and their critical thinking skills were taken from their scores in the National Achievement Test. Standardized instruments were used to gather data as basis for the answering the research questions. Ethical consideration was also done to ensure that respondents' rights were not violated during the data gathering and all through-out the research process. There were 372 Grade 10 students who took part in this study.

RESULTS AND DISCUSSIONS

On the Students' Cognitive Ability as Shown in Their National Achievement Test Scores

Table 1. presents the data analysis on students' performance in the National Achievement Test (NAT) in the different subject areas such as, Filipino, Math, English, Science, Araling Panlipunan and Critical Thinking. This shows the results that were obtained from selected students in public schools who took the NAT in 2013 in the different subject areas such as, Filipino, Math, English, Science, Araling Panlipunan and Critical Thinking. The performance of the students in the National Achievement Test is described as follows: 96 and above = full mastery, 91 – 95 = nearly full mastery, 86 – 90 = mastery, 81 – 85 = near mastery, 75 – 80 = low mastery and 74 and below = no mastery.

The same table indicates that the performance of the students in the National Achievement Test is described as no mastery since their mean across all areas taken individually is 74 and below. It implies that students have not achieved mastery in all subject areas covered in the National Achievement Test. Students need to strive very hard to achieve the minimum competency level of 75. Similarly, teachers have to enhance their teaching competence so that they can carry out their teaching tasks effectively.

Furthermore, the table reveals that the students obtained the highest mean in Araling Panlipunan (57.01), followed in English (55.05) and Math (52.70). On the other hand, they achieved the lowest mean score in Critical Thinking (43.98), followed in Science (49.07) and Filipino (52.42). Based on their standard deviations, the students manifested a large variation in their performance in Math (20.82) followed in Science (14.69); however, a small variation is seen in their NAT performance in Filipino (7.75), and English (11.27). The study suggests that students vary in their performances in Math. They were students who obtained very high scores in the test while some achieved very low scores in the same subject. On the other hand, students manifested similar performances in Filipino. It can be inferred that students across all schools have similar level of knowledge content in Filipino. This result is supported by previous study that the NAT performance of the students is described as no mastery (Lai, 2007).

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Table 1. Students' Performance in the National Achievement Test

Subject Area	Mean	Sd	Description
Filipino	52.42	7.75	No mastery
Math	52.70	20.82	No mastery
English	55.05	11.27	No mastery
Science	49.07	14.69	No mastery
Aralin Panlipunan	57.01	11.67	No mastery
Critical Thinking	43.98	10.82	No mastery

On the Relationship of the Level Of Teachers' Performance and the Students' Critical Thinking Skills

Table 2. indicates that a low relationship exists between the dimensions of teachers' performance taken collectively and students' performance on the National Achievement Test in Critical Thinking as shown in the coefficient r (r = 0.191). The coefficient of determination (r^2 = 0.036) implies that only 3.6% of the variance of the students' performance in the National Achievement Test in Critical Thinking is explained by the dimensions of teachers' performance taken collectively. It can be deduced that 96.4% of the factors which contributed to the students' performance in the National Achievement Test in Critical Thinking is not discussed in this study. The F –Obs with the p-Value greater than the alpha level (p-Value>.05) suggests that there is no significant relationship between the dimensions of teachers' performance and the performance of the students in the National Achievement test in critical thinking.

When the dimensions of the teachers' performance were taken individually, not one significantly influences students' performance in the National Achievement Test in Critical Thinking as indicated in the p-Value which are all greater than the alpha level (p-Values>.05).

Table 2. Influence of Teachers' Performance on National Achievement Test in Critical Thinking

Independent	R	r^2	F-Obs	p-Value	t-Obs	p-Value	Interpretation
Lesson Planning and Delivery	.191(a)	.036	.864	.606(a)	.212	.832	Not Significant
Assessment					-1.436	.152	Not Significant
Management of Time and Learning Environment					.934	.351	Not Significant
Learner's Achievement					-.537	.592	Not Significant
School – Home and Community involvement					-.312	.755	Not Significant
Decisiveness					-.362	.718	Not Significant
Honesty/Integrity					.474	.636	Not Significant
Dedication/Commitment					-.083	.934	Not Significant
Initiative/Resourcefulness					1.232	.219	Not Significant

Courtesy	.761	.447	Not Significant
Human Relations	-1.200	.231	Not Significant
Leadership	2.187	.029	Significant
Stress Tolerance	-1.842	.066	Not Significant
Fairness/Justice	.685	.494	Not Significant
Proper Attire/Good Grooming	-.439	.661	Not Significant

CONCLUSION AND RECOMMENDATION

This study found out that students' cognitive ability as shown in the result of the National Achievement Test (NAT) is described as no mastery since their mean across all areas taken individually is 74 and below. It implies that students have not achieved mastery in all subject areas covered in the National Achievement Test. It can be deduced from the result that there is no significant relationship between the dimensions of teachers' performance and the performance of the students in the National Achievement test in critical thinking. In the light of the findings, this study recommends on the alignment of hands-on training and seminars related to the enhancement on the teaching of the core subjects .School administrators, teachers and stakeholders should work together in designing programs and related activities that will contribute to the improvement of NAT results in the future and teachers are encouraged to focus on the least learned topics on the core subjects.

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