Intelligence Quotient and Academic Performance of Grade 7 Students: A Correlation Study

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ABSTRACT: Cognitive intelligence, often quantified as intelligence quotient (IQ), encompasses a range of mental capabilities including reasoning, problem-solving, and abstract thinking, which are critical for academic success. This study investigates the intricate relationship between IQ and academic performance, particularly among Grade 7 students in the School Year 2023-2024. Utilizing a quantitative descriptive research design, the study analyzed the academic records and admission test results of 199 students, employing the OLSAT Level F as a standardized measure of cognitive ability. The findings indicate a concerning trend, with a majority of students scoring below average on the OLSAT, highlighting significant areas for academic improvement. Furthermore, a notable correlation was observed between school type, general academic averages, and academic awards with OLSAT scores, suggesting that the educational environment and recognition of achievements significantly influence student performance. Interestingly, no significant differences in academic outcomes based on gender were found, emphasizing the need for equitable educational opportunities. The study recommends targeted interventions to support students struggling academically, focusing on enhancing critical thinking and problem-solving skills. Additionally, a comprehensive review of educational policies and practices is necessary to foster a nurturing learning environment for all students. By addressing these areas, educators and policymakers can work towards improving academic outcomes and ensuring that all students reach their full potential.

KEYWORDS: Academic performance, Correlation, Grade 7, Intelligence quotient, OLSAT.

INTRODUCTION

Cognitive or intelligence quotient (IQ) is defined as a general mental capability involving reasoning, problem-solving, planning, abstract thinking, complex idea comprehension like reading and vocabulary, and learning from experience. Academic performance is considered an important achievement for students during the educational process in the university. (Mappadang et al.,2022). Many societies use tests to determine an individual's intelligence level. A student's academic performance is the main criterion today.

According to a recent study, there is a significant correlation between IQ and performance in school, implying that those with higher IQs typically perform better academically (Deary, Strand, Smith, & Fernandes, 2022). As a result, IQ assessments can be used to predict the academic success trajectory from childhood into early adulthood.

A study conducted by PISA (2022), with 690,000 participants from 81 countries, the Philippines' performance in the three subjects "was about the same" as in 2018 when it first took part in the assessment. For the subjects of reading comprehension, math, and science. the 2022 assessment, the Philippines ranked sixth to last in reading and mathematics while in science, it ranked third to last among 81 countries.

The purpose of this study is to examine the multifaceted relationship between academic performance and IQ, drawing on recent research and theoretical frameworks, as well as practical implications for educational policy and practice.

METHODS

Quantitative descriptive research design was employed in this study. This design is deemed appropriate because it provides a detailed and accurate picture of the characteristics and behaviours of a particular population or subject (Sirisilla, 2023 as cited by Bigcas, 2024). The participants of this study were all Grade 7 students who are currently enrolled in the S.Y 2023-2024. The previous academic records of the students before their admission in Grade 7 were utilized as the basis for their academic performance. Whereas the test result of their admission test was utilized for this study.

In this study, OLSAT level F was utilized as a research questionnaire, which was given to children in 6th through 8th grades, especially those entering private schools, gifted schools, or other advanced placement programs. Also, this test may be used to identify areas of academic weakness. Frequency Count and Percentage Distribution, mean and standard deviation, Pearson r correlation coefficient and independent samples t-test were used in analyzing the data gathered.

RESULTS AND DISCUSSION

A. Profile of the Participants

Table I. Profile of the Participants

Profile Variables	Frequency	Percent
Sex		
Male	94	47.24
Female	105	52.76
School Type		
Public	71	35.68
Private	128	64.32
General Average		
Satisfactory (80-84)	11	5.53
Very Satisfactory (85-89)	67	33.67
Outstanding (90-100)	121	60.80
Academic Award		
None	88	44.22
With honors	100	50.25
With high honors	11	5.53

Table 1 presents the profile of the participants. As to the sex, 105 (52.76%) are females while 94 (47.24%) are males. As to school type, 128 (64.32%) are from private schools while 71 (35.68%) are from public schools. As to the general average, 121 (60.80%) are outstanding, 67 (33.67%) are very satisfactory, and 11 (5.53%) are satisfactory performers. As to the academic awards, 100 (50.25%) are with honors, 88 (44.22%) did not receive an academic award and 11 (5.53%) are with high honors.

B. OLSAT Level F Results

Table II. OLSAT Level F Results

OLSAT Level F	Frequency	Percent
Below Average	144	72.36
Average	51	25.63
Above Average	4	2.01

Table 2 presents the OLSAT Level F Results of the students. Based on the table, 144 (72.36%) got below average rating, 51 (25.63%) got average rating while 4 (2.01%) got an above average rating. There is a clear indication of a disparity in cognitive performance among students. This trend is supported by recent research, such as Plucker, Makel, and Rambo-Hernandez (2021), which demonstrates that socioeconomic status, access to educational resources, and quality of instruction significantly influence cognitive test scores, often leading to lower performance among under-resourced students. Similarly, Card and Giuliano (2020) found that differences in access to enrichment activities and preparatory resources are substantial factors contributing to lower test scores among disadvantaged students. These findings suggest that socioeconomic and educational inequalities are likely contributing to the high percentage of students scoring below average, highlighting the need for targeted interventions to improve cognitive outcomes and ensure equitable access to educational resources.

C. Relationship between the Profile variables and OLSAT levels

Table III. Relationship between the Profile variables and OLSAT levels

Profile	Level	r	p-value	Decision	Interpretation
School Type	OLSAT F	-0.19	0.007	Reject H$_o$	Relationship is significant
General Average		0.27	0.000	Reject H$_o$	Relationship is significant
Academic Award		0.23	0.001	Reject H$_o$	Relationship is significant

Table 3 shows that there is a statistically significant correlation (r= -0.19, p = 0.007) between school type and OLSAT scores. his negative correlation suggests that as one variable changes, the other tends to move in the opposite direction. Specifically, it indicates that students from different types of schools may perform differently on the OLSAT, with the nature of the school type potentially influencing their scores. The significance level, indicated by the p-value of 0.007, confirms that this relationship is unlikely to be due to random chance, suggesting a meaningful association that warrants further investigation. This is in line with recent research conducted by Agbofa, F. J. K. (2023). which highlighted that private school students often have higher academic performance. The differences in outcomes were attributed to varying levels of parental involvement, school resources, and teacher qualifications.

It is also shown in the table that there is a significant correlation between the learner's general average and the OLSAT level (r=0.27, p-value-0.000). This positive correlation suggests that as a student's general average increases, their OLSAT scores also tend to rise, reflecting a consistent relationship between overall academic performance and aptitude as measured by the OLSAT. The strength of this correlation, indicated by the moderate value of 0.27, implies that while there is a notable association, other factors may also influence OLSAT performance. The extremely low p-value of 0.000 further underscores the statistical significance of this finding, indicating that the likelihood of this correlation occurring by chance is virtually nonexistent.

It is also presented that a significant correlation exists between the academic awards received and the learner's OLSAT level (r=0.23, p-value=0.001). This positive correlation suggests that students who receive more academic awards tend to achieve higher scores on the OLSAT, reflecting a relationship between recognition of academic excellence and cognitive ability as assessed by the test. Recent research supports this finding by highlighting the importance of academic recognition in fostering student motivation and performance. For instance, a study published in the International Journal of Humanities and Social Science found that students who received awards or recognition for their academic achievements exhibited higher levels of motivation, which in turn positively influenced their academic performance (Dzulkifli & Alias, 2012). Additionally, research in the Asia Pacific Journal of Maritime Education emphasizes that recognition of academic success can enhance students' self-efficacy, leading to improved performance in standardized assessments (Atienza et al., 2017 as cited by Laurezo & Magallanes, 2020).

D. Difference in the general average, academic award received and OLSAT level when grouped according to sex

Table IV. Difference in the general average, academic award received and OLSAT level when grouped according to sex

Dependent	t	p-value	Decision	Interpretation
Gen. Average	1.38	0.241	Do not reject H$_o$	Difference is not significant
Academic Award	1.24	0.267	Do not reject H$_o$	Difference is not significant
OLSAT F	0.28	0.597	Do not reject H$_o$	Difference is not significant

As presented in Table 4, there is no significant difference in the learner's general average when grouped according to sex (t = 1.38, p = 0.241). This implies that overall academic achievement varies for male and female students. These results are corroborated by recent research, conducted by Tsaousis & Alghamdi, 2022 where they found no significant differences in general academic ability between sexes.

The results also show that there is no statistically significant difference in the academic awards when grouped according to sex (t = 1.24, p = 0.267). This suggests that the probability for male and female students to be recognized academically through awards or honors is equivalent. The sex gap in academic achievement and recognition is decreasing, according to recent research (Tsaousis & Alghamdi, 2022b).

The analysis also finds no statistically significant difference in OLSAT F scores based on sex (t = 0.28, p = 0.597). This suggests that male and female students perform similarly in cognitive assessments or academic testing. Recent research supports these findings, highlighting converging performance between sexes in cognitive domains (Hyde, J. S.,2019).

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings gathered, it is hereby concluded that there is a concerning trend in OLSAT Level F results, with a significant majority of students scoring below average, indicating potential areas for academic improvement. Additionally, the significant correlations between school type, general average, and academic awards with OLSAT scores suggest that both the educational environment and recognition of achievements play crucial roles in student performance.

Moreover, the lack of significant differences in academic outcomes based on sex underscores the need for continued efforts to ensure equitable educational opportunities for all students, regardless of gender. This highlights the importance of addressing any disparities in educational experiences to promote fair and inclusive learning environments.

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