Learning Amidst Pandemic: A Correlation Study on the Relationship of the Students' Cognitive Skill and Gender

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Abstract

The COVID-19 pandemic caused unprecedented global disruption. When we reflect on the past two years and the severe effects of the pandemic that continues to this day, it is clear that education was one of the most affected sectors. Both the general public and educational establishments were ill-prepared to accept the sudden shift to various platforms. Empirical evidence on the impact of COVID-19-related school closures on academic achievement has been the recent trend in the field of academic research. The present work aimed to determine the level of cognitive skill of Junior High school students in one of the public schools in the Philippines. Employing a quantitative descriptive correlational design, respondents were also chosen using total enumeration sampling. Results indicate that the students are satisfactory in terms of their academic performances. Moreover, a very weak relationship exists between their cognitive skill and their gender where males and LGBTQ were found to be different from each other.

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Introduction

The COVID-19 pandemic was a serious problem all over the world that made people's lives miserable. It has affected nearly 1.6 billion students in over 200 countries, causing the largest disruption of education systems in human history. More than 94% of all students worldwide have been affected by school and other educational closures. In fact, the world has been stressful for everyone, and the virus outbreak has made education difficult. All aspects of our lives have been drastically altered as a result. Traditional educational practices have been significantly disrupted by policies that restrict movement and social distance. With numerous new standard operating procedures implemented, reopening schools following restriction relaxation presents another obstacle.

According to Haig et al., (2020), school closures are regarded as one of the most effective strategies for halting the virus's spread a large number of educators and researchers voiced concerns regarding the impact of COVID-19-related school closures on student achievement and learning disparities. For instance, Woessmann (2020) estimated that school closures related to COVID-19 would have a negative impact on student achievement of 0.10 standard deviation. Students struggled to remain engaged and connected with their teachers and peers online, parents struggled to balance work demands with the responsibility of ensuring their children were accessing instruction from home, and school leaders and teachers rushed to completely redesign their educational delivery models.

The impact of the COVID-19 pandemic on student learning has been the subject of numerous studies. Byrnes et al., (2020) for instance revealed that the COVID-19 pandemic has impacted students' learning in higher education in a negative way, causing significant changes in almost all aspects of society. Pokhrel (2021) further identified accessibility, affordability, adaptability, learning pedagogy, lifelong learning, and educational policy are additional obstacles to e-learning (Murgatrotd, 2020). Access to digital devices and a reliable internet connection are major issues in many nations. Online education runs the risk of increasing the amount of time spent in front of a screen for the student, although many economically disadvantaged children in developing nations cannot afford online learning devices. As a result, students must now participate in offline activities and self-exploration learning. Due to the fact that both parents work, a further obstacle arises from the lack of parental guidance, particularly for young learners.

Because of the synonymous scenario in most of the schools, Parojenog et. al (2022) have conducted a study on the coping mechanisms of the Senior High School learners in addressing the concerns in the use of the blended learning modality during the COVID-19 pandemic. Their study revealed that most of the students were able to cope with the academic challenges brought by the pandemic through the help of their family and friends. The aid of technology also came to the rescue especially that it was hard for them to understand the lessons that were only discuss using the modules.

On the other hand, some studies indicate that in comparison to in-person learning, the significance of online education is lower (Thai et al., 2020; Widodo et al., 2020; Berga et al., 2021). Abbasi et.al (2020) stated that face-to-face learning was preferred by the majority of Pakistani students over online instruction. According to their study, 86% of respondents believed that students' learning in higher education is little affected by online instruction. Additionally, this study found that the lack of practical teaching aspects caused by limitations rendered the online learning experience uninteresting.

In addition to the issue of internet connectivity, numerous studies have examined the relationship between gender and students' learning and cognitive abilities. Gender is one of the factors mentioned in the literature to have a significant impact on students' academic performance, according to Joseph (2015)'s study. The range of physical, biological, mental, and behavioral characteristics that distinguish the feminine and masculine (female and male) populations is referred to as this. The social and cultural differences between girls and boys are the primary reason why gender-based performance evaluation is so crucial. Furthermore, gender differences in achievement have been the subject of extensive research for some time (Osakwe (1991); Mordi (1992); Umeoduagu (1995); Jack & Johannes (2001); Mustafa, Khan & Fabunmi (2004); Adeyemi & Ajibade (2011); Akinsola (2007), Nenty (2010), Dania (2014); etc.). In various Journal of Education and Practice subjects, some of these researchers found no significant gender difference in students' academic achievement or retention, while others found significant differences, with either boys or girls performing better.

However, it is also interesting to note that there are students who still learn amidst pandemic. Like in the case of the Junior High School

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secondary language- specialized students, Sandal et. al (2022), noted that the students were highly motivated to learn English language though online teaching. The study likewise concluded that socio-economic status and their gender did not have a significant difference in terms on the level of their motivation.

Relative to the recent observations and literature, it is also interesting to revisit the cognitive skills of Junior High school students during the pandemic and investigate further if even after the advent of the pandemic if gender still affects the way students' learn.

Related Literature and Studies

Effect of the COVID-19 Pandemic to Students' Learning

Not only did a lot of researchers want to know how the COVID-19 pandemic affected people's health, but they also wanted to know how students learned. One of them is Noori (2021), who he looked into how the COVID-19 pandemic affected how students learned in Afghanistan's higher education. During the COVID-19 pandemic, the students did not receive consistent online instruction, according to the study. It also revealed that the COVID-19 pandemic had a devastating impact on the education of students in Afghanistan's higher education institutions. In addition, the qualitative findings revealed that the students had issues utilizing the internet and technological resources for their education. They also suggested that the Ministry of Higher Education develop and implement a practical online platform that is free and accessible to students with poor internet connections due to the fact that some of the students live in areas where the internet speed is extremely slow.

The Whitly, et al. (2021) study came to the same conclusion about the same result. Educational, social, and environmental factors have been identified as contributing to the vulnerability of many Canadian youth and children. Physical distance, school closures, and cuts to community-based services are just a few of the COVID-19-imposed changes that have the potential to weaken the support systems these children need to learn and grow. As cracks in our support systems are revealed, the disparities in educational outcomes that vulnerable children experienced prior to the pandemic have been significantly exacerbated. During the pandemic, many children and adolescents experienced disengagement, persistent problems with attendance, declines in academic achievement, and decreased credit attainment, with the effects being much more severe for those already at risk.

Throughout the pandemic, global organizations like UNICEF and UNESCO have also expressed concern about the negative impact on child education caused by the estimated 1.5 billion students worldwide impacted by school closures (Gustafsson 2021; UNESCO 2021). They assert that many children worldwide lack access to high-quality education, making the health crisis rapidly transform into a child rights crisis. Recent research on COVID-19 raises concerns about increased absenteeism, poor literacy and math outcomes, and the possibility of long-term educational disengagement, dropout, and lifelong reductions in educational and vocational attainment for students who live and learn in vulnerable circumstances (Andrabi et al. 2020; Engzell et al. 2021).

However, it is also good to note that other students had a positive perception towards their learning amidst pandemic. Alejandro, Saavedra, & Espinosa, (2022) stated in their

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study that social sciences students perceived themselves to have a high level of competence in doing research. Nochefranca et. al (2022) also mentioned the significance of understanding on the junior high students' cognitive ability and critical thinking as the core skills in doing research.

On the Relationship between Gender and Learning

Gender differences in educational performance have been the subject of numerous studies (Udousoro 2011; Jansen 2004; Bruinsma 2003). Gender is more than just the distinction between the sexes (Okeke 2003); instead, it can be thought of as a psychological term used to describe people's behavior and characteristics based on whether they were born male or female (Umoh 2003). Eggens et. al., (2008) identified gender as a factor in academic achievement alongside other demographic variables.

Men and women generally tend to communicate differently, in addition to differences in comfort levels. Linguistic constructions are regarded as indicators of an individual's identity due to the significance of these distinctions (Ochs, 1993).According to (Arbaugh, 2000, Blum 1999, Xu & Jaggers, 2013), males and females may communicate very differently via online communications, such as those required in online courses to varying degrees. Online education and internet-based communication are generally viewed as a cost-effective option by men. Their communications 5 are typically more competitive, leading to systems in which some are ranked higher than others, limiting their access to discussion forum posts and reducing their participation (Arbaugh, 2000; Xu & Jaggers, 2013). Additionally, some studies have suggested that women may actually prefer online education due to the fact that online instruction is more collaborative and encourages more sharing and interaction than traditional classroom settings (Blum, 1999).

The gender of computer science students in New Bussa, Borgu local government, Niger state, was also found to be related to academic performance in Joseph's (2015) study. Even though male students performed slightly better than female students, the difference was not significant, according to the study's findings. The private school that was found to have the best male brains in the study area was found to have this better performance. Furthermore, Olukanye (2015) used a multinomial logistic regression model to investigate the effects of gender, admission method, parental higher institutional status, family home status, and campus residential status on students' academic performance. The finding demonstrated that gender and the method of admission have a significant impact on performance levels, and that male students are more likely to perform well than female students. Additionally, students who live on campus typically perform better than those who live off campus. However, considering that some studies have demonstrated a correlation between gender and academic performance (Adeneye and Adeleye, 2011;), the decision to touch gender performance in academics is not conclusive whereas Abiam and Odok (2006) found no correlation between gender and academic performance in some studies. Gender is taken into account as a predictor in this study to see if it is a significant factor, as this issue has not been resolved.

Research Questions

1. What is the level of cognitive skill of the Junior High School students during the pandemic?
2. Is there a significant relationship on the level of students' cognitive skill and their gender?
3. Is there a significant difference on the level of students' cognitive skill and when data are grouped according to their gender?

Methodology

This study is centered on Junior secondary school students in one of the public schools in the Division of Zamboanga City. The study employed quantitative descriptive correlational as indicated in the study's objectives. Data were obtained using the average grade of the students during the school year 2021-2022 where their grades were obtained during their blended learning modality. A Total of 208 Junior high school students freely participated with the consent of their parents and class advisers. This study utilized the demographic profile which indicates the gender and grades of the students as the bases for answering the research questions. Total enumeration sampling was also appropriately used in order to represent the whole population. Descriptive statistics were also used in the interpretation of the data subjecting to the use of the SPSS. In consideration of the ethical protocols, before the conduct of the study, an online orientation was conducted among the students, their parents, and advisers in order to disseminate the objectives and significance of the study. DepEd Order no. 8 series of 2015 was also the grading system or the rubric that served as the basis of the data interpretation.

Results and Discussions

On the Academic Performance of students in Junior High in the Pandemic

Table 1. shows the academic performance of students in Junior High school. The 208 Junior High school students got an overall mean of 81.22. Based on the DepEd Order no. 8, series of 2015, the students' level of cognitive skill is satisfactory. This means that the Junior High school students consistently meet expectations where they routinely meet grade-level standards. Their cognitive skills are applied independently or with minimal assistance. This level of achievement is developmentally appropriate.

Table 1. Academic Performance of students in Junior High in the Pandemic

Academic Performance mean Score	Adjectival Interpretation
81.22	Satisfactory

(Deped Order no. 8 s. 2015)
90-100 Outstanding; 85-89 Very Satisfactory; 80-84 Satisfactory; 75-79 Needs Improvement; 74 below; did not meet the expectation

On the Relationship between the Level of Students' Cognitive Skill and their Gender

Table 2. presents the significant difference between the gender and academic performance of students in Junior High School. When data were analyzed, the result reveals that the Pearson R between Gender and GPA is 0.181 which describes a very weak relationship. Further, the probability value of the Gender and GPA is 0.009 stating **that there is a significant relationship between gender and GPA of the students in Junior High School.**

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Table 2. Significant Relationship Between Gender and Academic Performance

Variable	Pearson R	Description	Sig. (2-tailed)	Interpretation
Gender*GPA	.181	Very Weak Relationship	0.009	Significant

On the Difference of the Level of Students' Cognitive Skills when Data is Grouped according to their Gender

Table 3. below presents a significant difference between the gender and academic performance of students in Junior High School. When data were analyzed using the One-way Analysis of Variance, the result reveals that there is a significant difference between gender and academic performance showing a p-value of 0.018. Furthermore, post hoc analysis using Scheffe was also done for the multiple comparisons. It shows that Male and LGBTQ is significantly different from one another.

Table 3. Significant Difference Between Gender and Academic Performance of the Respondents

	Gender	p-value	Interpretation
Academic Performance (GPA)	Male	.018	Significant
	Female		
	LGBTQ		

Table 4. Multiple Comparisons of the Gender

Dependent Variable: GPA

(I) Gender	(J) Gender	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Male	Female	-.38876	.20460	.167	-.8933	.1157
	LGBTQ	-1.59091	.66415	.059	-3.2285	.0467
Female	Male	.38876	.20460	.167	-.1157	.8933
	LGBTQ	-1.20215	.66679	.199	-2.8463	.4420
LGBTQ	Male	1.59091	.66415	.059	-.0467	3.2285
	Female	1.20215	.66679	.199	-.4420	2.8463

Conclusion and Recommendation

For a number of decades, researchers have been intrigued by cognitive gender differences and their historical context. Perhaps due to the significance of mathematics in facilitating access to scientific and technical fields, gender differences in test performance have received the most attention. But in this study, it covered all subject areas. Based on the data taken from the profile of the respondents which includes their gender and average grade in all subject areas, the students' level of cognitive skill is described as satisfactory which explains that respondents can perform most of the academic tasks independently and with minimal assistance from their guardian. When their grade was correlated with their gender, this

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study found that a very weak relationship exists between the two variables. Moreover, among the three enumerated gender, the male and LGTBTQ were significantly different from one another. Although the students' cognitive level is satisfactory, still, this study recommends the enhancement of the students' cognitive skills by planning academic activities which are appropriate in a certain situation. Although, none of us desires to experience the pandemic again, let us all learn from the abrupt changes that the pandemic or any untoward incident may cause.

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