Is Day Care Important?: Basis For Cognitive Development Of Kindergarten Learners

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Abstract — The current study gives a brief and representative description of the role of Day Care or Childcare in the foundation of learner's cognitive abilities as they enter Kindergarten in Umingan Central Elementary School during the School Year 2023-2024. As evident in our pre-elementary education system, day care is still voluntary. Thus, the researchers raised the problem of whether attending Day Care serves as a basis of cognitive development for kindergarten learners. The researchers differentiated daycare-attending kindergarten learners with those who did not with consideration to the potential variations in outcomes. Through quantitative method involving collection and evaluation of numerical data from the standardized tests administered on the subjects, findings showed that learners who attend day care have higher cognitive development scores on written, oral, and performance tests compared to those who do not attend. Consequently, attending daycare or childcare is significant for the cognitive development of kindergarten learners.

Keywords — Childcare, Daycare, Kindergarten, Cognitive, Early Childhood, Head Start, Readiness

I. Introduction

According to UNESCO (2023), only 22% of United Nations Member States in 2021 have made pre-primary education compulsory, and only 45% provide at least one year of free pre-primary education. Daycare has been an integral, but not mandatory, part of the pre-elementary education system of the Philippines for a long time already which serves as a preparatory for

essential skills needed in the period shifting. This transition from kindergarten to primary school constitutes a significant point in children's development, entailing definitive effects on their personality and the formation of their behavior, but also on their school performance (Kokkalia, et.al, 2019).

Cognitive abilities are aspects of mental functioning, such as memorizing and remembering; inhibiting and focusing attention; speed of information processing; and spatial and causal reasoning (Robinson 2012). These cognitive abilities must be developed especially during the years before kindergarten since they set the stage for a child's future academic achievement. Daycare as an early learning environment offers a unique setting for children to engage in various learning activities where they can interact with friends and get guidance on how to do basic skills from their teachers.

The fact that daycare is commonly one of a child's first organized learning environments outside of the family emphasizes the importance of childcare for cognitive development. However, there is limited evidence on whether formal pre-primary schooling is an effective model in developing countries (Dean & Jayachandran, 2020).

It is crucial for parents, teachers, and legislators to understand how childcare affects kindergarten students' cognitive development. Preschool may be atypical of interventions, however, as it entails both separation from parents and exposure to variable yet potentially enriched learning environments (Loeb, 2006). Understanding its impact can help decision-makers make judgments on early childhood education strategies and initiatives that assist kids' cognitive growth.

This study on whether daycare is important as a basis for cognitive development of kindergarten learners on Umingan Central Elementary School for the SY 2023-2024 revolve around articulating the specific issue or question that the research aims to address. As to what is the level of observation towards learner's cognitive ability on the learners who attended and not attended daycare based on the following their written test, oral test, and performance test. This study also sought the significant relationship between the cognitive development of learners and attendance in Day Care.

Literature Review

The main aim of the review is to provide a comprehensive overview of what is known about the quality of early childhood education provision for children aged 0 to 4.

Children experience the most rapid rate of development during the first four years of life. High-quality childcare keeps children safe and healthy. In addition, it helps children develop skills

they will need for success in school and in their lives outside of school: Social, emotional and communication skills.

A few studies with robust methodology further document positive effects of high process quality for child development and engagement levels (Choi et al., 2019; Kwon et al., 2019; Pinto et al., 2019). A study with infants and toddlers developed in Peru, involving 2 198 children in 582 playgroups, found positive associations between higher-quality interactions and communication, problem-solving, and fine motor skills, with positive effects being particularly important for children with lower development scores (Araujo, Dormal and Schady, 2019).

Nature-based preschools are an increasingly popular choice for families given the variety of ways that these settings enhance children's physical, mental, and emotional health, and development (Kuo et al., 2019). A growing body of evidence shows that these preschools help foster happy, healthy children by promoting physical activity and motor development, reducing stress, and enhancing social emotional development, brain development, and communication skills (Rymanowicz et al., 2020). Children's academic learning is also fostered, since children attending nature-based preschools are just as prepared for kindergarten as children from traditional preschool programs (Burgess & Ernst, 2020; Cordiano et al., 2019).

Daycare centers in the Philippines play a role, in supporting the growth of young learners by creating an engaging environment and providing enriching experiences that can boost their cognitive abilities. In the Philippines, the Early Childhood Care and Development Council (ECCD) offers programs like the National Child Development Center (NCDC) LGU-National Partnership, and Child Development Center or commonly known as Daycare in each barangay to enhance the social, cognitive, and emotional skills of young children. At the same time, The Department of Education has also established standards and competencies for kindergarten education based on child development principles. These programs and standards aim to provide an approach to promote cognitive progress among young learners.

Despite the program that shows the significance of this to a child's holistic development. Parents of children aged 0-4 hesitate to enroll their children in a Daycare center. There are several reasons why parents in the Philippines may be hesitant to enroll their children in daycare centers. Parents may doubt their involvement in their children's schooling. It could be due to societal and cultural influences and parents' engagement and expectations of their children's development and learning. (Bartolome, Mamat, & Masnan, 2017). These reasons affect the number of enrollees in DC.

Two theories served as the anchor of this study, deemed suitable for this investigation: Jean Piaget's Cognitive Development Theory and Vygotsky's Cognitive Development.

In Jean Piaget's cognitive theory, early childhood enters the first two stages of development, namely the sensorimotor stage and the pre-operational stage. (Sriastuti & Masing, 2022)

As cited by (Babakr, Mohamedamin, & Kakamad, 2019), the first stage of cognitive development is the sensorimotor stage, which starts from birth until two years old (Kasschau, 2003) Infants at this age seek to understand objects by using sensory activity stage, characterized by object permanence and deferred imitation (Bremner, 2010).

According to research studied by (York, 2001) Sensory play is an effective way to encourage experimentation, even with children as young as infants and toddlers. Early childhood is the developmentally appropriate age for acquiring sensory awareness because, at that age, infants are primarily involved in explorations involving their movements and senses.

According to study conducted by (Bashrin, 2015) The second stage of Piaget's cognitive development process is the pre-operational stage. In this stage, children of 2-7 years old go through significant cognitive development processes such as imaginative thinking, make-believe play, egocentrism, logical thought, memory, spatial reasoning, conservation, etc.

(Irshad, Maan, Batool, & Hanif, 2021) Related to classroom teaching is Vygotsky‟s idea of the role of play. According to it, the teacher needs to supply children.

According to the study of (Yanti, et al., 2022) Early education centers or Daycare centers use a variety of activities related to this first stage-- activities rich in sensory-motor experiences that help the student's brain development and cognitive progression. The second stage includes symbolic play, building blocks, conservative activities, reading books, and perspective-taking activities that help foster cognitive growth and enhance social skills.

On the other hand, another theory suggests that children can reach the highest form of mental development if guided by their teachers and through play. (Weisberg, Kittrede, & Klahr, 2015)

The conceptual abilities of a child are sketched through play and imagination. Vygotsky argues that development is led by play. Vygotsky's concepts brought a revolution in the field of learning, especially combining thought and language with socialization; he made learning a dynamic process involving the development of a human higher mental function.

Early childhood education incorporates Piaget's sensorimotor stage by offering hands-on activities and creating environments. This approach allows children to explore and build their foundations. The ZPD, developed by Lev Vygotsky, is used to assess each child's readiness, and provide support. Play-based learning plays a role in promoting development through social interactions, problem-solving, and creative thinking, aligning with the theories of Lev Vygotsky and Jean Piaget. Together, these frameworks form a strategy for enhancing the development of young children while fostering social learning and critical thinking in an engaging educational setting.

Daycare attendance plays a role in a child's development as it offers them valuable chances for interactive learning, socializing, and engaging in activities corresponding to their cognitive growth stages, according to the theories mentioned. Daycare centers provide an enriching environment that fosters the development of abilities and equips children with skills for their future academic success.

This study visualized that the independent variables which are performance assessments, written exams, and oral exams have an impact on evaluating cognitive abilities.

On the study of (Alharbi & Surur, 2019) Conducting standardized test that are appropriate with the respondents age such as Oral test like naming and categorizing, are highly regarded for their reliability not just in their language skills but in providing valuable insights into their cognitive abilities.

According to the study conducted by (Zhang, et al., 2021) written test which includes matching and copying was useful in assessing cognitive abilities such as visual-spatial skills, attention to detail and memory.

Another study conducted by (Maier, et al., 2020) Assessing a child's cognitive ability often involves conducting performance tests that focus on tasks, like sorting, arranging and following instructions. These tests provide insights into the child's problem-solving skills and overall cognitive development by revealing their processes such as classification organization and attention.

The findings in each assessment served as a basis of the level of observation towards learner's cognitive ability and relationship of daycare attendance and Cognitive Development.

II. Methodology

To meet this study's objectives, quantitative method was used by the researchers to collect data. The quantitative method involved collecting and evaluating numerical data in order to provide enlightenment on the ideas, experiences and implications of the problem. Data were collected through the use of standardized tests on Kindergarten pupils from Umingan Central Elementary School. The test was administered through the help of the advisers of the pupils in the most convenient and most appropriate learning condition.

The population of the study included Kindergarten pupils from Umingan Central Elementary School, Schools Division of Pangasinan, who were preselected to participate in the study. The study is composed of 15 learners who attended daycare before entering Kindergarten and 15 learners who did not attend, comprising a total of 30 Kindergarten pupils. These sets of pupils were identified and grouped accordingly to assess their cognitive ability.

For the gathering of data, the primary tools were the assessment guide administered to the Kindergarten learners, as subject of the study. The Early Childhood Care and Development Checklist (ECCD) focused on Cognitive Domain results data was also used in this study. In gathering data, permissions were sought using signed and approved letters of request. Health and safety protocols were strictly observed in addition to the current situation.

To address the statements of the problem, the following statistical treatment of data was conducted.

1. For statement 1, the level of observation on the learners who attended and did not attend daycare can be analyzed using descriptive statistics. The counts from the written test, oral test, and performance test can be tabulated through the frequency of each of the group of learners.
2. For statement 2, a statistical analysis was conducted to determine if there is any significant relationship between the cognitive development of learners and attendance in daycare. This was done using inferential statistics such as correlation analysis through Goodman and Kruskal's Gamma. This test is suitable for measuring the association between two categorical variables, making it useful for small samples in the presence of categorical data. Cognitive development was measured using standardized assessment tool or a specific cognitive development measurement. The attendance in daycare was categorized into two groups: learners who attended daycare and learners who did not attend daycare. The statistical analysis will help determine if there is a significant relationship between the cognitive development of learners and their attendance in daycare.

$$\gamma = \frac{N_c - N_d}{N_c + N_d}$$

where:

Nc denotes the number of concordant pairs; and

Nd represents the number of discordant pairs.

III. Results and Discussion

In terms of written test, Table 1 presents the results from the frequency distribution of observed, less observed, and not observed skills related to cognitive development in children who attended daycare compared to those who did not attend daycare. (See in table 1).

Table 1
Level of Observation towards Learner's Cognitive Ability in terms of Written Test

Written Test	Attended Day Care			Not Attended Day Care		
	Observed[a]	Less Observed[b]	Not Observed[c]	Observed[a]	Less Observed[b]	Not Observed[c]
Matches objects	15	0	0	3	2	10
Matches pictures	15	0	0	5	0	10
Matches 2-3 colors	15	0	0	5	0	10
Copy shapes	15	0	0	3	1	11
Matching upper- and lower-case letters	14	1	0	4	5	6

a- the subjects had done the task without difficulty or mistake.
b- the subjects had done the task with less difficulty or minimal mistake.
c- the subjects failed to do the task or had difficulty in accomplishing it.

The frequency distribution reveals that for the skill of matching objects, 15 children who attended daycare and 3 children who did not attend daycare were observed to possess this skill. Similarly, for matching pictures and matching 2-3 colors, 15 children who attended daycare were observed to possess these skills, while none were less observed or not observed in either group. In terms of copying shapes, 15 children who attended daycare and 3 children who did not attend daycare were observed to possess this skill, with one child in each being less observed and none in not observed under those who unattended daycare. Furthermore, for matching upper- and lower-case letters, 14 children who attended daycare and only 4 children who did not attend daycare were observed to possess this skill, with 1 and 5 children in each group being less observed respectively. Whereas only 6 from those who unattended daycare were not observed. These suggest that daycare attendance may positively influence skills such as matching objects and copying shapes, while there is no significant difference between the two groups in terms of matching pictures, matching 2-3 colors, and matching upper- and lower-case letters.

Table 2 also presents the results about the frequency distribution in terms of oral test.

Table 2
Level of Observation towards Learner's Cognitive Ability in terms of Oral Test

Oral Test	Attended Day Care			Not Attended Day Care		
	Observeda	Less Observedb	Not Observedc	Observeda	Less Observedb	Not Observedc
Names 4-6 colors	15	0	0	4	1	10
Names 3 animals or vegetables when asked	14	1	0	5	4	6
States what common household items are used for	15	0	0	6	0	9
Demonstrating an understanding of opposites by completing a statement	12	3	0	4	3	8
Stating what is silly or wrong with pictures	13	2	0	5	6	4

a- the subjects had done the task without difficulty or mistake.
b- the subjects had done the task with less difficulty or minimal mistake.
c- the subjects failed to do the task or had difficulty in accomplishing it.

For the skill of naming 4-6 colors, 15 children who attended daycare were observed to possess this skill, while none were less observed or not observed. In contrast, among children who did not attend daycare, only 4 were observed to possess this skill, with one child being less observed and 10 were not observed. Similarly, for naming 3 animals or vegetables when asked, 14 children who attended daycare were observed to possess this skill, while one child was less observed. In the group of children who did not attend daycare, 5 were observed to possess this skill, 2 were less observed and 8 were not observed. Moreover, for the skill of stating what common household items are used for, 15 children who attended daycare were observed to possess this skill, while none were less observed or not observed. However, in the group of children who did not attend daycare, only six were observed to possess this skill, with none being less observed and 9 were not observed. Additionally, in terms of demonstrating an understanding of opposites by completing a statement, 12 children who attended daycare were observed to possess this skill, while three were less observed. Among children who did not attend daycare, only four were observed to possess this skill, while three were less observed and eight were not observed. Finally, for the skill of stating what is silly or wrong with pictures, 13 children who attended daycare were observed to possess this skill, while two were less observed. Among children who did not attend

daycare, only five were observed to possess this skill, while six were less observed and four were not observed.

Overall, the findings suggest that daycare attendance may positively influence skills such as naming colors, naming animals or vegetables, and stating what common household items are used for.

Table 3 summarizes the results regarding the frequency distribution of level of observation towards the learner's cognitive development in terms of performance tests.

Table 3
Level of Observation towards Learner's Cognitive Ability in terms of Performance Test

Oral Test	Attended Day Care			Not Attended Day Care		
	Observeda	Less Observedb	Not Observedc	Observeda	Less Observedb	Not Observedc
Names 4-6 colors	15	0	0	4	1	10
Names 3 animals or vegetables when asked	14	1	0	5	4	6
States what common household items are used for	15	0	0	6	0	9
Demonstrating an understanding of opposites by completing a statement	12	3	0	4	3	8
Stating what is silly or wrong with pictures	13	2	0	5	6	4

a- the subjects had done the task without difficulty or mistake.

b- the subjects had done the task with less difficulty or minimal mistake.

c- the subjects failed to do the task or had difficulty in accomplishing it.

In the skill of sorting objects, 15 children who attended daycare and 4 children who did not attend daycare were observed to possess this skill. One child in either group was less observed or not observed, indicating a high proficiency in sorting based on objects. For the skill of sorting objects based on 2 attributes, 13 children who attended daycare and only 4 children who did not attend daycare were observed to possess this skill. Two children who attended daycare were less observed, while 4 children who did not attend daycare were less observed and 7 were not observed. Despite these variances, both groups displayed competence in sorting objects based on multiple attributes. In arranging objects according to size from smallest to biggest, 13 children who attended daycare and 5 children who did not attend daycare were observed to possess this skill. Two children who attended daycare were less observed, while no children who did not attend daycare were less observed. No children in either group were observed, suggesting a strong ability to

arrange objects based on size. Regarding assembling simple puzzles, 13 children who attended daycare and 5 children who did not attend daycare were observed to possess this skill. Two children who attended daycare were less observed, while 10 children who did not attend daycare were not observed. No children in either group were observed, indicating a proficient ability to assemble simple puzzles. Lastly, looking at the direction of a fallen object, 15 children who attended daycare and only 4 children who did not attend daycare were observed to possess this skill. In contrast, no child who attended daycare was not observed, suggesting a high level of competence in determining the direction of fallen objects for both groups.

Overall, these findings suggest that there are generally similar levels of observation for cognitive development in performance tests between children who attended daycare and those who did not attend daycare. While minor variations in the levels of observation were noted, the overall results demonstrate a positive indication of cognitive development in both sets of children.

Table 3 shows the results obtained from the relationship between learners' cognitive development and their day care attendance suggest that there is a significant positive correlation between cognitive development and attendance for all three tests (written test, oral test, and performance test).

Table 3
Level of Observation towards Learner's Cognitive Ability in terms of Performance Test

Day Care Attendance		Cognitive Development		
		Written Test	Oral Test	Performance Test
Attended	Pearson R	0.384*	0.569*	0.645*
	p-value	0.044	0.000	0.000
Not Attended	Pearson R	0.659*	0.385	0.447
	p-value	0.000	0.137	0.125

*Significant at 0.05 alpha level

For the written test, there is a moderate positive correlation of 0.384 with a significance value of 0.044, indicating that learners who attend day care have slightly higher cognitive development scores compared to those who do not attend. For the oral test, there is a strong positive correlation of 0.569 with a significance value of 0.000, suggesting that learners who attend day care have significantly higher cognitive development scores compared to those who do not attend. For the performance test, there is a very strong positive correlation of 0.645 with a significance value of 0.000, indicating that learners who attend day care have significantly higher cognitive development scores compared to those who do not attend.

The results suggest that overall, learners who attend day care have higher cognitive development scores compared to those who do not attend. However, the strength and significance of this relationship may vary depending on the specific test being analyzed.

IV. Conclusion

The conclusions that can be drawn from the findings are the following: Learners who attend day care have higher cognitive development scores when it comes to written, oral, and performance tests compared to those who do not attend. The exposure to diverse learning experiences, engaging activities, and interaction with peers and caregivers appears to foster cognitive skills such as language development, problem-solving abilities, and overall cognitive competence.

Moreover, it can be concluded that there is a significant relationship between attending daycare or childcare and cognitive development of kindergarten learners. We have learned that attending daycare is not just about childcare; it's a crucial investment in a child's holistic development, especially in this study which focuses on the cognitive domain.

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