Factors Affecting the Cognitive Competency of the Pre-School Children in Selected Day Care Centers in Diffun, Quirino, Philippines

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Abstract This study was conducted to uncover the factors that affect the development of the cognitive competency during the pre-test and post-test of the preschool children from the selected day care centers in Diffun, Quirino. It aimed to describe the socio-demographic profile of the preschool children and their performances in the cognitive competency during the pre-test and post-test. It also determined the significant relationships/differences on their performances on the said competency during the pre-test and post-test and their socio-demographic profile. Also, factors that affect the competency were identified. Furthermore, this study examined which among the factors have significant relationships on the performances of the preschool children during the pre-test and post-test. There were 420 preschool children, ages 3 to 5 years old from the selected day care centers in Diffun, Quirino as respondents in this study. The researcher made use of descriptive method and inferential statistics like t-test, Spearman Rho correlation, and Stepwise Regression to test the hypotheses. The data were gathered using the Early Childhood Care and Development Checklist. The data revealed that majority of the respondents are "Competent" in most of the cognitive competencies during the pre-test and became "Very Competent" during the post-test when they are grouped according to their socio-demographic profile. There are items that have significant relationships/differences on the cognitive competency during the pre-test and gender, and birth order of the respondents. Significant relationships/differences were also noted on some items on the cognitive competency during the post-test and the respondent's number of siblings, and birth order. Moreover, school, social and family parameters are identified to find out which among these affect the performances of the respondents on cognitive competency during the pre-test and post-test. The result of this study revealed that majority of the school factors affect the performance of the respondents on the said competency during the pre-test and post-test while the social and family factors have lesser effects. Thus, this study implies that continuous partnership of the school and home is essential, more organized activities has to be implemented and strict monitoring and evaluation of school program is needed in the Day Care Centers to improve further the cognitive competency of day care children.

Keywords: day care center, children, cognitive competency

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Introduction

Children thirst to know and understand. In their effort to know and understand, they construct their own ideas about the world around them (Santrock, 2007). A very important factor in cognitive development is the social interaction. At home, the child interacts with the different members of the family and even in the neighborhood. However, his/her social interaction widens when he/she is exposed to formal education.

The municipality of Diffun has a total of 43 day care centers. These are located at the vicinity of the town area but majority are from the forest regions where public transportation is not that accessible due to the proximity of the distance and quality of roads leading to such barangays. The day care centers offer preschool education to children ages 3 to 5. The core developmental milestones of the preschool children being monitored and evaluated by the day care worker have seven domains, namely: gross motor, fine motor, self help, receptive, expressive, cognitive and social-emotional domains. Furthermore, it has been considered that the day care centers are the children's second home with the day care worker as their second mother. Children stay at the center for at least two hours, learning basic concepts and principles of informal education such as knowing the alphabet, different lines, shapes, colors, reciting simple poems and playing. The center is dedicated in stimulating children's sense of creativity and initiative and introducing them to new experiences and social contacts they would not ordinarily receive at home (Garcia, 2013).

Hence, to state that preschool education is successful, several factors are needed such as the school, social and family factors. Parents' positive outlook and active participation in their children's activities, day care workers' eligibility, including the centers' environment are enumerated to emphasize the factors identified.

Thus, this study was conceptualized to uncover the factors that affect the development of the preschool children in their cognitive competency during the pre-test and post-test. Furthermore, this would give an assessment to children's school readiness in terms of cognitive competency emphasizing the child's capacity to execute basic learning skills and will recognize the good effects of the day care service and eventually will identify the areas that need improvement in terms of the training skills of the day care workers.

Objectives

This research determined the factors affecting the performance on the cognitive competency of the preschool children during the pre-test and post-test in selected day care centers in Diffun, Quirino, Philippines.

Specifically, this study shed light to the following objectives:

1. Determine the socio-demographic profile of the preschool children in terms of:

1.1 gender;

1.2 child's number of siblings;

1.3 child's birth order

2. Identify the cognitive competency of the preschool children during the pre-test and post-test.

3. Determine the significant relationship/difference between the cognitive competencies of the preschool children during the pre-test and post-test when they are grouped according to their socio-demographic profile.

4. Determine the factors affecting the cognitive competency of the preschool children.

5. Identify the significant relationships between the cognitive competency of the preschool children and the school, social and family factors.

Materials and methods

The research made use of the descriptive method. It identified and assessed the factors affecting the cognitive competency of the preschool children in selected day care centers in Diffun, Quirino, Philippines with total enumeration of respondents.

The researcher made use of a survey questionnaire. The instrument has three parts: Part I was used to gather the respondents' profile in terms of gender, child's number of siblings and child's birth order; Part II was utilized to identify the level of agreement on the factors affecting the cognitive competency with 5 meaning strongly agree, 4 – agree, 3 – moderately agree, 2 - disagree and 1 - strongly disagree; Part III was used to gather the respondents' level of competency during the pre-test and post-test from the accomplished ECCD (Early Childhood Care and Development) Checklist done by their respective day care workers. They were evaluated with 5 meaning very competent, 4 – competent, 3 – slightly competent, 2 – needs improvement and 1 – without competency.

The socio-demographic profile was analyzed using frequency and percentages; level of competency and factors affecting it using mean; relationship/difference of socio-demographic profile and cognitive competency

using t-test and Spearman Rho correlation and the significant relationships between the cognitive competency of the preschool children and the factors using the stepwise regression.

Results and discussion

Profile of the Respondents

Out of the 420 respondents involved in the study, 224 or 53.30 % of them are male while 196 or 46.70% of them are female. As to number of siblings, majority of the respondents have one sibling (126 or 30%) and there are 152 or 36.20% who are last born child in the family.

Level of Cognitive Competency of the Respondents When Grouped by Profile

When the respondents were grouped according to gender, number of siblings and birth order, majority of the cognitive competency obtained "Competent" performances during the pre-test and became "Very Competent" during the post-test. Based from the result, it is noted that there are improvements on the cognitive competency of the preschool children from the result of the pre-test compared to the result of the post-test.

Significant Difference/Relationships on the Cognitive Competency of the Respondents when grouped by Profile

Table 1. Difference on the Performance of the Respondents in the Cognitive Competency during the Pre-test and Post-test when grouped According to Gender

	Gender			
	Pre-test		Post-test	
	t-value	p-value	t-value	p-value
1. Looks in the direction of a fallen object.	-1.62^{ns}	0.106	0.22^{ns}	0.828
2. Looks for a partially hidden object.	-1.73^{ns}	0.085	-0.20^{ns}	0.845
3. Imitates behavior just seen a few minutes earlier	$-2.47*$	0.014	-0.62^{ns}	0.536
4. Matches objects	1.45^{ns}	0.148	0.76^{ns}	0.448
5. Matches 2 to 3 colors	0.40^{ns}	0.686	0.19^{ns}	0.850
6. Matches pictures	1.97^{ns}	0.050	1.36^{ns}	0.174

7. Names 4 to 6 colors	0.44^{ns}	0.661	-0.17^{ns}	0.866
8. Copies shapes	0.06^{ns}	0.949	0.43^{ns}	0.665
9. Can state what is silly or wrong with pictures (e.g., Ano ang mali sa larawang ito?)	$2.98*$	0.003	1.88^{ns}	0.061
10. Matches upper case letters; and matches lower case letters	$1.96*$	0.050	0.32^{ns}	0.746

It was noted from Table 1 that three (3) items got significant values during the pre-test while during the post-test there was no significant difference on the performance of male and female respondents in the cognitive competencies. This indicates that after the post-test there was no significant difference on the performance of male and female respondents in majority of the cognitive competencies except for the identified significant findings.

Table 2. Relationship on the Performance of the Respondents in the Cognitive Competency during the Pre-test and Post-test when Grouped According to Number of Siblings and Birth Order

Cognitive Competency	Number of Siblings				Birth Order			
	Pre-test		Post-test		Pre-test		Post-test	
	Spear-man Rho	p-value	Spear-man Rho	p-value	Spear-man Rho	p-value	Spear-man Rho	p-value
1. Looks in the direction of a fallen object.	0.011^{ns}	0.829	0.038^{ns}	0.432	0.027^{ns}	0.583	0.018^{ns}	0.717
2. Looks for a partially hidden object.	-0.000^{ns}	0.992	0.071^{ns}	0.144	0.047^{ns}	0.338	-0.021^{ns}	0.661
3. Imitates behavior just seen a few minutes earlier	-0.004^{ns}	0.934	0.061^{ns}	0.215	0.002^{ns}	0.049	-0.052^{ns}	0.286
4. Matches objects	-0.009^{ns}	0.853	-0.07^{ns}	0.133	0.065^{ns}	0.186	$0.098*$	0.045
5. Matches 2 to 3 colors	-0.034^{ns}	0.483	$-0.138*$	0.005	0.064^{ns}	0.189	$0.151*$	0.002
6. Matches	-0.062^{ns}	0.206	$-0.100*$	0.040	$0.098*$	0.044	$0.124*$	0.011

	pictures							
7.	Names 4 to 6 colors	0.039^{ns}	0.428	-0.022^{ns}	0.650	0.009^{ns}	0.859	0.096^{*}	0.048
8.	Copies shapes	-0.005^{ns}	0.922	-0.044^{ns}	0.373	0.045^{ns}	0.357	0.098^{*}	0.044
9.	Can state what is silly or wrong with pictures (e.g., Ano ang mali sa larawang ito?)	-0.058^{ns}	0.236	-0.010^{ns}	0.831	0.021^{ns}	0.673	-0.024^{ns}	0.619
10.	Matches upper case letters; and matches lower case letters	-0.003^{ns}	0.944	0.022^{ns}	0.660	0.033^{ns}	0.494	0.040^{ns}	0.412

It is shown in the table above that all of the cognitive competencies during the pre-test have no significant relationship when grouped according to the number of siblings. However, on the post-test, there were two (2) items that have negative significant relationship while the rest of the cognitive competencies were not significant. This implies that all the cognitive competencies identified during the pre-test have no bearing on the number of siblings while during the post-test the competencies, "Matches 2 to 3 colors" and "Matches pictures" are affected by number of siblings. This finding disagrees with Garcia (2013) that preschoolers' number of siblings is significantly correlated with most skills under the cognitive domains.

As to birth order, there is only one (1) item got significant value during the pre-test while during the post-test five (5) items got significant values while most of the cognitive competencies were not significant. The result leads to the acceptance of the null hypothesis which states that there are no significant relationships on the performance of the preschool children in the post-test and their birth order except for the cognitive competencies, "Matches objects", "Matches 2 to 3 colors", "Matches pictures", "Names 4 to 6 colors" and "Copies shapes". The result does not conform to Kristensen *et al.* (2007) finding that there is negative associations between birth order and intelligence level based from numerous studies.

Factors Affecting the Cognitive Competency of the Respondents

Table 3. Mean and Descriptive Equivalent of Factors Affecting the Cognitive Competency of the Respondents

Factors	Mean	Descriptive Equivalent
School		
1. The child is comfortable at the center; enough chairs and tables are available for children's consumption.	4.84	Strongly Agree
2. The day care worker's specialization is to teach preparatory children.	4.90	Strongly Agree
3. The school environment is safe and the children are free from danger.	4.40	Agree
4. The center is a conducive place for learning hence, the child learns better.	4.21	Agree
5. There is sufficient space for children's activities.	4.0	Agree
Social		
1. The child has lots of friends.	4.05	Agree
2. The child chooses to be with the day care worker/parent than to be with his/her classmates.	4.12	Agree
3. The child knows to be polite and respect the day care worker and other elders.	4.13	Agree
4. The child enjoys drawing rather than playing with his/her classmates.	3.78	Agree
5. The child selects his/her playmates.	3.49	Moderately Agree
Family		
1. The parents attend the needs and interests of the child.	4.34	Agree
2. The parents show support to their children for them to finish the program.	4.34	Agree
3. The parents encourage the child to attend the class regularly.	4.39	Agree
4. The parents assist in the preparation of their child's assignments/projects.	4.37	Agree
5. The parents check the behavior of their child.	4.42	Agree

Table 3 revealed that out of five school factors there are two (2) statements that obtained "Strongly Agree" while in social factors there are four (4) statements that obtained "Agree" and family factors obtained "Agree" as to level of agreement. This supports Thompson (2002) statement that most children spend many hours each week in the care of someone other than their parents. These are caregivers and early childhood educators who are warm and responsive in promoting their cognitive and social-emotional skills wherein classroom environment must be provided on individual children.

Cognitive Competency of the Respondents and the Factors Affecting the Competency

The table below showed that out of the factors (school, social and family) identified, several school factors affected the cognitive competency of the respondents during the pre-test and post-test while most of the social and family factors did not significantly affect the cognitive competency of the preschool children during the pre-test and post-test. The result agrees with Ormrod (2006), school is not just a place where children acquire cognitive and linguistics skills, it is also a place where they acquire beliefs about themselves, strategies for getting along with other people, and perspectives about right and wrong. In other words, school is a place where young people grow personally, socially as well as academically. Also, providing sufficient space and play materials – a generous amount of space and materials allows for many play options and reduces conflicts for preschool children; offering a wide variety of realistic materials for children such as dolls and toy scenes to act out everyday roles (Berks, 2006).

Table 4. Stepwise Regression on School, Social and Family Factors to Cognitive Competency of the Respondents during the Pre-test and Post-test

Cognitive Competency	School Factors that Affect the Cognitive Competency during		Social Factors that Affect the Cognitive Competency during		Family Factors that Affect the Cognitive Competency during	
	Pre-test Item No.	Post-test Item No.	Pre-test Item No.	Post-test Item No.	Pre-test Item No.	Post-test Item No.
1. Looks in the direction of a fallen object.	3	5	0	0	3	0
2. Looks for a partially hidden object.	3	5	0	0	0	0
3. Imitates behavior just seen a few minutes earlier	2	5	0	0	0	0
4. Matches objects	4	2	3	3	5	0
5. Matches 2 to 3 colors	5	2	3	3	0	0
6. Matches pictures	2, 3	2	0	0	0	0
7. Names 4 to 6 colors	2, 3	2, 3	0	3	0	4
8. Copies shapes	2, 3	2, 3	0	0	0	0
9. Can state what is silly or wrong with pictures (e.g., Ano ang mali sa larawang ito?)	2, 4	2	0	0	0	0
10. Matches upper case letters; and matches lower case letters	4	4	0	0	5	0

Summary

The study was conducted during the School Year 2012-2013 in order to assess the factors affecting the cognitive competency of the preschool children in selected day care centers in Diffun, Quirino, Philippines. Specifically, the research shed light to the following objectives: 1) determine the socio-demographic profile of the preschool children in selected day care centers in Diffun, Quirino in terms of gender, child's number of siblings and child's birth order; 2) evaluate the cognitive competency of the preschool children during the pre-test and post test when they are grouped by their socio-demographic profile; 3) determine the significant relationship/difference between the cognitive competencies of the preschool children during the pre-test and post-test when they are grouped according to their socio-demographic profile; 4) determine the factors affecting the cognitive competency of the preschool children; and 5) identify the significant relationships between the cognitive competency of the preschool children and the school, social and family factors.

The research utilized a structured questionnaire used by the day care workers in assessing the cognitive competency of the pre-school children during the pre-test and post-test. Data were analyzed using the frequency count and percentage, mean, T-test, Spearman Rho and Stepwise Regression.

The results of the study were:

Profile and performances of the respondents

There are 420 respondents involved in the study, 224 or 53.30 % of them are male, majority of them have one sibling (126 or 30%) and there are 152 or 36.20% who are last born child in the family. As to their performances, majority of the cognitive competency obtained "Competent" performances during the pre-test and became "Very Competent" during the post-test.

Significant difference/relationship on the cognitive competency of the respondents when grouped by profile

Majority of the cognitive competency have no significant difference during the pre-test and post-test on the performance of respondents as to gender and there are no significant relationship on the cognitive competency of the respondents when grouped to number of siblings during the pre-test. However, during the post-test there were two (2) items that have negative significant relationship while the rest of the cognitive competencies were not significant. Furthermore, majority of the cognitive competency have no significant relationship with child's birth order during the pre-test while during the post-

test five (5) items got significant values while most of the cognitive competencies were not significant.

Factors Affecting the Cognitive Competency of the Respondents

Out of five school factors there are two (2) statements that obtained "Strongly Agree" while in social factors there are four (4) statements that obtained "Agree" and family factors obtained "Agree" as to level of agreement.

Cognitive Competency of the Respondents and the Factors Affecting the Competency

There are identified factors that affected the cognitive competency of the respondents during the pre-test and post-test. Based from the result, majority of the cognitive competency of the preschool children are affected by school factors while the social and family factors did not necessarily affect the cognitive competencies of the respondents.

Conclusion

Based from the findings of the study, the preschool children had prior learning before entering the day care service program which was shown with their level of cognitive competency. Moreover, majority of the cognitive competencies during the pre-test and post-test were not significant when grouped according to gender, number of siblings and birth order. Hence, this leads to the acceptance of the null hypothesis that there are no significant relationships/differences on the performance of the preschool children in the pre-test and post-test. Furthermore, among the factors identified, there are more school factors that affected the cognitive competency of the respondents during the pre-test and post-test while the social and family factors did not greatly affect the said competency.

Recommendation

Based from the results of the study, the administrators should evaluate the existing physical conditions of the day care centers. Thus, implement interventions that will improve more the quality of the day care centers. In addition, seminar and workshops on latest teaching strategies should be provided and attended by the day care workers in order to enhance their capability to become more efficient and effective day care workers.

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