

Effects of Different Teaching Methods on the Cognitive Development of Children: A Parent's Perspective

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Article Info

Volume 81

Page Number: 6065 - 6071

Publication Issue:

November-December 2019

Abstract:

Different types of teaching methods can have different effects on children. Preschool education is considered the initial formative years of children since it lays the foundation for future academic and intellectual development in children. Hence, the teaching methods adopted in preschools have a significant impact on the cognitive development of children. The present study was carried out to analyze the effects of various approaches adopted by preschools like Kindergarten, Montessori and Play-way methods on the internal and external factors associated with cognitive development in children. The descriptive study used data gathered from parents (n=605) from the Thrissur district of Kerala. Statistical analysis conducted on the collected data showed that these teaching methods have an impact on the external and internal factors that affect children's cognitive development. It was found that these learning methods promoted social development in children by creating a socially interactive learning environment. Additionally, the motivational levels and the personality of children were also found to be influenced by these teaching methods in a positive manner. However, these teaching methods exerted no significant influence on the physical and mental health of children.

Article History

Article Received: 5 March 2019

Revised: 18 May 2019

Accepted: 24 September 2019

Publication: 28 December 2019

Keywords: Kindergarten, Montessori, Play-way, Cognitive development, Preschoolers

I. INTRODUCTION

Cognitive development is characterized by the mergence and growth of cognitive competence in domain general processes and domain specific skills which involves language, decision-making, problem solving, and other executive functions from childhood through adolescence to adulthood (Vandenbroucke, Spilt, Verschueren, Piccinin, et al., 2018). Children are usually born with certain inherent capabilities; however, cognitive changes like memory, attention, judgement, orientation, perception and language evolve as the children

mature (Sternberg & Sternberg, 2011). These cognitive changes help the children to acquire knowledge about self and the environment in which they live. Preschools play an important role in the cognitive development in children. Preschool programs have a long-lasting effect on children's academic and social skills (Bakken, Brown, & Downing, 2017). There exists a broad range of pre-school programs, namely, Kindergarten, Montessori, Play-way, Reggio Emilia and so on, each with their own components and unique style of teaching. With Kindergarten

being the most traditional approach, Play-way methods and Montessori methods are becomingly increasingly popular as effective ways for teaching preschoolers. The current study was carried out to examine how these teaching methods contribute to the cognitive development in children from the perspective of parents. This was done by analyzing how these teaching methods affected the various internal and external factors associated with cognitive development. The internal factors considered were personality, motivation, health (physical and mental), and family bonding; and the external factors considered were physical surroundings, social behavior, cultural factors, and school learning. Thus, the research objective for the study has been stated as follows:

To assess the effects of preschool teaching methods on cognitive development of children, as perceived by their parents.

II. LITERATURE REVIEW

Literature studies that focus on the effectiveness of the select teaching methods (Kindergarten, Montessori, Play-way) on the development of children were reviewed and presented in this section.

Park and Yang (2016) studied the various aspects of Froebel's kindergarten system that are beneficial to children. According to him, kindergarten education must be revisited and 'learning through play' must be encouraged for the holistic development of children. However, according to Abbas, Ansari and Rizvi (2015), both Montessori and Kindergarten systems of education are equally effective at imparting quality education in children. They observed that children from Kindergarten method of schooling exhibited better social skills and the children from Montessori method exhibited better language skills. Another study by Carnes and Albrecht (2012) showed that children who attended full-day Kindergarten performed well in academics when

compared to children who attended half-day kindergarten. McClelland, Acock and Morrison (2006) provided evidence for how the learning related skills acquired in Kindergarten had a positive impact on the reading and math skills in higher grade. Lastly, the effectiveness of universal pre-kindergarten programs on the cognitive outcomes of children was studied by Gormley, Gayer, Phillips and Dawson (2005). They found that pre-kindergarten programs helped the children to achieve high test score in reading, spelling, writing, problem-solving and reasoning tests. Also, the improvement in cognition was observed in the study irrespective of the students' races and family backgrounds.

The effectiveness of Montessori method on the cognitive tempo of children was studied by Kayili (2018). It was found that the Montessori method reduced the number of errors and extended the reflection time among the preschool children. Further, Kayili and Ari (2016) reported from their study findings that Montessori method supported by Social Skills Training Program helps in the development of children's skills of understanding feelings and social problem solving. Bhatia, Davis and Shamas-Brandt (2015) found evidence for how Montessori method of teaching can develop fine motor skills in Kindergarten. Also, evidence for Montessori methods to enhance the attention gathering level and eye-hand coordination of children to develop tactile, visual and auditory senses was found by Dogru (2015).

Not much studies have explored the impact of Play-way method on the cognitive development of children. According to Upadhyay, Malar and Sharanaiah (2017), play-way technique is the most natural and appropriate technique for educating children with special needs. Sari, Sukartiningsih and Jannah (2018) reported that teaching using geometric puzzle games can help children to easily identify the geometric shapes and develop their fine motor skills. Further, educational activities that involve structural movements were

found to have a positive impact on children’s social and cognitive development (Ayob, 2016). Studies like Nair, Yusof and Arumugam (2014) and Popoola (2014) provide evidence for how Play-way methods can enhance the language abilities and numeracy skills in children. From the above review, it can be inferred that all the selected teaching methods have an influence on the cognitive development of children. Extending this line of research, the current study intends to analyze how these teaching methods affect the cognitive development of children by influencing the external and internal factors associated with the same.

III. METHODOLOGY

The study adopted a descriptive design as its main objective was to identify and assess the influence of teaching methods on various factors that affect children’s cognitive development. Accordingly, a quantitative approach was adopted by the researcher for collecting and analyzing the study data. A structured questionnaire was developed as the research instrument for collecting data from the study samples. The samples for the study constituted parents whose

children were enrolled in primary schools which adopted any of the three teaching methods: Kindergarten, Play-way or Montessori methods. A total of 605 parents were selected from the Thrissur district of Kerala through random sampling method. Data was collected by a survey method wherein the questionnaire was administered to the participants and completely filled-in responses were gathered and collated to constitute the study data. The gathered data were subjected to statistical analyses (frequency analysis and MANOVA) and the results are discussed as follows.

IV. RESULTS

Demographic profile of the study participants

The demographic profile of the study participants can be studied from Table 1. It can be seen that the participants were all educated and belonged to the middle age group. Further, majority of the study participants had 2 to 3 children in their household and the children were above three years of age. Overall, the demographic analysis of the participants shows a good fit of the sample to the general population studied.

Demographic factor		Frequency	Percent
Parent's age	<30	73	12.1
	31-35	259	42.8
	36-40	175	28.9
	>40	98	16.2
Parent's education	Bachelor's degree	232	38.3
	Master's degree	284	46.9
	Others	89	14.7
Age of children	3 years	151	25
	4 years	145	24
	5 years	181	29.9
	6 years	128	21.2
Number of children in the household	<2	256	42.3
	2-3	323	53.4
	3-4	23	3.8
	>4	3	0.5

Hypothesis testing

Hypothesis 1:

Teaching methods adopted by pre-primary school teachers influence the internal aspects of cognitive development in children

The internal aspects of cognition was measured in terms of a handful of factors like personality, motivation, physical and mental health, and family bonding. The effects of different teaching

methods on these factors was measured using Multivariate Analysis of Variance (MANOVA). Table 2 shows that the different teaching methods adopted by pre-primary school teachers have a significant influence on the internal aspects of cognitive development in children, with $F=11.026$, Wilk's $\Lambda=0.868$ and $p<0.05$. It can be observed that only 13% variation in children's internal aspects of cognitive development could be explained by the teaching methods adopted.

Effect	Value	F	df	Sig.	Partial Eta Squared
Method of teaching	0.868	11.026 ^b	8, 1198	0.000	0.069

Table 2: General linear model for the impact of teaching methods on internal aspects of cognition

Since the overall MANOVA indicated that teaching methods have a significant impact on internal cognitive development in children, its impact on individual factors measuring the internal cognitive development was further studied. As indicated in Table 3, teaching methods have a significant impact on motivating the children ($F=19.255$, $p<0.05$), developing their personality ($F=4.280$, $p<0.05$) and promoting family bonding among the children ($F=15.352$,

$p<0.05$). However, it was found that the teaching methods exerted no significant influence on their physical and mental health ($F=1.706$, $p>0.05$). Perhaps, the children may be too young and are still in their pre-primary schools for the teaching methods to exert a significant impact on their physical and mental health. Thus, developmental deficits in children could be completely attributed to their early childhood education. Based on the above analysis, hypothesis 1 has been accepted.

Table 3: Tests of Between-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Method of teaching	Personality	4.260	2	2.130	4.280	0.014	0.014
	Motivation	21.792	2	10.896	19.255	0.000	0.060
	Health (Physical and mental)	1.775	2	0.888	1.706	0.183	0.006
	Family Bonding	16.870	2	8.435	15.352	0.000	0.049
R Squared = .014 (Adjusted R Squared = .011)							

Hypothesis 2:

Teaching methods adopted by pre-primary school teachers influence the external aspects of cognitive development in children

The external aspects of cognition was measured in terms of a factors like physical surroundings, social influence, cultural factors and school learning. The effects of different teaching methods on these factors was also measured using Multivariate Analysis of Variance (MANOVA).

Table 4 shows that the different teaching methods adopted by pre-primary school teachers have a significant influence on the external aspects of cognitive development in children, with $F=11.007$, Wilk's Lambda=0.868 and $p<0.05$. The results show that only 13% variation in the external factors that affect cognitive development could be explained by the teaching methods adopted by the teachers at pre-primary schools. Testing the between-subject effects (as indicated in Table 5) showed that the teaching methods adopted by pre-primary school teachers have a significant impact on all the factors: physical

surroundings ($F=35.887$, $p<0.05$), social influence ($F=8.710$, $p<0.05$), cultural factors ($F=7.256$, $p<0.05$), and school learning ($F=3.282$, $p<0.05$). The results imply that though the teaching methods could explain only

13% variation in the external aspects of cognitive development in children, it exerts a significant influence on each of the individual factors. In view of the above, hypothesis 2 has been accepted.

Table 4: General linear Model for the impact of teaching methods on external aspects of cognition

Effect	Value	F	df	Sig.	Partial Eta Squared
Method of teaching	0.868	11.007 ^b	8, 1198	0.000	0.068

Table 5: Tests of Between-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Method of teaching	Physical Surroundings	42.515	2	21.257	34.887	0.000	0.104
	Social Influence	10.958	2	5.479	8.710	0.000	0.028
	Cultural Factors	10.484	2	5.242	7.256	0.001	0.024
	School Learning	3.640	2	1.820	3.282	0.038	0.011
		R Squared = .104 (Adjusted R Squared = .101)					
		R Squared = .028 (Adjusted R Squared = .025)					
		R Squared = .024 (Adjusted R Squared = .020)					
		R Squared = .011 (Adjusted R Squared = .007)					

The results imply that the teaching methods (Kindergarten, Montessori and Play-way methods) adopted by pre-primary school teachers significantly influence the internal and external aspects of cognitive development. The teaching methods adopted were found to enhance the motivational levels of students toward learning. The teaching methods like Play-way, Kindergarten, and Montessori methods motivate children to discover and learn new things and in the process broaden their knowledge and derive

pleasure from learning. Prior studies like Rathunde and Csikszentmihalyi (2005) and Thijs and Koomen (2008) have also established the relationships between early childhood education and the motivational levels of students. Further, it was found that the teaching methods instill confidence, assurance and a spirit of competition among the children. These are in line with the findings made by Theodorakou and Zervas (2003) who reported that creative teaching methods have an impact on children's self-esteem. However,

evidences for the impact of teaching methods on personality development as well as on the physical and mental health of children could not be found in literature which in turn lends novelty to the current study.

With respect to the external aspects of cognitive development, teaching methods were found to have influence on the social and cultural behavior of children as well as their learning at school. Kindergarten, Play-way and Montessori methods of teaching provided opportunities for children for learning and to actively participate in social activities. The results showed that such teaching methods provided a positive and creative learning environment for the children and improved their social behavior. These results can be corroborated with findings from previous studies like Abbas, Ansari, and Rizvi (2015); Kayili and Ari (2016); Ayob (2016); and Lillard (2012) that have established relationship between teaching methods and developing social skills in children.

V. CONCLUSION

The study was conducted to analyze the influence of teaching methods (Kindergarten, Play-way and Montessori) on the external and internal factors that influence cognitive development in children. It was found that these teaching methods have a significant influence on the social and cultural development in children by developing a creative learning environment. Further, they also have an impact on the personality development in children and on their motivation towards learning. These findings can be used for encouraging educators to develop and adopt appropriate teaching methods to ensure cognitive development among the children they teach. The study results can also be used to provide support for the effectiveness of these teaching methods on the cognitive development in children. Direct effects of these teaching methods on the cognitive development of children can be studied in future by subjectively measuring the cognitive abilities of children who attend these

schools. Further, the effects of other types of teaching like interactive teaching, cooperative learning, storytelling, role playing, etc. on the cognitive development of children can be analyzed from both teacher's and parents' perspective in future.

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