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Research Paper

Do we need an intervention programme on teachers' knowledge regarding developmental milestones of 6-10 years of age group children?

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■ **ABSTRACT :** In this pilot study, we investigated the impact of intervention programme on teachers' knowledge regarding developmental milestones of 6-10 years of age group children. The present study was carried out in two cultural zones of Haryana (an Indian state). Thirty teachers for one thousand children in the age group of 6-10 years from both cultural zones were assessed for their knowledge regarding developmental milestones of 6-10 years age children. After pre-assessment, the intervention programme was imparted to teachers regarding developmental milestones of children for a period of one week.After a gap of one month, teachers were post-tested.Results revealed that at pre-testing stage there were no significant differences in knowledge of teachers from both the zones regarding various developmental milestones: t-values were not significant for gross-motor (t=1.84), fine-motor (t=0.00), cognitive (t=0.00), language (t=0.50), social (t=0.40) and emotional domains (t=0.61) and also for overall development (t=0.73). Results revealed that after exposure to intervention programme, teachers' knowledge about developmental milestones of children improved significantly, as t-values for developmental gain were significant for gross-motor (t=5.43*), fine-motor (t=4.01*), cognitive (t=5.13*), language (t=4.71*), social (t=4.07*), emotional (t=4.65*) and overall development (12.23*).

■ **KEY WORDS:** Child development, Developmental milestones, Developmental domains, Teacher training, Dntervention, Developmental gain

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There are six main groups of skills that make up the developmental milestones. Gross-motor skill refers to using large groups of muscles to sit, stand, walk, run, etc., keeping balance and changing positions. Fine-motor skills are using hands and fingers to be able to eat, draw, dress, play and write, etc. Language is speaking, using body language and gestures, communicating and understanding what others say. Cognitive skills are thinking skills including learning, understanding, problem-solving, reasoning and remembering. Social skills include interacting with others, having relationships with family, friends, and teachers; and co-operating with others. Emotional skills are children's experience, expression, understanding, and

regulation of *emotions,* responding to the feelings of others.

Although all children develop at their own unique pace, as a direct result of both hereditary and environmental influences, there is a certain pattern of development that applies to nearly all children. Many children will reach some or most of these milestones at different times from the norm. When children do not reach their developmental milestones at the expected time, they are likely to be developmentally delayed, *i.e.*, adevelopmental delay occurs when children have not reached developmental milestones within the expected time period. Six to ten years old children attend primary schools and spend approximately 5 hours in school under the supervision of teachers. Hence, beside parents, school teachers also play an important role in overall development of children and therefore it is necessary that teachers should have knowledge about developmental milestones of children. In addition to academic teaching, school teachers can also promote the rate of growth and development of children. Teachers are the greatest assets of any educational system and are accepted as the backbone of theeducation system. Teacher quality is crucial and significantly associated with the quality of education in general and students' learning outcomes in particular areas. Therefore, understanding of developmental milestones can be used to gear the teachers to support children in maximizing the success in both the academic and the developmental aspects of their lives. It is necessary for a teacher to understand that child development follows general, sequential patterns andis interrelated across domains (cognitive, physical, social and emotional). Teacher must understand milestones and sequences of development in all domains and use child development information for planning and identifying activities, environments, experiences, and strategies (for large/small groups or individuals) to best promote growth and learning of children (Clauda, 2016).

A child with a developmental delay will able to catch up with his or her peers if identified early and timely treatment and intervention is provided. Early intervention treatments have the highest success rates when they are provided to children as early as possible in their development. Hence, early assessments should be made in order to determine the causes and remedial and protective measures for achieving the highest potential outcomes for these children.

It is necessary to give more importance to educate teachers regarding developmental milestone and complications associated with its delay. Attention should be turned particularly to teachers of rural areas because in rural areas parents need more help from teachers, as they might not be able to concentrate on each stage of child development or have less knowledge about developmental aspects of the children. This study would help the teachers for identifying developmental delays and its further complications.

There is currently widespread agreement by the educators that the knowledge of developmental milestones is a key component to create positive learning environment for ensuring that childhood education make good on the hopes of parents, and educators for improving children's success in school (Bogard and Takanishi, 2005 and Zaslow and Martinez-Beck, 2005). There is credible evidence that teachers' effective implementation of instruction is a mechanism through which teacher can provide better learning experiences to the children (Hamre and Pianta, 2007; Howes *et al.*, 2008). Teacher–child interaction is a very important aspect in early to late childhood education. There is growing evidence that teachers require more special training to improve their knowledge about the sensitive or crucial (when child learn skill more quickly) period of a child. Teachers can use their knowledge in classroom interactions with children, either in formal or informal instructional activities (Landry *et al.*, 2006 and Lonigan, 2004). Not only is the level of teachers' knowledge but the way of instructions equally important for the level of quality in childhood education. Specialized education is associated with better child outcomes and improved staff competences to provide suitable pedagogical learning opportunities. Specialization can refer to "any education, intervention or training focusing on childhood education" (Litjens and Taguma, 2010).

It is necessary for teachers to provide healthy school environment and teaching strategies to the children that would contribute in children's development and mastering developmental milestones.It is also clear that despite they have knowledge about developmental milestone but they don't have an idea, how to *implement* this knowledge through early literacy instructional activities and in how to engage children in useful activities that promotes their developmental domains (Justice *et al.*, 2007 and Wasik *et al.*, 2006). So keeping in view these facts, the present

investigation was undertaken with the objective, to assess the impact of anintervention programme on teachers' knowledge regarding developmental milestones of children.

■ RESEARCH METHODS

The present study was carried out in two cultural zones of Haryana state. Thirty primary teachers were selected for the study, 15 primary teachers from each cultural zone were assessed for their knowledge about developmental milestones of 6-10 years of age children. Intervention package was imparted to primary teachers for a period of one week. After a gap of one month, teachers were post-tested for their knowledge regarding developmental milestones. SPSS 10 was used to analyse the data, SPSS does not provide procedures for running Z-tests as there is no (direct) Z-test in SPSS. Statistical computing packages use't' throughout. Hence T-test was usedbecause of the T=Z for large n. In this study, to compare the difference in two samples on the basis of means, independent sample t-test has been used.

■ RESEARCH FINDINGS AND DISCUSSION

The present paper describes results regarding teachers' knowledge about developmental milestones, and how they use their knowledge to support children in their learning to acquire new skills by the use of effective teaching-learning practices.

Knowledge of teachers from Khadar and Mewat cultural zones was compared using independent sample t-test. As shown in Table 1, Results revealed that there were no significant differences in knowledge of teachers from both the zones regarding various developmental milestones of 6-10 years old children; t-values were not significant for gross-motor (t=1.84), fine-motor (t=0.00), cognitive (t=0.00), language (t=0.50), social (t=0.40) and emotional domains (t=0.61) and also for overall development (t=0.73).

To assess the impact of intervention programme, paired t-test was computed to compare pre- and post-testing knowledge of school teachers about developmental milestones of 6-10 years old children in gross-motor, fine-motor, cognitive, language, social and emotional developmental domains. Pre- and post-testing mean scores and developmental gain in different domains is presented in Table 1.

To assess the impact of intervention programme, paired t-test was computed to compare pre and post-testing knowledge of school teachers about developmental milestones of 6-10 years old children in gross-motor, fine-motor, cognitive, language, social and emotional developmental domains. Pre- and post-testing mean scores and developmental gain in different domains is presented in Table 2. Results presented in Table 2, clearly depict that there were no difference in knowledge of teachers from Khadar and Mewat cultural zones as t-values were not significant for gross-motor (t=0.70), fine-motor (t=1.28), cognitive (t=0.70), language (t=0.70), social (t=0.00), emotional (t=1.01) and overall knowledge about different development domains (0.48). Results also show differences in values after intervention programme. Teachers gain some knowledge regarding developmental milestones. Next table shows this gain in knowledge in teachers about developmental milestones.

Results presented in Table 3 clearly illustrate that after exposure to intervention programme, teachers' knowledge about developmental milestones of children improved significantly, as t-values for developmental gain were significant for gross-motor (t=5.43*), fine-motor (t=4.01*), cognitive (t=5.13*), language (t=4.71*), social (t=4.07*), emotional (t=4.65*) and overall development

Table 1 : Zone-wise comparison of teachers' knowledge regarding developmental milestones of children at pre-testing stage (n=30)

Developmental domains	Khadar (n=20) (Mean±SD)	Mewat (n=10) (Mean±SD)	t- Values
Gross-motor	11.40±0.87	10.90±0.59	1.84
Fine-motor	11.40±0.75	11.40±0.52	0.00
Cognitive	11.30±0.80	11.30±0.67	0.00
Language	11.50±0.51	11.60±0.52	0.50
Social	11.50±0.68	11.60±0.52	0.40
Emotional	11.45±0.51	11.30±0.82	0.61
Overall development	68.55±1.39	68.10±1.91	0.73

(12.23*).

Results of the present study revealed that teachers had a good knowledge of gross and fine-motor, cognitive, language, social and emotional developmental milestones of 6-10 years old children. Results also revealed that there were no differences in knowledge of teachers from Khadar and Mewat cultural zones regarding developmental milestones of children. Results clearly illustrate that after exposure to intervention programme, teachers' knowledge about developmental milestones of children improved significantly, as t-values for developmental gain were significant for gross-motor, fine-motor, cognitive, language, social, emotional and overall development. These results found support from Sharon *et al*. (2015) they also found that in-service teacher training regarding childhood development was largely effective in making classrooms more child-friendly and developmentally appropriate. These changes had the largest impact on children's all developmental domains.

The reason for good knowledge could be that majority of teachers from both the zones were graduate to post-graduate with B.Ed. training and had teaching experience upto 20 years. Vast academic knowledge, teaching experience, and a professional degree could have helped them in gaining knowledge about developmental milestone of children. Personal interaction with teachers also revealed that all the teachers were married and had 1-2 children. So, experiences with their own children could have improved their knowledge about developmental milestones of children.However, many government school teachers may have trouble implementing a developmentally appropriate early learning program because of perceived barriers, both real and imagined (Goldstein, 2007). Although teachers have good knowledge about developmental milestones but they were not aware of how to use this knowledge in teaching practice. After intervention programme, they became aware to use their knowledge in day to day teaching practice. After intervention programme, they start to plan activities according to developmental milestones of particular age group. This programme was very beneficial for the teachers as well as children. These results get partial support from the findings of Dewey *et al*. (2001). These authors found that majority of adult respondents answered most questions correctly regarding physical development of children.

Another reason could be that class teachers in the present study spent about 5 hours daily with these children; it could have improved their knowledge about children's current developmental milestones. Similar

Table 2: Zone-wise comparison of teachers' knowledge regarding developmental milestones of children at post-testing stage (n=30)

Developmental Domains	Khadar (n=20) Mean±SD	Mewat (n=10) Mean±SD	t-value
Gross-motor	11.95±0.22	12.00±0.00	0.70
Fine-motor	11.95±0.22	11.80±0.42	1.28
Cognitive	11.95±0.22	12.00±0.00	0.70
Language	11.95±0.22	12.00±0.00	0.70
Social	12.00±0.00	12.00±0.00	0.00
Emotional	11.90±0.31	12.00±0.00	1.01
Overall development	71.70±0.57	71.80±0.42	0.48

Table 3 : Pre- and post-testing comparison of teachers' knowledge regarding developmental milestones of 6-10 years old children from both zones (n=30)

Developmental Domains	Pre-testing Mean±SD	Post-testing Mean±SD	Knowledge Gain	t-value
Gross-motor	11.23±0.73	11.97±0.18	0.74	5.43*
Fine-motor	11.40±0.67	11.90±0.30	0.50	4.01*
Cognitive	11.30±0.75	11.97±0.18	0.67	5.13*
Language	11.53±0.50	11.97±0.18	0.44	4.71*
Social	11.53±0.63	12.00±0.00	0.47	4.07*
Emotional	11.40±0.62	11.93±0.25	0.53	4.65*
Overall development	68.40±1.57	71.74±0.52	3.34	12.23*

* indicates significance of value at P <0.05

findings have been reported by Catherine and Marc (2014) demonstrating that teachers' judgments about the developmental milestones depended on children's current developmental stage.

Lane *et al*. (2015) also support the findings of present study indicating the effectiveness of a professional development training support educators in learning a systematic approach to assessment. In another study, Evense *et al.* (2005) also reported that pedagogical content knowledge (PCK) is generally accepted as positively impacting teaching quality. Dunn and Kontos (1997) also support the findings of the studythey reported that for children in early learning environments, development is affected by the quality of interactions with the teacher. In an optimum environment, knowledge of teacher and the way of interaction provide a level of security and protection for children as well as engage children in the learning process. Teacher may give a child the belief that a personal and caring relationship is common place in the early learning environment. Shonkoff and Phillips (2000) highlight the need for warm and supportive interactions within the learning environment. Children can learn greater social competence and enhanced problem solving skills with the help of a good teacher. Children's development is enhanced when teachers have higher levels of education, have knowledge of how children grow and develop, and understand how to implement developmentally appropriate activities.

Urie Bronfenbrenner's Ecological Systems Theory also suggests that children develop within complex systems of relationships affected by multiple levels of a child's environment (Berk, 2002). Bronfenbrenner's Ecological Theory is represented by a nested structure that encompasses not only the child's immediate environment, but societal conventions and public policy and teaching practices used by the teacher (Berk, 2002). High quality early learning experiences are very important for children all round development (Bowman *et al.*, 2001; Schweinhart and Weickert, 1997). To give high quality early learning experiences teachers need good knowledge of a child's development.

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