2

Learning while Playing at Early Childhood Stage

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Significance of Early Years

The first six to eight years of a child's life, known as the early childhood stage, are globally acknowledged to be the most critical years for life-long development, since the pace of development in these years is extremely rapid. Recent research in the field of neuroscience, particularly on the brain has provided very convincing evidence of the 'critical periods' located within these early years, particularly the first three years, for forming of synaptic connections in the brain, and for the full development of the brain's potential. Research has also indicated that if these early years are not supported by, or embedded in, a stimulating and enriching physical and psycho-social environment, the chances of the child's brain developing to its full potential are considerably and often irreversibly reduced. This finding immediately places a very large percentage of children in the developing world in poverty contexts 'at risk', in terms of their life chances. The early childhood stage in life is also important as a foundation for inculcation of social and personal habits and values which are known to last a lifetime. What follows logically is the crucial importance of investing in these early years to ensure an enabling playful environment for every child and thereby, a sound foundation for life, which is not only the right of every child but will also impact, in the long term, on the quality of human capital available to the country.

Good quality Early Childhood Education (ECE) programmes are known to produce significant short and long term benefits, particularly for the children in underprivileged contexts. They contribute by compensating for the deprivations at the home front for the children in poverty contexts, and thus serve to improve their life chances. ECE also contributes to the universalisation of elementary education. This, to some extent, leads to reduction in the number of dropouts and failures at the primary level.

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Keeping in view the importance of ECE for universalisation of elementary education, the XIth Plan has put a lot of emphasis on early childhood education. The methodologies suggested for ECE are child-centred and play-based. Thus there is a need to provide quality play at early childhood stage so that the young children can develop to their full potential.

Play is the Basis of Learning

Play as an avenue for social, emotional and intellectual development has been recognised by early childhood educators. Many educators firmly believe that children should engage in activities/ objects of their own choice so as to enable them to learn through meaningful interaction with their environment. Early childhood educators are well aware that young children learn better with hands-on activities than with worksheets. Play allows young children to manipulate objects, participate in activities, try out new ideas, find solutions to problems, satisfy their curiosity and create new inventions. Children who are provided opportunities to engage in activities and handle or manipulate objects and play material of their own choice, gain a sense of autonomy and effectiveness; become motivated to attain mastery; develop attributes like self-direction; trust in themselves, self assurance and a feeling of self-worth. This article makes an attempt to clarify what children learn and how children learn by handling/ manipulating objects based on Piaget's theory.

How Children Construct Knowledge?

Piaget (1967) identified two different types of knowledge children build when they act on objects. *Physical Knowledge* refers to observable properties of objects and physical phenomena. The implication is that the child should be given opportunities to act on objects in the environment and observe the reactions to his actions on the objects, i.e. ability to manipulate, experiment and observe. This would help children to discover for themselves the physical properties of different objects. Physical knowledge is the knowledge of objects that can be seen or observed. We acquire physical knowledge by acting on objects, for example, by pushing, pocking, and dropping them. Most children have a strong desire to investigate their environment. Provide a mud puddle and children will seek it out, pock it, swirl, pat, plop, mash and mess with it. The child kicks the ball, pokes and drops it. The properties that are in the object (ball) i.e., softness and weight of a ball could not be known if the child could not poke and lift the ball. Similarly when the child picks up the ball and allows it to fall on the ground and see it bounce. This is also an example of physical knowledge.

Logico Mathematical Knowledge involves–

(i) Development of the ability in children to find similarities and differences among objects and be able to classify or group these objects accordingly into classes.

(ii) Development of the ability to seriate or place objects in order along any one dimension, for example, from biggest to smallest or vice-versa.

(iii) Development of the concept of number and quantity.

Logico mathematical knowledge differs from physical knowledge because it involves relationships between and among objects, rather than characteristics of individual objects. For example, if we gather several objects and determine that we have four, fourness is not a characteristic of one of the objects by itself, it is a relationship we have imposed on the group of objects. However, the colour of the objects, perhaps blue, red, yellow and green can be said to be a characteristic of each object and is not dependent on any object's relationship to other objects. In this case, physical knowledge is in the external world to be observed while logico mathematical knowledge is created by the learner. To create logico mathematical knowledge we act on objects, relate them to each other and can observe their actions and reactions.

Logico mathematical knowledge is created when we make relationships between objects, for example, when we compare two balls – one red and one blue – and think that they are different. The different relationship is created by an individual who puts the two objects into this relationship. The difference exists neither in the red ball nor in the blue ball. It exists only in the mind of the person who puts the two balls into this relationship.

Another view of Piaget's differentiation is to think of knowledge as being from two sources – external and internal. The source of physical knowledge is partly external to us, but the source of logico mathematical knowledge is internal.

When a child in the block building corner looks for more cylindrical blocks to make a tower taller, s/he engages mainly in the logico mathematical action. As the child searches through the pile of blocks, she makes relationships between blocks that are cylindrical and those that are not. When the child places a cylindrical block on the top of other four blocks in the tower, s/he is engaged mainly in physical action, because the tower will topple unless the blocks are carefully stacked so it is impossible to separate physical knowledge from logico mathematical knowledge.

Block building involves many concrete operations that involve both knowledge such as one-to-one correspondence, counting with purpose, matching, sorting and fitting blocks to spaces. The unique one dimensional multiple qualities of blocks seems to encourage productive thinking and experimentation. Block building is almost problem solving.

Similarly, it would be impossible for a child to recognise a red ball as such without comparing to balls of other colours. This relationship or classification is essential for the observation of object properties. When children put beads of different colours on a string, they learn cardinal and ordinal numbers as well as patterning and colour discrimination. Logico mathematical knowledge and physical knowledge depend on each other and develop together. As children's logico mathematical framework becomes well structured, they develop more precise and better organised physical knowledge and vice-versa. Children can obtain sensory information only when they act on an object physically and mentally. Materials offered in the classroom may range from buttons or seeds that children have collected to commercially produced manipulatives such as pattern blocks, puzzles and coloured page. Children sort, classify, order, count and compare collection of objects. Children acquire physical knowledge when they handle/ manipulate objects and observe how they work or react. For example, children discover the properties of balls by holding them, kicking them, dropping them, rolling them and throwing them. Manipulation or handling objects is essential for children and adults to acquire physical knowledge. We cannot get physical knowledge without *interpreting* with our logico mathematical framework , the sensory information we get by holding and touching the object. Teachers must support our children's learning about new ideas and concepts by providing variety of toys, objects and activities that lead them to manipulation and exploration.

How Children Think

Children's thinking undergoes changes as they get older. For example, the child between 2 to 6 years of age is in *pre-operational stage* of cognitive development, while the child between 6 or 7 years and 9 or 10 is in Piaget's *concrete operational stage*. Today Sakshi is sure that her toy will sink if dropped in a pail of water. Tomorrow she may confidently guess that the same toy will float. Priya may judge that you and she have the same amount of orange juice if both of your tall glasses are full. As you carefully pour your juice into several shorter, thin glasses, the child may decide that you have more to drink than she does. Children spend years actively exploring material to learn about the properties of substances. For example, children gradually realize the total mass or weight of solids and liquids does not change despite changes in container shape or distribution of materials.

Piaget's term action refers to mental action, which is often accompanied by physical action at early childhood stage. When we gently squeeze a mango or a papaya to find out how ripe it is, we do so because we want to know something about the fruit.

The important part of our action is the mental part, without which the external act would be a mindless manipulation.

Adults can begin to learn how a young child thinks and reasons by watching each child's response to physical changes, such as breaking up a ball of clay into many pieces and judging the amount of clay present when compared to an unbroken ball.

In the physical reaction, children have to think to decide how to roll a ball in a game similar to bowling. If they roll the ball too far to the left or right and miss the target, they have to think to decide what to do next.

In the logico mathematical reaction, the child acts on objects not to produce desired physical efforts but to put them into relationships. When the child is given six blue blocks and two yellow ones, for example, s/he can put together the ones that are the same, and separate those that are different. The child can also order the blocks spatially or divide the blocks into two equal groups.

Young children physically act on the objects as they put them into relationships. As they grow older, they are able to group, order or divide them in their heads without touching the objects at all.

In short, the handling of objects or first hand experience with concrete objects (manipulation of objects) is essential in the logico mathematical realm because young children think better and do better when they physically act on the objects. Children can gain an understanding of the basic concepts of one-to-one correspondence, counting, ordination, classification, comparison, etc. as they manipulate objects in their environment. This is why we say always provide concrete manipulative material to get first hand experience, as workbooks do not encourage children to invent their own ways to solve problems. When we always tell/teach or present knowledge to young children, we stifle their initiative and diminish their confidence.

Children are learning about their environment and people in every situation. They learn how to use materials/objects. Sand is for sifting and pouring, but not for throwing. Books are for reading, not for tearing up or using as weapons.

Creating a Thinking Atmosphere

Pre-schoolers can be challenged to think and sketch their imagination. There are ways to encourage thinking which often occur simultaneously. One way to encourage children to think is to provide opportunities for them to take decision. Allow children to decide on their own in a game, who knocked over the most balls or how many children should be there in each learning area or give children choices within the boundaries of the rules for the centre. In this way children need to learn to be responsible for their own actions through taking the initiative. Giving responsibility or allowing to take decisions encourage children to think

Giving Children Choices (I Can Do It)

From earliest toddlerhood, children express their need to do things for themselves and by themselves. Children often grow in self-satisfaction as they try to accomplish new developmental tasks. If a caregiver has learned to match needs with abilities, children will have more experiences with success than failure as learning progresses.

"I can make out how to fix it."

"I can swim." "I can draw my house."

much harder than when the teacher decides everything. Children who are given choices in what and how they learn will learn more and have a better attitude about it. Without choices, children "burn out" just as adults do, says writer Alfic Kohn. This is the reason why sometimes they perceive themselves as powerless and respond with apathy or aggression. *Young children worked more creatively when they are permitted to select the materials they wanted to use in making a collage.* Children's choice is a key component of holistic, constructivist, learner-centered or developmental approaches to education.

Another way to encourage children to think is to provide opportunities for them to exchange viewpoints/ideas with their peers. Ask lots of "What if ....." (questions). Helping children develop their language skills entails priceless rewards for care giving adults as well as pleasure and skill for children. Children think harder when one child says, for example, that the balls are easier to knock over if arranged in a certain way, and another child holds a different idea. Working with manipulative objects encourages such kind of exchange of dialogue, whereas workbooks preclude the possibility of this kind of exchange. When doing only worksheet sitting on their chair (seat work) they do not get chance to agree or disagree. On the other hand when working with material/objects they develop intellectually and socially.

It is not the manipulation or handling of objects in itself that is important for children's learning. What is important is the mental action that is encouraged when children act on objects themselves. It depends on the teacher whether she wants her children to become active or passive learners. When the teacher holds all the power of decision making, children eventually become mentally passive because they are prevented from taking decisions/ taking a stand and exchanging ideas.

The crux of the matter is that children need to be active. We must create an environment that provides plenty of opportunities for children to think when they work with objects. Worksheets also need to be based on concrete experiences. So teachers and parents

need to go beyond drill-type methods of teaching and use your own initiative to encourage children's thinking.

Helping children become independent and enthusiastic lifelong learners. Isn't that what good teaching is about? Based on the discussion the following role of teachers emerges out.

Teachers must:

- be sensitive to the fact that children's initiative and creativity may be more important than our limited expectations and demonstrations;
- understand the stages of emotional development of children and their relationship to intellectual understanding;
- offer praise that is specific and sincere;
- give all children equal attention and opportunities for success; and
- capitalise on children's interests and curiosity.

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