

Construction of knowledge among young children before their entry to school

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I. Introduction

Even after a long tradition of scientific study of children and their development, not much is known about the private lives of children when they are by themselves and involved in play – the activities, social partners, and interactions that form part of everyday experiences. Most research in psychology has been conducted on children in laboratory or laboratory-like situations or relied on parents' reports rather than examining children's typically occurring everyday activities (Tudge, Hogan, & Etz, 1999). The activities and interactions that comprise proximal processes may be the engines of development, but to understand interactions it is necessary to know something about the particular individuals involved in the interactions. Clearly, although studies of socialization often focus on what parents do with or for their children, it is also necessary to account for the fact that children are the agents of their own experiences. They influence their own environments: for example by initiating new activities, drawing others towards them, while at the same time being influenced by those around.

Knowledge is to know or to be familiar about things that include facts, information, description or skills acquired through experiences and education. Knowledge acquisition is a complex cognitive process. Cognitive processes deal with learning and experiences. New knowledge is constructed by the developing human being when information comes into contact with existing knowledge developed by experiences. Construction of knowledge has been a vital concern among psychologists' specifically developmental psychologists. Among the eminent theorists of knowledge construction, the names of Jean Piaget, John Dewey, Lev Vygotsky, Maria Montessori and Barbara Rogoff are prominent.

II. Constructivism

Constructivists believe that learners construct or build their own knowledge. Learning is not unidirectional rather it is based on previous experiences and knowledge of the person. Constructivism is an approach that claims that humans are better able to understand the information they have created by themselves. According to constructivist theories, learning is a social phenomenon that involves language, real world situations, and interaction and collaboration among people in a social setup. The learners are considered to be central and active participants in the learning process.

Jean Piaget and Lev Vygotsky are two pre-eminent figures in the development of constructivist theories. They share the common belief that young children must learn by doing in real life situations. Development of the human beings is the result of two groups of factors: the heredity and biological adaptation factors, on which the evolution of the nervous system and elementary psychic mechanisms depend, and the transmission factors, or those of social interaction, which begin at the cradle and which play an ever increasingly important role during the course of growth, in the constitution of mental life and behaviour. To speak of a right to education thus means first to ascertain the essential parts played by social factors in the very formation of the individual (Piaget, 1973). However, there are important differences between their theories regarding to the process of learning. Piaget's developmental theory of learning and constructivism are based on discovery. According to Piaget's constructivist theory, in order to provide an ideal learning environment, children should be allowed to construct knowledge that is meaningful for them. Vygotsky, known for his theory of social constructivism, believed that learning and development are collaborative and that children's thinking develops in the context of socialization and education. The perceptual, attention, and memory capacities of children are transformed by vital cognitive tools provided by culture, such as history, social context, traditions, language, and religion. For learning to occur, the child is believed to first make contact with the social environment on an interpersonal level and then internalizes this experience. Vygotsky's constructivism is known as social constructivism because of the significance of culture and social context. For Vygotsky, the zone of proximal development – "the distance between the actual development of a child as determined by independent problem solving, and the level of potential development as determined through problem solving under adult guidance or in collaboration with more advanced peers" (Vygotsky: 1978, p.92) suggests that cognitive development is limited to a certain range at a particular age. However, with the help of social interaction, such

as assistance from a mentor, students can comprehend concepts and schemes that they cannot know on their own.

Social constructivism

Social constructivism is the application of general constructivism in social surroundings that proposes there is shared learning among people resulting in shared cultural meaning. Thus, culture is believed to be created from the collaborative interaction among people, learning from and teaching others through active engagement. Culture is thus believed to be a creation of social activity, both a process and a product of social interchanges (Valsiner, 2007). In this regard, Vygotsky (1978) posited the existence of two interdependent lines of development in ontogeny, the cultural and the natural. It is within the dynamic exchanges of the cultural and natural that children learn. They learn not only what is taught to them, but that which they engage with that lies within the range of their capacities to learn. Thus both the learner and the more knowledgeable other are critical to learning.

The cultural line is assumed to develop as the child participates with others in their social world. Vygotsky (1978) famously said that all higher psychological functions begin externally with others (inter-mentally) and are only gradually internalized so as to function for oneself (intra-mentally). Development proceeds dialectically as the cultural line feeds into the natural and the natural feeds back into the cultural. The methods developed by Vygotsky were attempts to capture the *structure* of the relationship between the two lines at various stages in child development. To do this he created an experimental situation in which the child could use some “external mediator” (e.g., an image, a card, a rope, an abacus, etc.) to help them complete a task, which represented the development of the cultural line. Results of this mediated task were often compared with a child’s performance on a task without the external mediator (approximating the natural line), so as to separate and compare the two lines of development—cultural, mediated; and the natural, unmediated (Vygotsky & Luria, 1994). Mediation is thus a critical phenomenon in this theoretical approach, and has become the central notion in activity theory.

Children’s cognitive development is therefore like an apprenticeship - it occurs through guided participation in social activity with companions who support and stretch children’s understanding of and skill in using the tools of culture (Rogoff, 1990). Research of interactions with older children is consistent in showing advantages of working with a skilled partner in memory and planning tasks (Rogoff, 1990).

III. Role of play in construction of knowledge

Play and playfulness is important for everyone. As adults, we make sincere efforts to find time for playful activity, although not in the sense that children do. We seek entertainment and recreation to provide us with change and relief from everyday activities. For children, play is a far more serious occupation, since their knowledge of the world is acquired through play. Children’s surroundings provide a world for exploration, discovery, and enjoyment. Playing is what young children spend most of their time doing from the moment they wake up until they close their eyes at night. Very often, the moments before they sleep, children rehearse and revisit many of the experiences they have had during the day (Nelson, 2006). Grasping the significance of play helps us to access the child’s personal world and appreciate the impact playing has on development and learning. Through play, children learn about cultural norms and expectations, discover the workings of the world, and negotiate their way through their surroundings.

Play teaches children about themselves, others, rules, consequences, and how things go together or come apart (Klein, Wirth, & Linas, 2004). Enrichment and growth naturally evolve from playing as children learn about themselves and their surroundings. A child’s active participation in his or her world facilitates mastery and control, leading to feelings of competence and self-efficacy; both competence and self-efficacy contribute to young children’s sense of self. The internal excitement derived from discovery and mastery nurtures children’s innate desire to learn. This passion and internalized sense of accomplishment is what motivates children’s learning in dynamic engagement with the world in which they live. Play lets children make important discoveries about the self—including their own likes and dislikes. They continually shift activities to maximize pleasure, while discovering what is easy and hard to do and what makes them happy or frustrated. They learn to understand the feelings of others and develop empathy. These skills are crucial for healthy peer relationships. Play fosters language skills as well and pretend plays encourages language development as children negotiate roles, set up a structure, and interact in their respective roles (Klein, Wirth, & Linas, 2004). As young children’s most familiar and comfortable tool for engaging the world, play with adults acts as an essential guide for scaffolding; that is raising the child’s level of activity by advancing the complexity of any activity (Bruner, 1990).

Children do not have to be taught to play. What adults can do is to create a stimulating environment with age appropriate and safe play materials for children and play will take care of itself. The conscious encouragement of play activities among children appears to be a symptom of contemporary parenting strategies

in the technologically advanced age. However, there is evidence for writings on playful activity and age-appropriate engagement with the child even in ancient times (Anandalakshmy, 2010). A range of voluntary, intrinsically motivated activities that are normally associated with pleasure and enjoyment are referred as play. Play occurs only when children do not feel anxious or threatened (Mehra, 1995). Toddlers imitate what they see around them; common play themes include cooking, caring for baby, driving cars or trucks, and other everyday events with the active involvement of adults in structuring some play (Smith, & Pellegrini, 2008).

Guided Participation

Caregivers and companions collaborate with children in deciding the nature of children's activities and their responsibilities for participation. In the process of collaboration, children adapt their knowledge to new situations, structure problem-solving attempts, and regulate their responsibility for managing the process. This guidance and participation includes tacit forms of communication and distal arrangements of children's activities, as well as explicit verbal interaction. The mutual roles played by children and their caregivers rely on both the interest of caregivers in fostering mature roles and skills and children's own eagerness to participate in adult activities and to push their development.

In contrast with such views, however, Rogoff (1990) suggested that the process is one of *appropriation*, emphasizing that children are already participants (either central or peripheral) in ongoing activity. As such, they already function *within* activities as they learn to manage them, rather than engaging in a two-stage process of, first, social lessons and then individual internalization in order to put the social lessons inside their heads. Children make later use of their changed understanding resulting from their contribution and involvement with joint problem-solving processes in new situations that resemble the ones in which they have participated. Rather than importing an external process to the internal plane, they appropriate a changed understanding from their own involvement and can carry to future occasions their earlier participation in and their gains in understanding of social activity (Rogoff, 1993).

The microgenetic method is “any empirical strategy that triggers records and analyses the immediate process of emergence of new phenomena” (Valsiner, 2000, p. 78). It must be noted that the resultant process is produced by the child's own agency, not the experimenter's; the experimenter may *guide* the child toward a particular “means” but cannot *determine* how the child will use them if they do at all (van der Veer & Valsiner, 1991). It is possible to visualize the interaction of a child with different kinds of partnerships in a given situation as follows (Figure 1). As shown, the learner can have situations with internal moderation (the self) or external moderation (others). These others are likely to have divergent interactions on account of the intersubjective context between the learner and the other. For instance, a younger child is likely to be cared for and guided, whereas an older person may be the one to provide the child with a higher level of interaction. Intersubjectivity here refers to the level of common grounds of understanding between any two partners (Rommetveit, 1992).

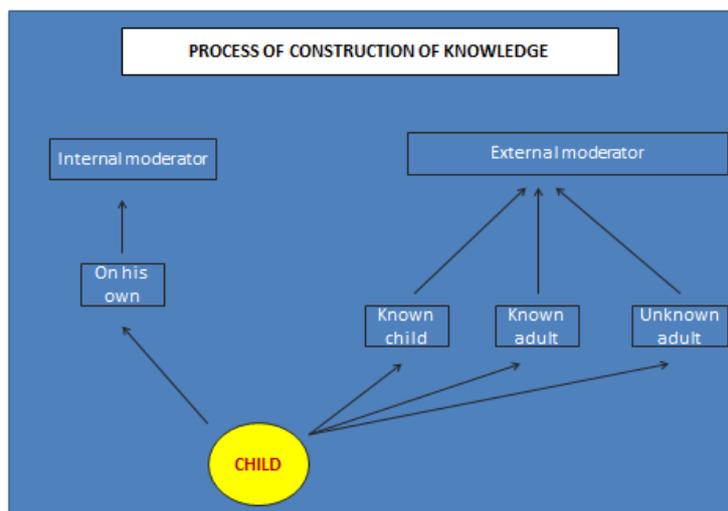


Fig.1: Process of construction of knowledge

IV. Microgenesis

Vygotsky's understanding of microgenesis is most apparent in his comments on experimental procedures in psychology. He argued that when conducting laboratory studies, the investigator should at least be

aware of the microgenetic processes involved in the formation and execution of a psychological process. The first type of microgenesis identified by Vygotsky concerns the short-term formation of a psychological process. The study of this domain requires observations of subjects repeated trials in a task setting. He pointed out that by ignoring this form of genetic transition, learning and experimental studies often fail to utilise what may be the most interesting data they generate. The second type microgenesis is the unfolding of an individual perceptual or conceptual act, often for the course of milliseconds (Wertsch, 1985).

V. Sociogenesis

Vygotsky (1978) emphasises cognitive factors as basic to psychological development and highlights the social organization of psychology. Thinking depends upon social concepts represented in language and socially structured life activities of children. The cognitions that shape thinking therefore implant cultural concepts, linguistic terms, and social activities into those thought processes leading to the construction of knowledge. Vygotsky speaks of sociogenesis as a higher form of human behaviour which occurs when the child interacts with a more knowledgeable other and thus fosters the thinking processes. This helps in the construction of knowledge at the social level. Thus, the structures of higher mental functions originate from interactions with other people. This phenomenon is termed as sociogenesis, or emerging from the social.

Children bring a lot of knowledge to school. However, it is commonly believed by teachers at school that children arrive with little or no knowledge and that they have to be 'taught', otherwise they will not learn. Nothing can be further from the truth, and yet, this myth pervades the school system (Kalra, 2012). Adults in education believe that the child starts learning when he or she joins school. This study will focus on the issue of how much and how children have already learnt before entry to school by combining the theories of Piaget and Vygotsky.

Play helps children bring all the basics of life together as they experience it. It allows children to understand life and make it their own. It is a channel for expression of their creativity, and it is an absolutely critical part of their childhood. With creative play, children flourish; without it, they could suffer a serious decline (Almon, 2003). There have been several researches on construction of knowledge and play, but most research has been conducted in the West and under controlled conditions, whether in the psychology laboratory or preschool setting. A review of studies done in India indicates that much of the research has been done on parent's opinions of, and teachers' encouragement of play among preschool children. A study done by Gupta (2005) on opinions about play among urban Indian families, finds that most parents believed play to be universal. Parents accepted the need for play, understanding its significance in preparing children for later life, it was accepted that children spontaneously learn games, rules and boundaries. It is the culture of childhood that reproduces play, games and childhood language through playful regimes. Parental support of children's play is extremely important, but the actual means of support, whether through the provision of time, space, materials, or social partners, varies widely and appropriately by culture. According to a study done by Singh and Srivastav (2008) adults were not considered to be popular play partners as they did not reciprocate same levels of energy and enthusiasm for play. They are seen as 'stationary', where there is absence of agility and movement. Mediation means (tools and signs) make possible the transmission of culture, but more important for Vygotsky's approach is the fact that these signs provide the mechanism for sociocultural change (Wertsch, 1985).

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