

Children's Theory of Mind: Educational, School and Instructional Implications

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The awareness regarding mental life of self and others is a significant developmental milestone in children's early years of life. As social interaction is virtually an interaction of minds, children, after theory of mind development, are able to participate more meaningfully in their social and cultural environment. As evident from empirical studies, this specific acquisition of children has implications for their socio-emotional growth in later life. Hence, significant departure from the normative age of its development can adversely affect children's effective coping with complex social interaction. How children learn in classrooms, how they communicate, how they make friends, how they make sense of important verbal and non-verbal transactions in everyday life...all these and many more, share significant relationships with children's theory of mind development. Research also indicates that the pragmatic and communicative deficiencies, that are central to the disorder of autism, are attributable to autistic children's inability to understand the mental world. When children are able to think recursively by attributing second and higher-order mental states, their understanding of social life becomes richer and more meaningful. Apart from specific classroom implications like peer tutoring and collaborative learning, theory of mind development has implications for children's ability to think critically, their episodic memory and their development of self-concept. The present paper discusses the concept of theory of mind, its development and implications of children's recursive thinking for Educational, School and Instructional practices.

Keywords: Theory of mind, School, Teaching-learning practices

During their elementary school years, children undergo important developmental changes. Their reasoning becomes more logical, their attention gets more adaptable, their perspective taking grows more sophisticated, and their linguistic skills blossom. This age span coincides with the time frame in which children are developing an understanding of mental states and processes. In particular, around the age of 4-5 years, young children acquire the ability to put together their conceptual knowledge of intention and false belief (Astington, 1991; Chandler & Hala, 1994), two of the central concepts to understanding of mind. Theory

of mind – the rubric given to a body of studies and findings pertaining to children's abilities to attribute mental states to own and other people – is a system of inferences, allowing a person to explain behaviour using mental states such as beliefs, intention, knowledge, and desires. It is viewed as a theory because such mental states are not directly observable. Simply put, an individual who has a theory of mind is able to impute mental states to oneself and to others (Premack & Woodruff, 1978).

Piaget opined that children begin development by being cognitively egocentric.

That is, initially, they do not know that there exist such things as conceptual, perceptual, and affective perspectives. As a result, they naturally cannot know that they themselves have such perspectives, or that other people do, or that their own perspective may differ from those of others, or that they may be unwittingly reporting their own perspective when asked to report another person's. Even after children become aware of the existence of perspectives and perspective differences, they only gradually acquire skill in discriminating their own from other people. Consistent with the Piagetian view, many studies since the 1950s have documented increases with age in various perspective taking abilities (Flavell, 1992; Shanz, 1983).

Two of the central concepts to understanding mental states are false belief and intention. False belief generally is construed to mean that a person can hold a belief that is not an accurate portrayal of reality. In the false belief tasks, the child witnesses a transaction in which he knows that "y" is the case and yet at the same time knows that the protagonist still believes "x" to be the case. For instance, in response to the question "Why Raja looked for the ball in the wrong place?", children come up with such statements as "He did not know that the ball has been shifted to the new place" or "He thought the ball was there". The words 'know' and 'thought' refer to the mental state of knowledge and belief respectively. The general consensus is that, prior to the age of 4; the ability to hold such conflicting mental representations in mind is not evident (Bennett, 1993; Flavell Green, & Flavell, 1995; Perner,, Leekam, & Wimmer 1987).

Children's understanding of intention serves to differentiate things we do on purpose from things that merely happen to us. It is composed of a goal and a means, and both must be present for there to be an intention. For example, when a person desires something, the person will form an

intention to obtain it. In turn, this causes the person to act in a way that will fulfill the desire, which leads to outcome. In sum, there is a causal element to intention because the propositional content of an intention is not it happens, nor even I do it, but I do it in order to carry out this intention. Children's comprehension of the causal nature of intention improves markedly between the ages 5 & 10 (Astington & Gopnik, 1991).

Developmental trend

Acquisition of theory of mind does not take place overnight. The early steps in its developments are evident in the second and third year of child's life. Prior to that, babies exhibit their preference for social to non-social stimuli by enjoying face-to-face contact and showing active interest in noticing human faces. By talking about events gone by and things out of sight, solving problems by insight, finding invisibly displaced objects etc. children, in their second year of life, show us that they can think about absent and hypothetical situations. This ability to imagine a possible alternative reality is most clearly seen in young children's pretend play. Even two-year-old children indicate their awareness regarding perception by showing things to others. (Lempers, Flavell & Flavell, 1977). By the age of 3 years they can deprive others of perception by hiding things and can judge other modalities of perception like hearing, smell and touch (Yaniv & Shatz, 1988). While four-year olds can understand that something can look different from what it really is, many 3-year-olds cannot. This distinction between appearance and reality is important particularly in avoiding misconceptions and misunderstanding.

Once children understand that people may hold false belief, they are in a position to create false belief in others to deceive them. Deliberately inducing a false belief in someone is most commonly observed in lying. For adults to consider something a real lie, what is said must be false and the person

who says it must know it is false and should want the listener to believe it. However, understanding of mental life does not end here. After all, our mental states of knowledge and beliefs are not limited to objects, events or persons. We also are concerned with other's thoughts, ideas and feelings. In other words, mental states also encompass mental states themselves. Therefore, children must become aware of 'beliefs about beliefs' which was previously confined to beliefs about things or situations. This embeddedness or recursion of mental representation allows us to attribute second-order and higher-order epistemic states to others. Around 6 years of age, children gradually learn to attribute higher-order mental states in explaining behaviour (Patnaik, 2002; Perner & Wimmer, 1985)

Lack of the ability to attribute mental states has been said to be responsible for autistic children's abnormal social interaction (Baron-Cohen, Leslie & Frith, 1985). Therefore, the attribution of first-order mental states like false belief is a significant acquisition of a normal four-year-old child. Interaction between people is to a large degree, based on interaction of minds. Therefore, theory of mind development in children opens the way for social understanding in children. They are more equipped for operating in a larger variety of social interactions. Given that the period of such development is largely in preschool and early school years, the nature of teaching - learning practices to which children are exposed during this time is of paramount importance. Not only there is a need for consideration of impact of theory of mind development on children's academic achievement but also of the instructional atmosphere children receive at this age.

Teaching -learning practices

In the 1970s, the play -based programmes were widely used in early

childhood education. Based on Piaget's emphasis on interaction with physical environment, early childhood teachers were required to plan stimulating and challenging environment for children. Wellman and Gelman (1998), examining the periodic changes in construction and organization of knowledge, have defined foundational knowledge as "those concepts or bodies of knowledge that engender, shape, and constrain other conceptual understandings" (p.523). They propose that in contrast to earlier research on children's knowledge, such as Piaget's major studies of children's concepts which emphasised domain-general structures and processes, recent research has focused on the knowledge itself, as the content on which the mind works. Astington and Olson (1995) suggest that acquisition of critical concepts permits increasingly complex understanding of social interactions which in turn lead to more advanced conceptual structures. In the case of theory of mind acquisitions, the ability to recognize another's intentions makes possible the ability to engage in more complex collaborative play, which in turn provides further opportunities to participate in socially constructed learning,. These findings highlight the need for acknowledging the knowledge base that children bring to early education settings.

Sternberg (1998) argues that "instruction should be geared not just toward imparting a knowledge base, but toward developing, reflective, analytic, creative, and practical thinking with a knowledgebase" (p. 18). In other words, the subject studies should not be experienced by students as static bodies of knowledge to be 'acquired' but should correspond to the essential qualities of critical concepts of domain knowledge. Hence, students should be provided with opportunities to immerse themselves in a subject study which captures their personal interest and stimulates their cognitive structures and operations. This perspective

applies as equally to the field of teacher education as it does to the area of subject learning with young children.

According to Bruner (1996), modern pedagogy is moving increasingly to the view that the child should be aware of her own thought process and that it is crucial for the pedagogical theorists and teachers alike to help her become more metacognitive – to be as aware of how she goes about her learning and thinking as she is about the subject matter she is studying. The period, during which children acquire a theory of mind, represents their early school years. This acquisition provides the base for the metacognitive skills required for their academic achievement. Attributing mental states to self and others is metacognitive too, as it involves the representations in mind, another mental state – a representation itself. Thus teachers can build on this foundation by consciously introducing and using language about thinking and other mental states in the classroom. This makes their understanding of mental and cognitive processes more explicit. According to Vygotsky (1962) control of a function is the counterpart of one's consciousness of it. A conscious understanding of thinking and learning can help children in constructing knowledge through their own actions and experience. Therefore, teachers can make children's understanding of mental states and cognitive processes explicit by leading children to reflect on and to articulate their thinking. At school entry, children's theory of mind is intuitive or non-reflective as discussed earlier. To make their understanding explicit, even kindergartners can be asked, - How do you know that? Do you really know or are you just guessing? Did you think of that or did you remember it? (Paley, 1984).

Building on the work of Tomasello, Kruger and Ratner (1993), Olson and Bruner (1996) have described four different conceptions of learner's minds held by teachers that lead to

different kinds of pedagogical practice: (1) Conceiving of children as unable to do something leads adults to provide demonstration for them to imitate: (2) Conceiving of children as ignorant of something leads adults to provide them with information about it: (3) Conceiving of children as having their own ideas about something leads adults to engage them in discussion of it: (4) Conceiving of children as knowledgeable members of the culture leads adults to engage them in reflection on what is known in the world beyond what the children themselves knew.

These four models represent implicitly a developmental progression on the part of the learner. Children first benefit from demonstration, then from didactic instruction, then from participation in collaborative discourse, and finally from participation in a world of objective knowledge. These benefits cumulate, rather than replace one another, so that eventually learning can occur in any of these ways. With the emergence of more complex social understanding, earlier forms of learning are subsumed by new forms of learning.

Thus, it has been argued that there may be a relation between the level of children's theory of mind development and their ability to learn by instruction and collaboration (Astington & Pelletier, 1996). This has particular relevance to method of imparting classroom instructions. Teaching methods, that tend to ignore the entering behaviour of the learner and the goals of teaching, can be detrimental for the education of a child. Teaching should be inevitably based on the teachers' notions about the nature of learner's mind. Children, who are capable of reflecting on the mental states of their own as well as others, may benefit more from collaborative learning methods rather than instructional methods. Collaborative learning requires appropriate metacognitive language to talk about mutual understanding and

conflict. Therefore, a new conception of the reciprocity of teaching and learning can be formed by integration of research in children's theory of mind and teacher's awareness regarding it.

Theory of mind and academic skills

Children's understanding of mental states has more specific and direct implications for their learning in school. In students' production and narration of literary and historical texts (Gardner, 1991), attribution of mental states is essential.

According to Astington (1998), theory of mind development is also linked to the growth of scientific reasoning and critical thinking as they depend upon the ability to reflect one's own beliefs, to recognize where they are mistaken and to take another's perspective.

Recently it has been argued (Suddendorf & Corballis, 1997) that episodic memory, which requires traveling mentally into one's past and inspect one's history, and mentally disengaging from the present, depends on reflective awareness of mental states. Near absence of autobiographical memory in early childhood, when children's understanding of mental state is rudimentary, supports this argument.

It has been argued (Kogler, 2002) that taking the perspective of others by attributing mental states is an essential cognitive mechanism needed to understand others. In the medium of language, we are able to articulate what constitutes other's view, and while stating what is different, we are at the same time united in the medium of common linguistic comprehension. This also enables students to move beyond an understanding of the other in terms of some alien, strange and unapproachable otherness. This has implication for the multicultural education and diversifying the curriculum which is a very important dimension of developing students' intelligence – assuming that there is a willingness in all of us to accept the complexity

and richness that human social intelligence entails. This not only helps the students to develop a reflective understanding of themselves but also an open-minded world view.

Researchers have recently suggested links between peer-tutoring and theory of mind, arguing that the ability to tutor effectively depends upon the development of recursive perspective – taking skills or second order theory of mind. In a study of same age tutoring, it has been found that by 7 years, most children can teach contingently. Some 5 year olds show contingent teaching but none of the 3 year olds can (Tomasello, Kruger & Ratner, 1993; Wood, Wood, Ainsworth & O'Malley, 1995).

When children are able to attribute second and higher-order beliefs, their communication skill is enhanced by increased awareness about mental states of the listener. With appropriate understanding of various kinds of speech acts, children can enter into the realm of complex social interactions. Competence in intentional deception and lying add the Machiavellian character into their social lives too. Friendships and peer relationships become more matured in its characteristics, with the shift towards reflective thinking about interpersonal relations.

On the whole, theory of mind development has far ranging repercussions for children's academic and social lives at school.

Implications for early childhood teachers

Pretend play - By talking about events gone by and things out of sight, solving problems by insight, finding invisibly displaced objects etc. children, in their second year of life, show us that they can think about absent and hypothetical situations. This ability to imagine a possible alternative reality is most clearly seen in young children's pretend play.

According to Leslie (1988), representations, decoupled from the things they are representations of, become eligible for a secondary representation. These secondary representations can violate the normal reference, truth and existence properties of primary representation. For example, a stick can be represented as a telephone. Supported by an older and friendly sibling, even two-year olds take on make believe roles and can act out complicated scenarios in make-believe places (Dunn & Dale, 1984). The two-year olds are not just carried along in the game but really do understand another person's pretense (Harris & Kavanaugh, 1993). The importance of early pretense, according to Leslie (1988), is that it is the first clear sign of children's ability to understand another person's mental state.

Children begin to engage in pretend play, develop receptive and expressive language, and use mental representation at approximately the same time in their development. Thus researchers have hypothesized strong relationships among these processes. Because pretending involves language use and takes place in social contexts, the findings of many recent studies of pretend play shed light on the social and linguistic competence vital for school success.

By using questions, entering the activity and co playing or posing problems, the teacher guides and diagnoses for cognitive/language growth. Asking questions, talking about discrepancies between believed and actual situations and experimenting and exploring to find solutions are part of interactions in which thought and language concepts evolve and expand.

Peer tutoring - There are three commonly cited benefits of peer and cross-age tutoring: the learning of academic skills, the development of social behaviors and classroom discipline, and the enhancement of peer relations (Greenwood, Carta,

Hart, Thurston & Hall, 1989). Researchers have also identified improvements in self-esteem and one of its components—internal locus of control. It is important to note that all such benefits accrue to both tutor and tutee. One reason peer tutoring works may be that tutors and tutees speak a more similar language than do teachers and students (Hedin, 1987; Cazden, 1986). Being closer in knowledge and status, the tutee in a peer relation feels freer to express opinions, ask questions, and risk untested solutions. The interaction between instructor and pupil is more balanced and livelier. This is why conversations between peer tutors and their tutees are high in mutuality even though the relationship is not exactly equal in status.

Promoting peer-peer interaction is a critical implication in planning and implementing early education programs for young children. With theory of mind acquisition promoting effective peer-tutoring, it is important for teachers to take note of the developmental changes in peer tutoring skills.

Responsive teaching- It involves the construction and negotiation of shared meaning or perspective in conversational interaction (Stone, 1985). Critical to responsive teaching practice is the ability of teachers to be reflective during their interactions with children. Teachers who teach responsively need to reflect on what they are doing in the midst of their activity, evaluate how well it is working, and, as a result, make changes in their teaching practices. In this way of thinking, a teacher cannot begin to understand the perspective of the learner without first considering his or her own system of values and attitudes about teaching and children's learning.

Teacher education programs should use self-reflection to help teachers to get in touch with their personal experiences and the ways in which these experiences may influence their teaching practices. With this, they can examine their teaching practices against the

experiences, values, and cognitive processes of their pupils.

Conclusion

Theory of mind is a significant social-cognitive development in children's early years of life. Equipping them for a richer social interaction, this acquisition has implications for children's academic skills and educational achievement. Teachers can play a facilitating role when they are aware of 'mentalist' progression of children from a primarily 'behavioural' one. Teaching practices can be geared to help the students for acquiring greater awareness and control over their own cognitive processes as well as that of others. This can make the learning process truly enriching one. The realization of fullest potential, the primary aim of education, can thus be achieved when students are encouraged to explore and reflect on cognition itself.

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