

Theory of mind: concept and application for classroom learning

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Abstract:

The paper is about concept and utility of theory of mind for classroom learning. Although the concept was originated with study of autism, but author finds its utility even with normal children. Introductory part of the paper elaborates justification of existence of theory of mind its origin and concept. Further theoretical perspective of theory of mind is discussed in terms of 'theory-theory' and 'simulation theory' from perspective of 'folk psychology' and 'empathy skills'. Author believes theory of mind is needed for both social and physical context named 'social empathy' and 'physical empathy' respectively. Physical empathy is necessary for learning subjects related to matter as in case of science. Finally author proposes some activities of social and academic nature for making learners effective mind readers. Activities are suggested around role playing, awareness of theory of mind and skills for building the same. These include both implicit and explicit activities for achieving the target for academic and social context.

Key words: theory of mind, empathy, theory-theory, simulation, metacognition

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Theory of mind has come in to picture with observations of Premack and Woodruff (1978) when they hypothesized that

human beings are gifted with remarkable ability to perceive mental states of others like moods, desires, intentions, feelings and the like. This makes human beings an effective social community whose members are endowed with special abilities to assess other's mind without even communicating through language. Dennett (1978) pointed out theory of mind is impossible without the capacity to form 'second-order representations' i.e. understanding other's point of view. Leslie's (1987, 1992) asserted this capacity does not appear until the second year of life. While this capacity manifests itself eventually in a theory of mind, Leslie shows that it also accounts for the emergence of pretend play in childhood one of the parameter of appropriate social development. An absence of the capacity to form second-order representations, then, would lead not only to a lack of theory of mind, with the concomitant aspects of social ineptness, but also to a lack of pretend play. The existence of theory of mind as a mental tool could be justified as observed by Howlin, Baron-Cohen and Hadwin (1999) that people suffering from autism lack this vital tool. Consequently they prove to be socially withdrawn; communication disabled, and lack language skills and vocabulary resulting in stereotype and repetitive behaviour. Further intervention guide developed by Howlin, Baron-Cohen and Hadwin (1999) to inculcate theory of mind skills among autistic children works well as rehabilitation tool.

Theoretical perspective

Theory of mind has been explained mainly by two theories namely 'theory-theory and 'Simulation Theory' popularly known as 'cold theory' and 'hot theory' respectively. Cold theory is named so due to its hypothesis of passive learning of empathy skills by the child, in the form of gestures and expressions -- and uses his everyday understanding of people as evidences to develop theories that explain and predict the mental state of

people they come in contact with usually appreciated as 'folk psychology'. Whereas hot theory assumes active involvement of child as simulation necessitates for understanding other's perspective. Simulation theory states that we are natural mind readers. We place ourselves in another person's "mental shoes," and use our own mind as a model for theirs. Gallese (1998) contends that when we interact with someone, we do more than just observe the other person's behavior. He believes we create internal representations of their actions, sensations and emotions within ourselves, as if we are the ones that are moving, sensing and feeling. It is actively and intentionally done as in case of actors do in a movie and more so in a stage drama. The intense emotions can only be produced by an actor if s/he is able to create second order representations of the prescribed character whose role s/he is performing. Simulation theory believes humans are "mind readers" by nature, building interpretations of the mental events of others and feeling our constructions as starkly as the physical objects we touch and see. Psychologists name this ability as a trait called as empathy. Humans evolved this ability as a consequence of millions of year's efforts to develop interacting social community for mutual benefit and survival. Precisely because such an interpretive system does model the world in terms of unobservable entities (thoughts, intentions, beliefs, and desires), it needs to be coupled to confederate modules that can construct a bridge from the observable to the unobservable. Unobservable entities are invisible to association-learning mechanisms, but they are "visible," in terms of our expressions, gestures and language. By linking observable cues (such as direction of gaze) to representations of unobservable mental states (such as wants and beliefs), they create what one can think of as the "psychophysics" of the social world.

Theory of mind and learning

Let us transform theory of mind hypothesis to a classroom where teacher is teaching a story or a history lesson. Almost all the educationist undoubtedly emphasized that learning is efficient when child is fully engrossed in the learning process. It simply means that child should be able to feel the story i.e. develop empathy for the characters and situations depicted in the learning content. One must remember that empathy via imagination is only possible if it could be reconstructed from the available elements collected, classified and assimilated for further use. This reconstruction happens in all social as well as physical experiences for which we react strongly favorably or unfavorably. This is where author would like to differ from existing explanations for autism only in terms of social world. Subject of science or mathematics supposedly abstract in nature but still we need theory of mind to grasp the content. In fact social behavior is much more abstract and subtle compare to learning content where one needs to understand even the unsaid behaviors for which even gestures may be ambiguous. On the other hand in case of science matter behaves consistently irrespective of social context, at the same time abstract entities behind the scene are working to make the world a reality. How atomic and sub atomic particles are arranged in matter and how they behave and change with external conditions like temperature, pressure etc. and how they result in electricity needs great amount of imagination to understand. Many of the theories of science (e.g. theory of relativity, theory of aromaticity etc.) have been put forward by sheer empathy about nature of the particles involved rather than empirical experiments. The nature of particle (as electron is negative with negligible mass whereas proton is positive 1836 times heavier than electron) decides its behaviour and guide our imagination. Thus not only social learning physical learning also requires empathy, we may call it as 'physical

empathy' as corollary to 'social empathy' for social learning. The only missing link is awareness of using theory of mind for all these things. Further what are skills working behind the scene which makes theory of mind effective and how these skills could be learnt? Theory of mind can be distinguished from empathy for reason as former is understanding of other's state of mind where as latter is matching with other's state of mind. But it is hardly possible to understand or analyze other's state of mind without matching with other's state of mind. Astington and Pelletier (1996) have argued that there is a relationship between the degree of ToM development and the ability to learn by instruction and collaboration, and that ToM skills are linked to the development of scientific and critical thinking. Klein (1998) found those students' skills in predicting or explaining a doll or cartoon character's behavior correlated with their abilities to plan controlled experiments and explain the causes of events. He suggested that first through fifth graders use science strategies that are dependent on their ToM development. Most 6-year-olds understand the concept of evidence, and 8-year-olds can distinguish between ambiguous and unambiguous evidence. Younger children often hold on to prior beliefs despite evidence to the contrary, whereas older children can revise their beliefs. Likewise, younger children manipulate multiple variables when planning science experiments, failing to hold any factor constant, whereas older children and adults understand the concept of testing only one variable at a time and holding the other factors constant. In school children need to be able to discuss mutual understandings and misunderstandings and their own beliefs and those of others and to make conceptual changes. These activities all require ToM skills. Helping students to reflect on and talk about their thinking may help improve ToM abilities. Teachers report that children with more advanced ToM skills have better social skills as well as academic performers.

Teaching children to read mind

Modeling/Role playing: There is both theoretical and empirical support for the possibility that acting training may increase empathy and theory of mind. Theatre theorists have argued that acting fosters empathy (Levy, 1997; Metcalf, 1931; Verducci, 2000) because actors take on roles in which they must feel and portray the feelings of their characters (Hayman, 1969; Hull, 1985; Stanislavsky, 1950). Actors must carefully analyze the beliefs, desires, and motivations of their characters (Hull, 1985; Stanislavsky, 1950)—activities that psychologists would classify as requiring sophisticated theory of mind. Developmental psychologists have shown that role-playing and pretense, both acting-like activities, predict performance on early theory-of-mind tasks (e.g., Taylor & Carlson, 1997), and that imitation, the embodiment of an actual person (like the embodiment of an imagined person in acting), is critical for the emergence of empathy and theory of mind (Jackson, Meltzoff & Decety, 2003). Considering these findings, there is promising evidence that leads us to hypothesize that training in acting leads to growth in both empathy and theory of mind. Teacher need to devise some role playing woven around learning content for building, improving and enhancing theory of mind.

Drawings and interpreting faces, figures and pictures: teacher can use drawing exercise on a particular idea or concept like environment, classroom, nature, school, teacher, friend etc. to understand the ability to imagine and quality of empathy skills. There can be some ambiguous pictures, figures to interpret mood, purpose, future action etc. will give idea for maturity of theory of mind.

Games involving emotions: there can be physical and mental games involving simulation and intense emotions can be utilized to assess theory of mind for a learner. These games can

be utilized to enhance theory of mind of isolates and withdrawals. However teacher should care that competition and cooperation should not become a reason for permanent alliance and polarity for learners. Games are just simulations involving competition governed by rules leading to win or loss designed to arouse emotions for self and team mates. Mental games can be on computer or other electronic media which aimed at guessing behaviour of opponents an exercise of theory of mind.

Sharing your feeling: a simple exercise can be performed in classroom, where learner is given chance to express his/her feelings towards a person, s designation, a concept, a phenomenon or even a system. Submission of oneself for criticism by others is another very good exercise to test the ability to acquire theory of mind. Teacher can make a systematic analysis of expressions during this exercise for evaluating theory of mind.

Social stories and visual presentations for assessment: there can be visual presentations for assessment of a social story behind it. There can be a picture presented by teacher which represents mid way of a story and students are told to build a story before and after the presented scene. These exercises can give idea of empathy skills possessed by the learner.

Misunderstanding removed: teacher can present a story, an event, or a dilemma and ask learners to choose an action. The chosen action is analyzed and decided for validity in terms of theory of mind. The misconception could be analyzed and corrected for absence and wrong building of theory of mind. Actually the idea is to develop awareness about theory of mind as metacognitive tool for guiding appropriate social actions.

Different perspective of words, figures, and situations: teacher can discuss in class various possible perspectives of words, figures and situations. The perspectives are then analyzed for validity and rejection. The students having wrong perspectives can be further be tested and made aware of the correct one. This practice can result in building up of theory of mind.

Bibliotherapy: it is solving an issue with the help of literature. Literature is an evidence for validity and utility of an entity. Theory of mind and its training methods can be proved valid to the children by presenting research evidence from literature.

Direct instruction: teacher can explain phenomena of theory of mind and empathy to improve awareness about their existence and utility. This can be exclusive lecture series with daily life evidences to prove that our behaviour is governed by both visible as well as invisible behaviours. They must be taught about metacognition, imagination, ontology and the like. Direct instructions bring issue of methodology in focus for learning besides content prescribed for learning. It is about involving process besides product of learning.

Social analysis of real world incidents: real world social events should be studied in the light of ethics and manners to make learners aware of theory of mind and building the same in true perspective. The incidents taken for study need be deviant in nature both positive and negative, which can give the learners substance to reflect upon.

Reflective thinking on actions: during classroom activities student do act both academically and socially. They must be redirect to reflect upon their decisions taken for actions taken. The actions taken in accordance with theory of mind need to be

appreciated whereas actions which indicate lack of theory of mind need to be analyzed for fault. Once learner is made aware of flaws there is possibility of improving theory of mind.

Problems with advanced theory of mind:

In social sense if one is very effective on assessing other's states of mind s/he can exploit the situation like bullying, cheating, emotional blackmailing, brain washing, preparing someone for risk taking behaviour like act of terrorism, religious fundamentalism etc. in classroom situation it can be used a student for exploiting peers to make a gang, involving in abusive behavior, misinterpretation of facts, building wrong concepts of heroism, sex, nationalism and even humanism and the like. Teacher needs to be vigilant about such possibilities and should provide accurate information and information sources to avoid such situations. The best possible solution is developing skills of theory of mind among all the learners so that they must be able to read reciprocally other's states of mind to take appropriate action.

Concluding remarks:

Theory of mind should not be confused for its nature of being science or art; rather it is combination of the two. Science provides skills of analysis of other's mental states where as art guides the individual; how to use it. In this present state of affairs we can not ignore even a single child deviant or normal who is allowed to fail in learning. When child fails to perform up to expected level with mild or no signs of autism, teacher can think of assessing theory of mind of learners and help them to build and improve skills of theory of mind. If used positively in its extreme form can lead to situation like knowing exactly what is going through other's mind and how happy teacher

would be to possess such power for guiding each child to the path of success.

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