



SOCIAL COGNITION: PROBLEM SOLVING BLENDED WITH VISUALLY CHALLENGED ADOLESCENTS

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ABSTRACT

From womb to tomb, each individual faces some problem or other. There are various needs, which are to be satisfied and desire to be fulfilled, and for this, definite goals are to be set by the individual. In order to achieve the goal, individuals go on making attempts and face many obstacles and inferences. It creates a problem for the individual and makes deliberate effort to overcome the problem, which is problem solving. This paper is purported to identify the problem solving ability of visually challenged adolescents and how it influences them in their learning process and social environment in which they live. First it reviews the impact of social cognitive ability of problem solving on visually challenged adolescents, then it focuses on the learning difficulties encountered by them in solving problems, and finally, it evaluates teachers' role and provides implications for assistance. Adolescents develop problem solving through tasks which challenge them to display their grasp and use of skills that are important in their domain. It involves the skills of team work, communication, and analytical approach. The ability to solve problems in a range of learning context is essential for the development of knowledge, understanding and performance.

KEYWORDS : Cognitive learning, Social information processing, Problem solving, Social cognition

Introduction

With the socio-economic and technological advancements, the adolescents become more complex fraught with a number of problems and they have to face challenges in solving them. Problem solving is a sort of thinking in terms of some problems as well as solutions. It involves reproductive thinking, for most of the routine problems are solved through reliance on memory and transfer. However, it may also involve productive thinking where in through the explanation of past experiences, a new insight is found. Productive thinking is treated as true problem solving, and is one of the highest levels of thinking under social cognitive abilities (Crowl, Kaminsky & Podell, 1997). Thinking involves manipulating and transforming information in memory, which often is done to form concepts, reason, think critically, make decisions, think creatively, and solve problems (Santrock, 2006).

Revealing from Earlier Studies

Kanubhai (2016) found that problem solving approach was a powerful means to develop the creative personality of secondary school pupils and established that a problem solving approach is not successful means to develop the academic performance of secondary school pupils. But in dissimilar, Elizabeth (2015) revealed that after the implementation of Polya's approach among students, there was significant relation between problem solving and problem creating ability of the students. It was also found that originality of pupils in the problem creating ability of students taught through Polya's approach was significantly higher than that of students taught through activity oriented method and Chi et al. (1981) found that advanced physics graduate students tended to group the problems according to the physics principles required for solution compared to the undergraduate students. Similarly, Roona (2015) established the effectiveness of problem solving and inquiry methods of teaching over traditional method of teaching. Sunil (2016) studied that thinking strategies of problem solving affected significantly the problem solving ability and cognitive style of the problem solvers. Sumathy (2016) determined that boys were at a higher level than girls in the single principle skill and girls were better than boys in solving problems involving recall/ recognition skill, more than one principle skill and synthetic thinking skill. But boys and girls do not differ in their divergent thinking. Chauhan and Sharma (2015) found that there was low problem solving ability among intellectually gifted students and boys showed higher problem solving ability than girls and there was no significant difference was found with regard to locality. In contrast Namreta and Jit (2015) revealed that school students possessed problem

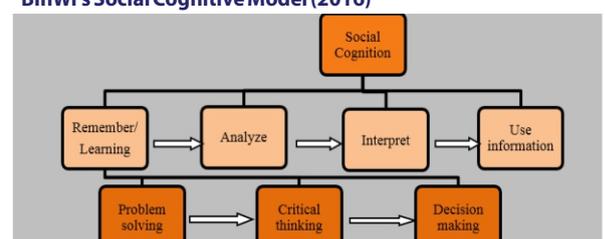
solving ability ranging from average to low and there was no significant difference in problem solving ability among adolescent boys and girls. Schiano, Cooper, Glaser, and Zhang (1989) revealed that low-scoring students tended to sort the problems according to the superficial perceptual similarities. In contrast, the high scoring students inclined to arrange the problems according to the abstract, transformational relations underlying solution. Wertheimer (1959) found that structural understanding helps to see important similarities between problems that differ in appearance.

Social cognitive approach

Adolescents' thoughts affect their behaviour and learning. Social cognition as a higher-order thinking is the study of how people form inferences from the social information in the environment (Mathew & Raja, 2015a). When children learn, they can cognitively represent or transform their experiences and learning occurs between environment experiences and behaviour. One of the most widely used heuristic for studying social cognition in adolescents is the Social Information Processing (SIP) Model (Crick & Dodge, 1994) that describes different mental steps the individuals go through before they engage in actual behaviour in a situation. These mental processes are encoding of cues (attention to a cue and its storage), interpretation of cues (applying the meaningfulness to the information), clarification of goals (deciding what one wants to achieve), response access or construction (accessing possible responses from the behavioural repertoire in long-term memory or construction of new behavioural responses), and response decision (evaluating possible outcomes for the selected or constructed behavioural responses and choosing the best one).

Social cognition is the manner in which one remembers, analyzes, interprets and uses information about the social world (Myers, 2014). It is the study of how people form inferences and make judgments from social information (Taylor, Peplau & Sears, 2006).

*BinWi's Social Cognitive Model (2016)



*Authors: Bincy Mathew & B. William Dharma Raja (2016)

The information children gather from the environment induces learning and it is symbolic in nature. It is initiated by a problem or task that the child faces, involves some trial and error which entails analyzing the task critically and arriving at a decision and ultimately leading to a solution of the problem (Warren, in Rao, 2008). The child is then, able to interpret the task and use the information in actual learning situations. The social cognitive skills have made important contributions to learning.

Problem solving among Adolescents

A problem is "a situation in which the individual wants to do something but does not know the course of action needed to get what he or she wants" (Crowl, Kaminsky & Podell, 1997). The process of problem solving requires a series of successive decisions, each of which depends on the outcomes of those that precede it (Mathew & Raja, 2015b). The problem solving method aims at providing adequate practice and training in the art of tackling problems, for it is the best type of preparation for life. In this, generally a problem is presented to students, the solution of which requires efforts and study on their part. The student has to go through a variety of steps while solving a problem. The student may be able to point out the unknown, the given data and the conditions. The teachers' role at this point is to ask questions and guide the students in the process (Pola, in Santrock, 2006).

The main features of problem solving involve theoretical, practical, numerical or symbolic in nature and distinctive. It is challenging, involves reasoning, within the reach of children, need to use higher mental ability, entails many solutions, and it may be carried out in a limited time. It always includes an obstacle to reach the goal. Ability to solve a problem is dependent on the circumstances in which the person finds himself/herself. It is also an insightful procedure because selection and reorganization of experiences are its keynotes. Problem solving is creative in nature and involves critical activity (Rao, 2008).

Problems solving among Visually Challenged

The visually challenged are imposed with three general effects, all of which may have influence on cognitive development and their ability to solve problem in day-to-day life. The range and variety of experiences, ability to get about, and the control of environment and self in relation to their environment pose challenges (Macesic-Petrovic, Vucinic & Eskirovic, 2010). The children who are visually challenged need to build up concepts of the world around based on other senses and experiences, while visual experience and information is extremely useful in building concepts for children. The developmental disorders make the complete experience of the visually challenged to more restricted and the nature of skills they acquire depends on the range and quality of their experiences. Therefore it may be expected that the cognitive ability of problem solving of visually challenged are some ways more restricted than those of sighted children (Tobin, 1972; Warren, 1984). Some researchers relate to individual differences in certain cognitive skills, aside from intelligence. Karahoca and Yengin (2010) found that there were more generalized cognitive effects of the training on learning tasks of children who are visually challenged. Visually challenged show a slower course of cognitive development as represented by conservation of weight, substance and volume. The experiences of the visually challenged during the operational period are restricted in significant ways that hamper the development of operational thought.

Children encounter certain difficulties while solving problems and these are taken as a sort of obstacles or barriers, namely, lack of motivation (hinders the individual to solve problem), interference of prejudices (includes on account of certain attitudes, beliefs, and opinions), lack of independence, lack of making use of appropriate technique in problem solving, fluctuation in thinking or a wavering mind, and lack of self-confidence.

Educational Implications

The application of problem solving in learning facilitates children. It is here that the role of teacher becomes pivotal. Transfer occurs when a person applies previous experiences and knowledge to learning problem solving in a new situation. Visually challenged children especially benefit when they can apply what they learn in the classroom to situations in their lives outside of the classrooms (Mathew & Raja, 2016c). The teacher has to facilitate children in solving their problems. For it, teacher ought to commensurate with one's intelligence and augment the children to solve problems in their learning process. It is necessary to take into consideration as to make children approach problems without fear and hesitation in order to solve correctly the problem activity. Once children find a problem and clearly define it, they need to develop strategies of setting sub-goals, use algorithms, and rely on experiences for solving it (Bransford & Stein, 1993). It is important to endow children with good strategies to improve their problem solving ability. It is necessary to make the children aware of the challenges involved in and the ability needed to solve actual problems in daily life, which would enhance and give extensive opportunities to solve real-world problems. Teachers ought to develop problems that are relevant to their student's lives. Teachers and parents are to monitor their effective and ineffective problem solving skills.

Adolescents frequently suffer from fears and anxieties; especially fear of future hampers their efforts to solve problems. Also, general thinking patterns may inhibit children's problem solving ability. Solving problems effectively requires identifying, defining and using logic as well as lateral and creative thinking. In the process, they arrive at a deep understanding of the subject matter and construct new knowledge on which they are able to make decisions. For children who are visually challenged needs special assistance and motivation to cope up with the fear of solving mathematical problems in their learning. Due to their inability to draw geometrical problems, they are inclined to avoid courses that involve problem solving. Hence, the teacher has to inculcate the four problem solving steps of becoming fixated, harboring biases, motivating self-confidence, and persist at finding a solution (Sternberg & Spear-Swerling, 1996; Pintrich, 2000). Some children avoid problems or give up easily. An important task for teachers is to devise or steer students towards problem that are meaningful to them and to encourage and support them in finding solutions. Visually challenged children are far more motivated to solve problems that they can relate to their personal lives than textbook problems that have no personal meaning to them (Santrock, 2008). Problem-based learning takes the real-world, a personal approach.

Conclusion

Thus, problem solving ability in teaching-learning process is most effective in the development of reflective thinking, and it also encourages creativity among individuals. Similarly the social cognitive approaches have significantly expanded the scope of learning to include cognitive and non-cognitive behaviours. An important task in working with visually challenged is to determine the modality of touch and hearing through which they learn best and encouraging collaborative problem solving among them. As children work together, they have numerous opportunities to communicate about issues and share their problem solving strategies, and get feedback that helps them refine their thinking. Group of children present their ideas; discuss their strengths and weaknesses of their strategies and solutions. The collaborative aspect of learning is the heart of problem solving.

References

1. Bransford, J. D., & Stein, B. S. (1993). *The ideal problem solver*. New York: W.H. Freeman.
2. Chauhan, P., & Sharma, N. (2015). A study on problem solving ability among intellectually gifted students with respect to gender and location. *Journal of Community Guidance and Research*, 32(3), 468-476.
3. Chi, M.T., Feltovich, P. J., & Glaser, R. (1981). Categorization and representation of physics problems by experts and novices. *Cognitive Science*, 5, 121-152.
4. Crick, N.R., & Dodge, K. A. (1994). A review and reformulation of social information processing mechanisms in children's social adjustment. *Psychological Bulletin*, 115, 74-101.
5. Crowl, T. K., Kaminsky, S., & Podell, D. M. (1997). *Educational Psychology*. New Delhi:

- Windows of teaching. Madison, WI: Brown and Benchmark.
6. Elizabeth, T. (2015). Effectiveness of Polya's approach on problem solving and problem creating ability in Mathematics of secondary school students. Dissertation Abstracts, Mahatma Gandhi University, Shodhgangainflibnet <http://handle.net/10603/45119>.
 7. Kanubhai, J. G. (2016). An investigation onto the effectiveness of problem solving approach on the performance and personality of secondary school pupils. Dissertation Abstracts, Sardar Patel University, Shodhgangainflibnet <http://handle.net/10603/75183>.
 8. Karahoca, A., & Yengin, I. (2010). Computer assisted active learning system development for critical thinking in history of civilization. *Cypriot Journal of Educational Sciences*, 5, 1.
 9. Macesic-Petrovic, D., Vucinic, V., & Eskirovic, B. (2010). Cognitive development of children with visual impairment and special educational treatment. *Procedia Social and Behavioural Sciences*, 5, 157-162.
 10. Mathew, B., & Raja, B.W. D. (2015a). Social cognition: A higher-order thinking. In G. Rexlin Jose & B. William Dharma Raja, (Eds.), *Education in the Digital Era: Channels for Confrontations*, 245-257.
 11. Mathew, B., & Raja, B.W. D. (2015b). Creative thinking of visually challenged adolescents: A case study. *International Journal of Academic Research and Development*, 1(9), 45-49.
 12. Mathew, B., & Raja, B.W. D. (2015c). Blending of social cognitive abilities in teacher education: Inexorableness to sustainable development. *The International Research Specialist*, 3(11), 86-100.
 13. Myers, D.G. (2014). *Social Psychology*. (10th ed.) New Delhi: Tata McGraw Hill.
 14. Pintrich, P. R. (2000). The role of goal orientation in self-regulated learning. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation*. San Deigo: Academic Press.
 15. Rao, U. (2008). *Advanced educational psychology*. Mumbai: Himalaya Publishing House.
 16. Santrock, J.W. (2008). *Educational psychology*. New York: Tata McGraw-Hill Edition.
 17. Schiano, D., Cooper, L. A., Glaser, R., & Zhang, H. (1989). Heights are to lows as experts are to novices: Individual differences in the representation and solution of standardized figural analogies. *Human Performance*, 2, 225-248.
 18. Singh, K., & Kumar, B. J. (2015). Metacognition among senior secondary students in relation to their problem solving ability and self-esteem. Dissertation Abstracts, Maharashtra Dayanand University, Shodhgangainflibnet <http://handle.net/10603/37316>.
 19. Sternberg, R. J., & Spear-Swerling, P. (1996). *Teaching for thinking*. Washington, DC: American Psychological Association.
 20. Sumathy, M. (2016). And problem solving physical of the plus two students in Salem. Dissertation Abstracts, University of Madras, Shodhgangainflibnet <http://handle.net/10603/103146>.
 21. Sunil, D. (2016). Problem solving ability and cognitive style of the problem solvers. Dissertation Abstracts, University of Madras, Shodhganga.inflibnet.ac.in/handle/10603.
 22. Taylor, S.E., Peplau, L. A., & Sears, D. O. (2006). *Social psychology*. New Delhi: Pearson Prentice-Hall.
 23. Tobin, M. J. (1972). Conservation of substance in the blind and partially sighted. *British Journal of Educational Psychology*, 42(2), 192-197.
 24. Warren, D. H. (1984). *Blindness and early childhood development*. New York: American Foundation for the Blind.
 25. Wertheimer, M. (1959). *Productive thinking*. Chicago: The University of Chicago Press.