Reading Disabilities and PASS Reading Enhancement Programme

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Abstract
Children experience difficulties in reading either because they fail to decode the words and thus are unable to comprehend the text or simply fail to comprehend the text even if they are able to decode the words and read them out. Failure in word decoding results from a failure in phonological coding of written information, whereas reading comprehension difficulties result from difficulty in focussing on relevant information while reading, perceiving the interrelationship among obtained information, strategic thinking, lack of vocabulary knowledge, inability to make inferences and lack   of reflective knowledge of language while reading. Within the framework of PASS model of intelligence, word reading has been found to be depending on successive processing, particularly at earlier grades, while reading comprehension depends primarily on simultaneous processing. Planning and attention, on the other hand, are found to be essential at all levels of reading. The PASS Reading Enhancement Programme (PREP) which is based on the PASS theory of intelligence, helps remediate the word decoding and reading comprehension skills of children by improving the underlying cognitive processes. The efficacy of PREP has been proved not only in case of children who are the native speakers of English language, but also in those for whom English is the Second Language (ESL children). School psychologists and teachers may take this as a challenge and help improve the reading skills of poor readers.
Keywords: Word decoding, reading comprehension, PASS processes, PREP, ESL children

1. Reading and reading disabilities
Reading is the skill that enables one to transform the visual graphic information into meaningful units of thought. Understanding the units of prints and comprehending the lexical content of the text, therefore, is a complex cognitive activity that depends on several component skills. Access to phonological and lexical aspects of the print is basic to all reading and helps in word reading or word decoding. Understanding the meaning of the print, on the other hand, is an active and constructive process in which knowledge about syntactic and semantic structures of the language is needed to be used deliberately and flexibly. Development of reading skill like any other skill, thus, involves three important phases, namely, "cognitive", "mastering" and "automaticity", which recur continually till one acquires the status of a skilled reader. Learning to read, therefore, is a big challenge that children face as they begin to go to school. With proper instruction, of course, most children learn to read easily. But, in spite of good instruction and in the absence of any form of physical, mental, sensory , or cultural handicap, or even lack of motivation many children "fail to read" and academically fall behind their competent counterparts constituting the so called group of 'disabled readers' who are also referred to as 'poor readers'.

The two skills of reading, i.e., word reading and reading comprehension, of course, are highly related, but disorders related to reading weaknesses differentiate the two components (Oakhill,Cain &Bryan,2003). Poor readers vary from one another with respect to their proficiency in these two skills. Many poor readers experience difficulty in word reading i.e., decoding because of difficulty in phonological coding i.e., the ability to translate letters and patterns of letters into phonological forms. Consequently, they fail to comprehend the text. But, there are many others who experience difficulties in comprehending the text while their word reading skill is intact, i.e., normal for their grade. This second category of children are referred to as 'poor comprehenders'. Such children experience difficulties in providing word definitions, activating relevant background information, generating inferences while reading, combining information in working memory to form mental representations of text, and are less aware of when they do not understand what they read (Yuill &Oakhill,1991; Nation, Clarke & Snowling, 2002; Nation, 2005;Perfetti, Landi & Oakhill,2005).

2. Remediating reading disabilities
Keeping in view the reading difficulties experienced by children, several attempts have been made to remediate the same (Byrne &Fielding-Barnsley, 1983; Engelmann & Brner, 1995; Lovett et al.,2000;Lundberg et al.,1988; Oloffson & Lundberg, 1983). In fact, attempts were made to improve both word decoding and reading comprehension skills, but they have been proved to be ineffective. For example attempts have been made to remediate word decoding difficulties by developing training programmes focusing on teaching phonological skills, but phonological training has been found to have its own limitations and the improvement they bring about is also limited (Torgesen,1995; Wagner et al., 1993). Remediation of reading comprehension difficulties by developing certain tasks, on the other hand, was more difficult. It appeared, therefore, that children require a method of instruction that is based on specific elements of information integration. In other words, a necessity

for cognitive-based training programme was felt. This is referred to as cognitive education which involves the application of cognitive theory and methods of education in remediating reading difficulties in children (Ashman & Conway,1997). It is argued that unless cognitive processes underlying reading are the focus of remediation, remediation will not be successful in promoting transfer to broader aspects of reading (Das et al.,1994).One such attempt has been made through the development of a programme called PREP which is an inductive learning remedial programme based on PASS theory of cognitive functioning .

3. PASS theory of intelligence and reading skills

The PASS (Planning-Attention-Simultaneous-Successive) theory of intelligence which has got its root in the clinical observation of Luria (1996, 1970, 1973) proposes that cognition is organized in three systems and four processes. The first system is the planning system, which involves executive functions (EFs) responsible for controlling and organizing behaviour, searching, goal-setting, selecting, constructing and executing plans or strategies, monitoring performance, evaluating the course of action and decision making. The second system is the attention system, which is responsible for maintaining arousal levels and alertness and ensuring focus on relevant stimuli to the exclusion of irrelevant ones. The third system is the information processing system which employs simultaneous and successive processing to encode, transform and retain information. Simultaneous processing is engaged when the relationship between items and their integration into whole units of information is required. Successive processing, on the other hand, is required for organizing separate items in a sequence. The four processes can also occur at three levels, i.e., perceptual, memory and conceptual varying from one another in terms of abstraction they involve and thus, maintain a hierarchy with perception at the bottom, conceptualization at the top and memory, in-between.

The four processes are also carried out in different blocks or areas of the brain. Thus, attention- arousal is located in Block1 that involves brainstem, the diencephalon and the medial regions of the cortex. Coding is the function of Block 2 that includes parietal, occipital and temporal lobes, whereas, planning is carried out in Block 3 that entails the frontal, especially, the pre-frontal areas of the cortex.

The PASS processes, however, operate on a knowledge base that includes one's past experiences involving his/her learning, emotions and motivations and the performance (behaviour) emerges out of it (Das et al., 1994).

Researches carried out within the framework of PASS model have established that, planning, attention, simultaneous and successive processes are importantly involved in reading. Attention being the basic prerequisite of all intellectual functions helps the reader to focus on relevant information to the exclusion of irrelevant ones and makes way for efficient coding of information that may be either simultaneous or successive or both. In fact, a cyclical hierarchy of involvement of both simultaneous and successive processes is seen in the entire process of reading. But, since phonological processing is importantly involved in word decoding, successive processing plays an important role in reading particularly in the early stages. Simultaneous processing, which helps in deeper level of semantic analysis of the information, seeing the interrelationship among separate bits of information and integrating them into larger units of information, on the other hand, plays an important role in comprehension at any stage of reading. Mastery over the two coding skills ultimately makes way for emergence of appropriate reading strategies in which planning plays an important role. Studies reveal that a weakness in simultaneous processing in children is linked with comprehension difficulties, whereas, word decoding difficulties are associated with a successive processing weakness in beginning readers. Planning and attention on the other hand, are necessary at all levels of reading and their importance increases as a function of complexity of the reading tasks (Das, Naglieri &Kirby, 1994;Das, Parrila &Papadopoulos, 2000; Kirby et al., 1996; Mahapatra,1989,1990; Mahapatra & Dash, 1999, Naglieri & Das, 1990).

PASS processes can be assessed with the help of a test battery known as Das-Naglieri Cognitive Assesment system (Naglieri & Das, 1997). These tests have been used for the understanding, assessment and intervention in regard to educational problems of children like reading disability, attention deficit and mental retardation. These tests are also used in studying cognitive changes in ageing and decision making in management (Das, Kar & Parrila, 1996; Das & Mishra, 2015). CAS is a highly reliable and valid measure of intelligence (Naglieri & Das, 1997; Johnson et al, 2003).

4. PREP and remediation of reading disabilities

The PASS Reading Enhancement Programme (PREP) which is based on the PASS theory of intelligence consists of ten tasks that very considerably, both in content and in what they require from the child. Out of the ten tasks, four are mainly successive processing enhancement tasks, four are mainly simultaneous processing enhancement tasks whereas, the remaining two are the tasks developed to enhance both successive and simultaneous processing abilities. The tasks are Joining Shapes, Connecting Letters, Window Sequencing, Transportation Matrices, Related Memory Set, Tracking, Shape Design, Shapes and Objects, Matrices Numbers and Letters and Sentence Verification. All tasks involve a global training component and an additional

curriculum related bridging component. The global component consists of structured non-reading tasks that require the application of simultaneous or successive strategies. These tasks also provide children with the opportunity to internalize strategies in their own ways, thus facilitating transfer. The bridging component involves the same cognitive demands as its global component and provides training in simultaneous and successive processing strategies that are linked to reading and spelling (Das et al. 1994).

PREP aims at promoting the use of cognitive strategies, i.e., simultaneous and successive as well as planning and directing the participant's attention selectively to information that is available (Das, Georgiou & Janzen,2008; Naglieri & Rojahn, 2004). PREP remediation is structured in such a way as to promote inductive inferencing and internalization of principles and strategies rather than deductive rule learning (Das, Mishra & Pool, 1995). Such a procedure encourages "ownership" of the strategies that the individual can apply, thereby ensuring transfer to broader aspects of reading. Moreover, "verbalization" is used in the process of training which helps the learner to recognize and identify the existence of the different facets of a problem and thus facilitates discovery learning. In contrast to direct instruction programmes, such as Reading Mastery (Engelmann & Bruner, 1995) PHAST (Lovett et al., 2000) or RAVE – O (Wolf, Miller & Donnelly, 2000), PREP avoids explicit teaching of specific reading skills. The cumulative evidence collected over several years of research using PREP has produced positive results with respect to word identification, pseudoword decoding and reading comprehension tasks in English (Das, Mishra & Kirby 1994; Janzen, 2000; Papadopoulos et al., 2003) in Greek (Papadopoulos, charalambous, Kanari & Loizou, 2000); and in Spanish (Molina, Garrido, & Das 1997). In fact, PREP improves both word, reading and comprehension skills of the reader facilitating the growth of phonological processing, verbal working memory, syntactic awareness, vocabulary knowledge, inference making and above all planning, strategic thinking and comprehension monitoring along with a reflective knowledge of language while reading.

4.1 PREP in India
In most of the states of India, now-a-days, most of the children go to English medium schools where the curriculum is taught in English which is not their first language. In other words, they read English as their Second Language (ESL). Many of these children are even found to be equipped with absolutely normal word reading skill but are markedly poor in reading comprehension. The efficacy of PREP as a cognitive-based remedial training programme has also been proved by means of a study (Mahapatra, Das, Stack-Cutler,& Parrila, 2010) on these children in Odisha (a south-eastern state of India where peoples' first language is Odia). It seems as if the PREP cognitive enhancement training turned on a switch and enabled the children to substantially improve their word reading as well as comprehension skill. In both reading skills, the treated group exceeded the grade equivalent norm. It is believed that proficiency in reading comprehension developed in these children with the use of PREP because of some of its tasks which facilitated the development of specific cognitive processes underlying comprehension. For example, in the global part of the shapes and objects task, which required the children to put the picture cards under the shapes they resemble most, the children looked at each picture and "abstracted" the shape the picture would fit best. Some children also outlined the pictures with their fingers in order to match them with their appropriate shapes. In the bridging part of the task, the children were given some sentence cards to be sorted out in categories based on thematic similarity. The children asked the meaning of the difficult words, tried to grasp the essential idea of each sentence and put it under the appropriate category. Some children, when presented with the sentences, also used self-talk to work through the problem, analyzing each sentence before categorizing it.

Similarly, the Sentence Verification task required the children to read some printed passages, study the accompanying sets of photographs, and select the photographs that best illustrate the contents of the passages. Some read the passages silently, asked the facilitator the meaning of the difficult word (if they found any), and tried to match them with their corresponding pictures. But some children, when going through the sentences started talking to themselves, nodding their head, and showing excitement when they got an appropriate match for a sentence. As the children experienced the task, they also learned to observe the minute details in the pictures and the essential elements in the passages and matched them accordingly.

Thus, comprehension skill developed in these children through abstraction, perception of interrelationship among the obtained information, strategic thinking, and the ability to focus on relevant information to the exclusion of the irrelevant ones. The children were also encouraged to become aware of their use of strategies through verbalization and showed improvement with increasing experience of the tasks. These facilitated the development of simultaneous processing which is importantly involved in reading comprehension but in which these children were deficient. In fact, before training, the children were processing the information at surface level in order to comprehend the text. But PREP appears to have facilitated their development of logical-analytical and inferential thinking, leading to deeper level of processing text as they progressed through remediation. Thus, the cognitive-based remediation programme seems to have the potential to facilitate the growth of reflective knowledge of the language while reading. Following the training, they could benefit more

from regular classroom instruction. Most importantly, the study provides evidence that PREP as a cognitive remediation programme has potential for improving comprehension as well as simultaneous processing ability of children who speak English as their second language as it has been shown to do among the native speakers of English.

5. Conclusion

Reading disabilities present very real and devastating problems not only to the child, but also, to his/her family and the society at large, for reading failure constitutes a significant factor in the high rate of emotional maladjustment, school dropout and juvenile delinquency, which contribute appreciably to the social welfare costs. Amelioration of reading difficulties of children, therefore, is considered imperative, in which school psychologists play a pivotal role working in collaboration with the Teachers as well as the parents of the children. Hence, earlier the problem is detected and remediation starts, better is the outcome.

References

Ashman, A.F., & Conway, R.N.F. (1997). An Introduction to cognitive education: Theory   and Application. London: Routlodge.

Byrne, B., & Fielding – Barnsley, R – (1993). Evaluation of a programme to teach phonemic awareness to young children : A 1 year follow-up, Journal of Educational Psychology, 85: 104 – 11.

Das, J.P. (1999). PASS Reading Enhancement Programme, Deal, N.J. : Sarka Educational Resources.

Das, J.P., Georgiou, G., & Janzen, T. (2008). Influence of distal and proximal cognitive processes on word reading. Reading Psychology, 29, 366-393.

Das, J.P., Mishra, R.K., & Kirby, J.R. (1994). Cognitive patterns of children with dyslexia: A comparison between groups with high and average nonverbal intelligence. Journal of Learning Disabilities, 27, 235-242, 253.

Das, J.P., Mishra, R.K., & Pool, J.E. (1995). An experiment on cognitive remediation of word-reading difficulty. Journal of Learning Disabilities, 28, 66-79.

Das, J.P., & Misra, S.B. (2015). Cognitive planning and executive functions. New Delhi, India: Sage Publications.

Das, J.P., Kar, B.C., & Parrila, R. (1996). Cognitive planning. New Delhi, India: Sage Publications.

Das, J.P., Naglieri, J.A., & Kirby, J.R. (1994). Assessment of Cognitive Processes: The PASS Theory of intelligence. Boston, MA : Allyn and Bacon.

Das, J.P., Parrila, R.K. & Papadopoulos, T.C. (2000). Cognitive education and reading disability. In A. Kozulin & Y. Rand (Eds.), Experience of mediated learning: An Impact of Fewrstein's theory in education and psychology. (pp. 274-291). Elmsford, NY:Pergamon.

Engelmann, S., & Bruner, E.C. (1995). Reading mastery I. Worthington, OH: SRA/McGraw-Hill.

Johnson, J.A., Bardos, A.N., & Tayebi, K.A. (2003). Discriminant validity of the Cognitive Assessment System for students with written expression disabilities. Journal of Psychoeducational Assessment, 21, 180-195.

Kirby, J.R., Booth, C.A., & Das, J.P. (1996). Cognitive processes and IQ in reading disability. The journal of Special Education, 29 : 442-56.

Lovett, M.W., Lacerenza, L., Borden, S.L., Frijters, J.C., Steinbach, K.A., & De Palma, M. (2000). Components of effective remediation for developmental reading disabilities: combining phonological and strategy-based instruction to improve outcomes. Journal of Educational Psychology, 92, 263-283.

Lundberg, I., Frost, J., Peterson, O.P. (1988). Effects of an extensive programme for stimulating phonological awareness in preschool children. Reading Research Quarterly, 23, 267-84.

Luria, A.R. (1966). Human Brain and Psychological processes. New York: Harper & Row.

Luria, A.R. (1970). The functional organization of the brain. Scientific American,222 (3) 66-78.

Luria, A.R. (1973). The working Brain. New York: Basic Books.

Mahapatra, S. (1989). Relationship among simultaneous, successive and planning processes in skilled and unskilled readers. Indian Psychologist, 6 (1&2), 31-39.

Mahapatra, S. (1990). Reading behaviour in children with epilepsy. Psychological Studies, 35 (3), 170-178.

Mahapatra, S. & Dash, U.N. (1999). Reading achievement in relation to PASS processes. In U.N. Dash & U. Jain (Eds.), Perspectives on psychology and social development (pp. 282-303). New Delhi, India: Concept Publishing Company.

Mahapatra, S., Das, J.P., Stack-Cutler, H., & Parrila, R. (2010). Remediating reading comprehension difficulties: A cognitive processing approach. Reading psychology, 31:5, 428-453.

Molina, S., Garrido, M., & Das, J.P. (1997). Process-based enhancement of reading: An empirical study.

Developmental Disabilities Bulletin, 25 (1), 68-76.

Naglieri, J.A., & Das, J.P. (1990). Planning, attention, simultaneous and successive (PASS) cognitive processes as a model for intelligence. Journal of Psychoeducational Assessment, 8, 303-337.

Naglieri, J.A., & Das, J.P. (1997). Das-Naglieri Cognitive Assessment System. Itasca, IL: Reverside Publishing.

Naglieri, J.A., & Rojahn, J. (2004). Construct validity of the PASS theory and CAS: Correlation with achievement. Journal of Educational Psychology, 96, 174-181.

Nation, K., (2005).Children's reading comprehension difficulties. In M.J. snowling & C. Hulme (Eds.), The Science of reading (pp. 248-265). Malden, MA : Blackwell.

Nation, K., Clarke, P., & Snowling, M.J. (2002). General cognitive ability in children with reading comprehension difficulties. Journal of Memory and Language, 39, 85-101.

Oakhill, J., Cain, K., & Bryant, P.E., (2003). The dissociation of word reading and text comprehension: Evidence from component skills. Language and Cognitive processes, 18, 443-468.

Olofsson, A., Landberg, I. (1983). Can phonemic awareness be trained in kindergarten? Scandinavian Journal of Psychology, 24 : 35-44.

Papadopoulos, T.C., Charalambous, A., Kanari, A., & Loizou, M.(2000).Kindergarten cognitive intervention for reading difficulties: The PREP remediation in Greek. European Journal of Psychology and Education, 19 (1), 79-105.

Papadopoulos, T.C., Das, J.P., Parrila, R.K., & Kirby, J.R. (2003). Children at risk for developing reading difficulties. School Psychology International, 24 (3), 340-366.

Perfetti, C.A., Landi, N., & Oakhill, J. (2005). The acquisition of reading comprehension skill. In M.J. Snowling & C. Hulme (Eds.), The Science of reading (pp. 227 – 247), Malden, MA : Blackwell.

Torgesen, J.K. (1995). Instruction for reading disabled children: Questions about knowledge into practice, Issues in Education, 1 (1), 91-95. Wagner, R.K., &Torgesen, J.K., Laughon, P. Simmons, K. & Rashotte, C.A. (1993). Development of young readers' phonological processing abilities. Journal of Educational Psychology, 85 (1) 83 – 103.

Wolf, M., Miller, L., & Donnelly, K. (2000). Retrieval, automaticity, vocabulary elaboration, orthography (RAVE-O) : A comprehensive fluency-based reading intervention programme. Journal of Learning Disabilities, 33, 375-386.

Yuill, N., & Oakhill, J. (1991). Children's problems in text comprehension: An   experimental investigation. Cambridge, England: Cambridge University Press.