

Strategies for Teaching Science in Inclusive Classrooms with Learning Disabled Children

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Abstract

Learning Disability (LD) is a neurological disorder which affects a person's cognition and perception. LD can cause difficulty in basic learning skills like listening, reading, writing or doing math. When such children are brought up in special schools, they will be segregated from the society and in turn widens their fear about human differences. Another critical aspect in the development of LD children is science education and in this context, inclusive classrooms play a vital role. Inclusive classroom enables all students to participate effectively in mainstreams schools irrespective of their strengths and weaknesses. Our education system must ensure that every child regardless of their gender, race or disability gets to learn and understand the essential science concepts. Therefore, a thorough understanding of the various strategies utilized for science teaching in inclusive classrooms is crucial.

KEYWORDS: Learning Disability, Inclusive Education, Multisensory Teaching Approach, Mnemonic Strategy

INTRODUCTION

Learning Disability (LD) is typically a neurological disorder in one or more basic processes involved in understanding or using languages. It affects the child's ability to process information, to listen, read, write, speak, spell, and perform mathematical calculations or to build relationship with others (Hammill & Leigh, 1987). Common learning disabilities are Dyslexia, Dysgraphia, Dyscalculia, Dyspraxia, Central Auditory Processing Disorder, Non-Verbal Learning Disorders, Visual Perceptual Disorder and Dysphasia. The main causes of learning disabilities include genetic and environmental factors (Mizon & Cooper, 2012). Since the impairment rolls out across all the cognitive and affective domains of the child, scholastic performance of the child will be poor when compared with the individual's chronological age (Dapudong, 2013). It is estimated that 10% of all school going children are learning disabled (Science Daily, 2013).

Why Inclusive Education?

In most cases, children with learning disabilities are driven out from the schools gradually and will be moved to special schools, as they cannot adapt with the normal learning styles and practices. Eventually these children will be segregated from the society and thus widens their fear about human differences. Basic education should be given to all students and the education system should try their best to reduce the disparities (UNESCO 1998:3). Here lies the importance of inclusive education. Inclusive Education enables all the children to participate effectively in mainstreams schools irrespective of their strengths and weakness (Joseph Kisanji, 1999)

Significance of Science Teaching

Science is a universal subject and it systematically explains the world around us. It is the key for human advancement and as science learning insist on pragmatism, it helps to develop patience and perseverance in children. As like other children, science education is essential and critical for LD children as it is an integral factor in modern life. (Karanth, 2002). So we should provide opportunities for all children to learn and understand the essential science content, irrespective of their gender, race or disability. It is more complex to convey and comprehend the scientific principles to LD children rather than any other subjects. But many science teachers have little training or experience in identifying and meeting the needs of children with learning disabilities (Brigham & Scruggs, 2011). Since the LD children are more exposed to teachers in their earlier developmental stages, teachers should identify, assess and treat these co-morbidities appropriately. If the teachers get some training in handling the LD children, he/she may foster positive attitude as well as enhance the educational experience of the child. Therefore the student develops an interest to learn science and thus to understand the truth also (Grumbine & Alden, 2006).

SCIENCE TEACHING STRATEGIES IN INCLUSIVE CLASSROOMS

Multisensory teaching approach

Multisensory approach is an approach that helps the learner to learn through many senses. It is beneficial to all children irrespective of their learning disabilities. If a student uses more than one sense to learn information, then the information is transformed in long term memory (Schwed & Melichar, 2008). Students with learning disabilities have perceptual and cognitive disorders, they usually struggle with normal teaching techniques which is mostly auditory or visual techniques. Since the multisensory approach stresses the use of visual, auditory, kinesthetic and tactile senses while giving classroom instructions, it enables the child to learn using his own individual areas of strengths (Thorpe & Borden, 1985). For example, visually impaired children have challenges in learning through reading or visual stimuli, while if he uses auditory or tactile senses his lessons will be easier.

Mnemonic Strategy

It is a simple memory tool which uses familiar phrases, keywords or rhymes for memorizing unfamiliar content in our brain. It is very useful to children with learning disabilities as their common characteristics are deficits in learning and memory (Mastropieri & Scruggs, 1985). Keyword and pictorial mnemonic strategy can be used to explain and memorize scientific terms and processes (Scruggs & Mastropieri, 2007). The common example for a mnemonic device is VIBGYOR which we all used for the memorizing the colors of optical spectra.

Summarization and Re-teaching

Summarization is the act of recalling the important content of the class by the teacher. It helps the children with special needs to effectively memorise the relevant contents. It will be more effective, if the teacher uses certain keywords or phrases in summarization (Bakken, Mastropieri, & Scruggs, 1997). Re-teaching is the process of teaching the content which is already taught and this helps the learner to reinforce the content in more depths. (Hodges & McTigue, 2014). Listening to the same content for multiple times ensures long term memory.

Group Discussion

Group discussion is an effective tool for science education which is based on the principle of brainstorming. It provides an open platform for students to discuss their ideas and views about the content. Before initiating the group discussion in inclusive classrooms, the teacher should provide clear idea about the ground rules. That is, children should value and respectfully listen to the ideas from peers. Sociograms conducted in inclusive classrooms indicate that almost all children enjoyed working in groups and nobody wished to be isolated (Nilholm, & Alm, 2010). It promotes the peer acceptance and overall friendship quality of the children with special needs.

Pre-service and In-service Training for General Education Teachers

General Education teaching programs give little or no knowledge for teacher trainees about how to cater the children with special needs. Most of the teacher training students complete their teacher training programs without acquiring enough knowledge, experience and skills related to teaching children with special needs. This could be the reason for developing a negative attitude in general education teachers towards the implementation of inclusive education. (Jobling & Moni, 2004). Therefore, training opportunities should be provided to general education teachers so that they could increase their knowledge about teaching techniques that can be adopted in inclusive classrooms. In addition, special school teachers can render a hand of help in assisting the regular school teachers for the same (Forlin, Kawai & Higuchi, 2014).

CONCLUSION

Teachers can make adaptations when students are not successfully meeting the demands of the general education setting. Hence they can implement various strategies and adaptive measure for the holistic growth and the success of their students. The inclusion of special students in general classrooms, give LD students an opportunity to study as equal partners with their classmates with no disabilities. Several studies have demonstrated that the inclusion helps the students to reduce their fear about human differences and helps to counter the stigma associated with it. The success of the methodology depends on the utilization of appropriate strategies in inclusive science classrooms which will in turn enhance the social and academic performance of the children with learning disability.

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