

CHAPTER V

SUMMARY AND CONCLUSION

5.0 Introduction

The indisputable importance of interventions to the children with dysgraphia is not at present sufficiently realized in India especially in Telangana State. By realizing the need and importance of Intervention Strategies for children with Dysgraphia the investigator selected the problem of **“Impact of Intervention Strategies in Overcoming Dysgraphia by 4th & 5th Class Children at Primary Level in Telangana State”** taking one step towards meeting this need of the hour. The present study has been designed to identify and assess Dysgraphia among 4th & 5th class children and implement instructional strategies to help them overcome their writing problems. The findings of the study from the qualitative and quantitative analysis of the data are presented in this chapter. An attempt is made in this chapter to discuss these findings in the light of the available literature related to the present investigation. A list of recommendations and suggestions emanated from the present study are also given.

5.1 Major Findings

The major findings of the study are presented below.

- Among the children identified with learning disabilities in writing 14% have writing disability of one area or the other.
- It was found that 98% of the children have some combinations of writing disabilities or the other like difficulties in fine motor, hand writing, Spelling, grammar and comprehension skills .
- The intervention strategies helped in improving the writing skills of both 4th and 5th class children with writing disabilities in all the sub skills of writing skills namely 12 sub skills in finemotor, 13 sub skills in Hand Writing, 7 sub skills in spelling and 6 sub skills in Grammar and 6 sub skills in writing comprehension skills of Written Expression Skills and 16 sub skills in behaviour manifestation skills as shown by post mean scores of these skills which are significantly higher than pre mean scores.

- The study found that the Fine motor skill difficulties reduced from 91% to 46% in 4th class and from 96% to 69% in 5th class. Organizing the belongings and handling bullying need some more intervention period for 4th and 5th class children.
- The study showed that all the sub skills of handwriting improved greatly in response to intervention. The children from both the classes showed great liking to all the activities to enhance the dexterity, motor memory, auditory and kinaesthetic and tactile discrimination, drill and practice of hand writing. The individual attention to every child with a very careful consideration to see the efficacy of an activity, change to a more child tuned curriculum helped children improve their skills which is seen from the findings of the study. The hand writing skill difficulties came down from 91% to 28% for 4th class and 88% to 28% for 5th class. Response to intervention was tremendous in all the skills of hand writing where the most significant improvement is seen in legibility, alphabet formation & mixing letters, omit space, reversals, pencil grip and paper position .
- The findings of the study on Spelling Skills showed that difficulties in Spelling Skills reduced by 40% for 4th class and 49% in 5th classes after intervention where great response to intervention is observed in vocabulary, auditory & visual discrimination skills, reading fluency enhancement is seen by 40%, making sentences and syllabication at 32%. The decoding skills of 5th class showed a skill enhancement of 28% where phonetics & decoding need some more time of intervention for both the classes.
- The study showed that there exists a strong bond between reading and writing as the children started using words they had come across while reading in their writing. What is worth mentioning is that children not only used a large number of sight words but also they outperformed children without writing difficulty in both knowledge and application levels. The results of the present study agrees with Padhy, Meera and G Padmaja,2008 where (1) the performance both the classes showed significant improvement as a result of intervention (2) the performance of both the class children showed improvement and better integration over the testing sessions during intervention.

- The study indicated that in written expression skill & Grammar there is a skill enhancement by 41% for both the classes after intervention. Where increase in skill is by 53% in nouns, verbs, adverb, adjectives and sentence structure & simple complex compound sentences. It is observed that the children of both classes need constant practice of grammar concepts for a length of time for the grammar rules to sit firmly in their mind. Teachers should keep the practice of grammar continue for the whole length of school years for a meaningful syntactical writing.
- In Written Expression Comprehension Skills 4th class response to intervention is significant with 36% increase in skill where as 5th class showed 18% increase in response to intervention which is comparatively less than 4th class. The children of both classes require more time and effort for contextual clues and conventions where the improvement is 89% it came down to 80% in 4th class and from 99% to 88% in 5th class. The intervention for context clues should be for a length of time for more significant improvement.
- The study revealed that the behavioural problems reduced tremendously in all the sub skills in response to intervention like frustration reduced from 66 to 30%, stress & anxiety 57 to 20%, getting along with teachers, peer group and parents 60 to 24%, social status and self esteem from 92 to 26 % in both the classes. Leadership training to the children helped them gain self confidence and self esteem, peer tutoring and peer grouping helped in better learning with a tremendous improvement from 78% difficulties it came down to 43% in 4th and 5th from 93% to 71%. Getting along with parents, teachers and peer group improved from a skill deficit of 83% came down to 38%, frequent losing books of 4th from 78% to 41%, 5th class from 93% to 71% avoid tasks and forgets home works for 4th 70% to 34% and for 5th class 92% 49%, restlessness & moves around reduced from 88% to 43% in 4th and 92% to 44% in 5th class. It is observed that response to intervention in behavioural skills was more significant in 4th class children than 5th class. Early intervention is very essential to overcome behavioural problems.

- The study showed the lack awareness in teachers, parents and community came down from 95% to 49% in 4th and 98% to 45% in 5th class. The focus on learning disabilities and writing disabilities in the orientation workshops for teachers, awareness campaigns in the town and regular parent teacher meetings helped to bring awareness.
- It was evident that there is a significant relationship between before and after intervention mean scores of all the writing skills with the post intervention mean scores showing significant improvement in both the classes.
- It was found that there is a significant relationship between before intervention mean scores of Fine Motor Skills, Hand Writing Skills, Spelling Skills and Written Expression Skills with after intervention mean scores of 4th and 5th class children.
- It was evident that there is significant relationship in the before intervention mean scores of all the Behaviour Manifestation Skills with the after intervention mean scores of 4th and 5th class children. Hence it is evident that the intervention strategies helped in overcoming difficulties to handle Behavioural issues.
- The findings brought to light that children of 4th class showed significant improvement over 5th class. So the researcher observed that early intervention and long period of intervention will bring change to the writing problems of children in both the classes.
- The study revealed that 4th class girls and 5th class boys performed better in Fine Motor Skills, both boys and girls performed well in hand writing and Spelling Skills and Grammar in both the classes.
- The findings showed that in comprehension skills of 4th class there is a significant difference between boys and girls where boys fared better than girls.
- The study inferred that age did influence the performance of children. The 9 yr old performed better than 10 yr olds in Grammar and writing comprehension in 4th class. 10 yr old performed better than 11 yr olds in Spelling Skills and writing comprehension skills in 5th class, where as 11 yr olds performed better than 10 yr olds in Fine Motor Skills in 5th class. This brings out an interesting paradox where early intervention

worked out in all the skills except Fine Motor Skills where the oldest children fared better.

- The findings of comparative analysis showed that the locality or type (rural and urban) showed significant difference in both the classes where the urban children performed better than rural children in Fine Motor Skills, Spelling Skills(5th class), writing comprehension skills. The exposure to English language is more in urban places than in rural places which was reflected in the findings of this study.
- The study revealed that there is no influence of family income on the performance of writing skills in both the classes. This could be because of the family background of the sample who hailed from reasonably good income groups.
- It was found that the intervention strategies helped in overcoming Dysgraphia in 4th and 5th class children in acquiring Fine Motor Skills, Hand Writing Skills, Spelling Skills and Written Expression Skills Behaviour Manifestation Skills.
- The ANCOVA results signified that there is difference in performance between 4th and 5th classes where 4th class children responded better to interventions than 5th class.
- The Comparison of the performance of boys and girls showed no significant difference except that the boys improved slightly better in their mean scores than girls.
- The study inferred that there is significant improvement in the performance of children from the pretest to post test. The intervention strategies helped children from both the classes to improve in their academics.

The study revealed that the intervention brought significant improvement in all the sub skills in Fine Motor Skills, Hand Writing Skills, Spelling Skills, grammar and comprehension skills. Early intervention and long period of intervention will bring change to the writing problems of children in both the classes.

5.2 Discussion

In any research study, it is desirable to discuss the results in the light of previous research findings to make certain recommendations. In the current

study the investigator studied the overall writing skills development in 4th and 5th class children with Dysgraphia. Five main variables namely Class, Gender, Age, Type and Family Income are used to find out the differences if any in acquiring writing skills. Studies dealing with writing problems of children are found in the past but specific investigation on a grade appropriate writing skills is not pursued. Hence the investigator attempted to make the study by including all the skills & variables. In all the writing skills the children of both classes showed marked improvement from their pre test to post test levels. To make it a grade appropriate proficient levels of improvement there should be an intervention which is longer than eight months and a continuous consistent implementation of the intervention strategies for a length of time uninterrupted will definitely make these children compete like normal peers.

While most of the current research findings confirm with previous research studies certain other findings also emerged. They are enumerated as follows.

Identification & Prevalence of Learning Disabilities

The findings of the present study that 14% of children in a normal class room has writing problems slightly coincides with Mogasale VV, Patil VD, Patil NM, Mogasale V (2011)'s findings where the prevalence of specific learning disabilities was 15.17% whereas 12.5%, 11.2% and 10.5% had dysgraphia, dyslexia and dyscalculia respectively.

The present study agrees with Johnston and Rogers (2011) , says early identification of children with Learning difficulties is important in order to identify children who may be in need of specialized services or intervention. The 4th class children showed significant improvement in scores than 5th class.

The sub skills in writing

The writing skills has four components that augment good writing such as Fine Motor Skills, Hand Writing Skills, Spelling Skills, Written Expression Skills

Fine Motor Skills

The Fine Motor Skills of the children showed great response to intervention. The multi sensory approach activities using motor memory, recall, auditory, kinaesthetic, tactile (Schneider & Crombie, 2003), visual & spatial integration activities (Swanson, 2000) worked well in enhancing the performance of 4th and 5th class children from their level to higher levels of

performance. The findings of the study reinforced that intervention strategies for longer time will bring a positive change in the Fine Motor Skills of children.

Hand Writing Skills

This study agrees with Berninger, 1999; Berninger & Abbott, 2010; Berninger, Abbott, Abbott, Graham, & Richards, 2002a research findings that handwriting has been shown to be an integration of all the motor skills. Explicit and supplemental instruction of handwriting are important elements in an elementary program to prevent writing difficulties (Graham, Harris & Fink, 2000).

In Hand Writing Skills of 4th and 5th showed great improvement after intervention. The findings agree with (Alyssa L. Crouch Jennifer J. Jakubecy, 2007) that drill and Fine motor activities improve hand writing scores by 50%. The number of mistakes committed reduced significantly for both the classes. The improvement in marks varied in sub skills. The 4th class students improved in almost all the sub skills. Both classes need some more time for significant improvement in punctuation and capitalisation, omission of words and letters. Both classes showed great response to alphabets, words and sentences in manuscript and cursive script. A significant observation of the investigator about Hand Writing Skills is while copying the content children committed less mistakes copying from a hand out than from the board or verbal dictation. Thus it agrees with the studies of (Sara Rosenblum, Patrice L. Weiss, and Shula Parush, 2004) that copying and dictated writing task results significantly differed.

The present study agrees with Graham, Berninger, Abbott, Abbott & Whitaker, 1997 studies that the relationship between handwriting and spelling were significant in the primary grades. A simultaneous parallel intervention given to both Hand Writing Skills and Spelling Skills helped children overcome their writing difficulties. The intervention strategies using rubber stamps helped children greatly (Houck, 1984) who have reverse handwriting deficit to reduce the defects of their handwriting difficulties.

Spelling Skills

In Spelling Skills, 4th and 5th class children showed great improvement from their existing level of performance from pre test to post test mean scores after intervention. The reading fluency comprehension improved because of their ability to integrate their memory recall, audio, visual coordination of Fine Motor Skills and syllabification and Spelling Skills apply them into their

reading skills to overcome their reading problems. The present study agrees with Bowes (2007) who found that the bigraph-biphone segment- blending approach and Oad (1980) that intervention in vowels, consonants, sentence construction and the remedial material was effective in reducing the frequency of errors and improved both reading and writing abilities in an individual with phonological Dyslexia/Dysgraphia. Acquisition of reading skills is more after intervention reflecting the same findings of Sukumar (2000) and Lovett et al. (2012).

Written Expression Skills

In Written Expression Skills of Children of 4th and 5th classes there is a very low level of performance initially in pre test and there a great stride of improvement in their post test. For these children to do extremely well to get grade level competence the interventions need to be for a longer time than 9 months. Grammar showed more improvement than the writing comprehension in these children. Developing Hints, Integrating sentences, comprehension skills visual picture comprehension the children of both classes could do well than contextual comprehension and clues where they definitely require more time to learn them. Thus the present study agrees with Graham et al, (1997), that automacity of writing is the net single predictor of quality of writing composition supported by Nicolson & Fawcett(2011).

Behaviour Manifestation Skills

The Behaviour Manifestation Skills showed marked improvement. This coincides with the findings of Krishna Kumar (2006) where the children had significant improvement in their academic functioning and self esteem after the training in Behaviour Manifestation Skills. The Findings of the study agrees with Glazer (1996) Shechtman & Pastor (2005) suggested cognitive and observation techniques to yield ideas about alternative instructional techniques for minimizing the disabilities of the students. The researcher agrees with Ennis and Jolivette (2012) where the SRSD approach helped along with life skills training Thenmozhi and Pooja Agarwal (2008) in better learning outcomes.

Technology

The study agrees with Anila Kumari (2012), Shankar & Kumar (2011) that the use of multimedia tracking & digital content on interactive smart boards with computers, audio visual aids helped children learn better and are effective aids to intervention strategies.

Yoga and Drawing

The findings of the study is in agreement with Zahra Nikmanesh et, al., (2012) on drawing skills, Lenka Mynaříková, (2012), Freilich and Shechtman (2010) on art therapy and Alizadeh (2007) & Tabrizi (2009) that art therapy and purposive drawing as effective tools of intervention for dysgraphia contribute to progress in academic achievement of the children.

The findings of the study on the significant improvement in the behaviour skills after intervention techniques of Yoga coincide with the findings of Hu Li Ze Zhi (2009) on “The effect of yoga exercise intervention on health related fitness in school- age asthematic children” and Avinash. M, Sanjay.K, Nagaratna “a Comparative study of “the effect of three specific integrated yoga Modules on Manual Dexterity in school Children” which showed great improvement in the Fine Motor Skills and manual dexterity of Children in the age group of 9-12. The present study found that the children have better grades in their exams and they are able to handle stress more calmly.

Gender

The gender has no significant effect is substantiated with the findings of Viswaprasad (2005) & Hakeem (2001) that the performance of both boys and girls were almost same in all writing skills.

Age

The age group played a very important role as a significant variable in this research. 9 and 10 yrs did well in 4th class and 10 and 11 yrs did well in 5th class. Thus under and over age for a class did affect the performance of children. This study thus agrees with the findings of (SampathRani, 2012) and Educational Research Innovative Committee (ERIC) that disabled children of higher age group performed better in functional skills.

Family income

The findings of the present study agrees with Seetharam (2005) that parental income has significant effect on the peer group affiliations but not on the writing difficulties Kusum Harinath (2001).

Intervention

The findings of the study coincided with McEachern, Tamara, 2013 that handwriting intervention would increase abilities in reading and writing skills, in graphomotor and visual-motor integration skills, and improve the participants' self-perceptions and self-descriptions pertaining to handwriting enjoyment, competence, and effort.

The findings of the study agrees with Wanzek, Vaughn, Waxler, Smanson, Edmonds and Kin (2006) that improvement in Spelling Skills are the result of explicit instruction with multiple practice opportunities and immediate corrective feedback.

The findings of the study coincides with Sivakami (2000) that remedial instructional strategies used to overcome learning disabilities in English are effective.

The study agrees with Elbaum & Vaughn (2001) that intervention programmes should be for a longer duration to improve the reading and writing difficulties of children,

The investigator agrees with Chirandon, Laohawiriyanon, and Rakthong (2010) that teaching English through games improves the performance of children.

5.3 Recommendations

Despite the importance of writing and students' difficulties in mastering the hand writing skill, writing intervention research is not as well established as research in other academic domains, such as reading (Graham &Perin, 2007).

- There is a need for trained regular and special teachers in all the schools with the knowledge to teach children with learning disabilities the proposed intervention strategies.
- Multi disciplinary team may be set up to identify children with learning disabilities in general Dysgraphia in particular.
- The instructional strategies should be more and varied for different aptitudes of children.
- The instructional strategies should be in place for all the people who need a remediation and intervention.

- The research on instructional strategies that work on these children should be encouraged.
- The guidelines should incorporate innovativeness, creativity and multi sensory approach based on the learning styles of children.
- There should be more awareness in schools, teachers, parents and community. Awareness programs and workshops should be conducted to facilitate a comfort zone for children with disabilities to naturally tackle their disabilities.
- There should be more training to teachers and educators on instructional strategies to help the growing number of children with learning disabilities in every class room both in training colleges and in service training of teachers at regular intervals.
- There should be a close coordination among the teachers, parents, community and policy makers and executives in order to ensure development of an effective functional academic curriculum that tackles the problem of learning disability of children to guide, facilitate and plan strategies and activities to overcome their disability.
- The monumental work carried out so far in the field of Learning Disabilities by the Non Governmental and Voluntary Organisations is laudable. Encouraging them and helping them will take this movement a long way.
- Special policies should be made exclusively for children with learning and specific learning disabilities rather than mixing with other disabilities.
- A survey by government on the prevalence and identification of learning disabled in the Indian class rooms is an urgent need to tackle the problem.
- A special wing for learning disabilities should be created to promote, coordinate and attend to the issue of Learning Disabilities in India. The recent bill in parliament on Specific Learning Disabilities is yet to see light.
- There should be a positive injunction of compulsory early identification and assessment of Learning Disabilities in every pre schools and schools irrespective of the nature of school whether government or private, state or other boards.

- There should be special educational provisions for children with Learning disabilities in every state.
- In coordinating the activities of Learning Disabilities national and international agencies should work hand in hand to take an active, promotional and developmental role to take these programmes to a scaling success.

5.4 Scope for Further Research

- The scope for further research is plenty as there is so far a limited focus on Dysgraphia in India.
- The present intervention strategies are done for 4th and 5th class children. It can be done on other classes also.
- The present study is undertaken in English. All the vernacular languages in India namely 20 official languages can be considered as the potential research grounds for research on difficulties in writing.
- The effectiveness of intervention on each sub skill under the main writing skills can be done with more varied strategies.
- A comparative study on the impact of intervention strategies on the other Specific Learning Disabilities be carried out.
- A study on the identification, assessment and instructional strategies on Pre schoolers may be of great help as an early intervention programme.
- The role of parents in an effective implementation of intervention will help a child with disability a long way.
 - The effective class room practices to tackle Dysgraphia by teacher educators will be useful.

5.5 Conclusion

Teaching should not merely be the models of dictation of the written form. Children should be given variety of inputs to help them write better. They should be encouraged to use creativity along with instructions and guidance from the teacher to write well. When models of the target language are reinforced, children tend to get sentence structures internalized. Exposure of such texts enables them to acquire fluency and accuracy in writing. In addition to this, they should also be introduced to different kinds of writing strategies. Only by means of repeatedly practising, exercising, and utilizing language

structural forms, can a learner finally be accustomed to various structures and be able to communicate effectively in the written form. Systematically encouraging learners to reflect on what they want to write and then helping them to make an appropriate choice of language forms that has pedagogic value is the sure way to prevent the need for a future plaguing problems of learning disability. There are some inherent issues for a child with learning disability no doubt. But there is nothing that would stump them to down gradation in academics. A smile, patience, genuine interest in the wellbeing of the child, planning and intervention in the minds of teachers, parents and community will take these children a long way on the ladder of success to overcome learning disabilities.