CHAPTER - V
MAIN FINDINGS, EDUCATIONAL IMPLICATIONS 
AND SUGGESTIONS FOR FURTHER STUDIES

In the preceding chapter, analysis, interpretation and 
discussion of results were discussed elaborately upon the effects of 
intervention programme on the development of writing skills of 
students with dysgraphia. This chapter is devoted to the summary of 
main findings, educational implications and suggestions for further 
 studies.

5.1 MAIN FINDINGS

On the basis of analysis and interpretation in the foregoing 
chapter, following findings emerged out which are highlighted in 
three sections. The Section-I deals with prevalence rate of 
dysgraphia and difference in mean posttest scores of experimental 
and control groups of students with dysgraphia after the 
implementation of the intervention programme. The Section-II 
highlights the mean pretest-posttest scores of students with 
dysgraphia in experimental group on the basis of the intervention 
programme and the Section-III reflects the mean pretest-posttest 
scores’ comparison of students with dysgraphia in control group.

SECTION-I

• The prevalence rate of writing disabilities among learning 
disabled students in public schools varies from 12.31 to 17.14 
per cent with mean percentage 14.26.
• There exists significant difference in the mean gain score (14.77) 
of students with dysgraphia in experimental group at posttest 
level than the mean gain score (8.27) of students with dysgraphia 
in control group at posttest level on ‘Handwriting’ component of 
writing skills. It reveals that the students with dysgraphia in 
experimental group performed better than students with
dysgraphia in control group on posttest after the intervention programme.

- The mean posttest score of students with dysgraphia of experimental group (34.13) was greater than mean posttest score of students with dysgraphia of control group (29.07) on ‘Correct spellings’ component of writing skills. Considering this result, it can be said that spelling performance of experimental group of students with dysgraphia showed positive trend than students with dysgraphia of control group on posttest after treatment programme.

- The mean posttest score of experimental group of students with dysgraphia (10.47) was lower than the mean posttest score of students with dysgraphia of control group (19.07) on ‘Incorrect spellings’ component of writing skills. It reveals that students with dysgraphia in experimental group produced less incorrect spellings after intervention programme as compared to students with dysgraphia in control group.

- There exists significant difference between the mean posttest score of students with dysgraphia of experimental group (60.15) and the mean posttest score of students with dysgraphia of control group (22.13) on ‘Written expression’ component of writing skills. It can be said that writing fluency on narrative and expository text structure of students with dysgraphia of experimental group accentuated as compared to students with dysgraphia in control group on posttest after the intervention strategies were employed.

- The mean posttest score of experimental group of students with dysgraphia (.80) was lower than the mean posttest score of control group of students with dysgraphia (2.13) on ‘Incorrect letters’ of notes taking skill. It can be said that there was no difference between experimental and control groups of students.
with dysgraphia on posttest level after intervention programme. It further reveals that the performance of control group of students with dysgraphia increased even when there was no exposure to treatment programme.

- The mean posttest score of experimental group of students with dysgraphia (5.07) was lower than the mean posttest score of students with dysgraphia of control group (9.80) on ‘Incorrect words’ of notes taking skill. It reveals that students with dysgraphia in the experimental group produced less incorrect words after the implementation of the intervention programme as compared to students with dysgraphia in the control group.

- The mean posttest score of students with dysgraphia in experimental group (5.00) on ‘Missing words’ of notes taking skill was lesser than the mean posttest score of control group of students with dysgraphia (24.53). It means missing words of students with dysgraphia in experimental group on notes taking skill reduced considerably as compared to the students with dysgraphia in control group after intervention.

- The mean posttest score of students with dysgraphia in experimental group (16.73) was increased than that of the mean posttest score of students with dysgraphia in control group (5.00) on ‘Correct sentences’ of notes taking skill. It highlights that students with dysgraphia in experimental group wrote more correct sentences than students with dysgraphia of control group in notes taking skills after the implementation of the intervention programme.

**SECTION-II**

- The mean gain score of experimental group at posttest (14.77) was higher than the mean gain score of experimental group of students with dysgraphia at pretest (6.53) on ‘Handwriting’ component of writing skills. It means that a set of intervention
strategies had been found to have a significant positive effect on development of handwriting component of writing skills of students with dysgraphia.

- The mean posttest score of experimental group of students with dysgraphia (34.13) was greater than mean pretest score (27.47) on ‘Correct spellings’ of writing skills. It reveals that the intervention programme significantly improved the spelling performance of writing skills of students with dysgraphia.

- The mean posttest score of experimental group of students with dysgraphia (10.47) was lesser than mean pretest score (24.00) on ‘Incorrect spellings’ of writing skills. It shows that spelling errors of students with dysgraphia of experimental group gradually diminished after the intervention programme.

- The mean posttest score of experimental group of students with dysgraphia (60.15) was accelerated than mean pretest score (18.20) on ‘Written expression’ component of writing skills. It implies that the intervention programme i.e., Self Regulatory Strategy Development (SRSD) had remarkable impact on the ‘Written expression’ component of writing skills of students with dysgraphia in narrative and expository text.

- The mean posttest score of students with dysgraphia of experimental group (.80) differed significantly from mean pretest score (3.00) on ‘Incorrect letters’ of notes taking skills. It reveals that the intervention programme had been found to be immensely helpful in notes taking abilities of students with dysgraphia or correct writing of letters.

- The mean posttest score of experimental group of students with dysgraphia (5.07) on ‘Incorrect words’ of notes taking skills differed significantly from their mean pretest score (13.06). It reveals that the experimental group of students with dysgraphia
wrote less incorrect words after their exposure to the intervention programme.

- A significant difference was found in the mean posttest score of students with dysgraphia of experimental group (5.00) on ‘Missing words’ of notes taking than mean pretest score (24.53). It implies that number of missing words of students with dysgraphia of experimental group on notes taking skills gradually diminished after their exposure to the intervention programme.

- Significant difference was found in the posttest performance of experimental group of students with dysgraphia (mean=16.73) than pretest (mean=5.06) on ‘Correct sentences’ of notes taking skills. It highlights that students with dysgraphia of experimental group wrote more correct sentences after the implementation of the intervention programme.

**SECTION-III**

- No significant difference was found in mean posttests score (8.27) of control group of students with dysgraphia than mean pretest score (6.73) on ‘Handwriting’. It means the performance on handwriting of students with dysgraphia in control group remained similar. Marginal changes had occurred in alignment, letter spacing, word spacing, slant, and line quality components of handwriting of writing skills.

- The mean posttest score of control group of students with dysgraphia on ‘Correct spellings’ (29.07) had not differed significantly than their mean pretest score (28.13). In the same way, mean posttest score of control group of students with dysgraphia on incorrect spellings (19.07) was not much different than the mean pretest score (20.60). It reveals that the performance of students with dysgraphia in control group did not change at posttest level due to lack of treatment i.e., designed intervention programme.
• The mean posttest score of control group of students with dysgraphia on ‘Written expression’ (22.13) was little greater than mean pretest score (19.20). It implies that the writing fluency in control group of students with dysgraphia had not shown any sign of improvement. Slightest changes had happened in ‘Organization’, ‘Mechanic’ sub-components of written expression of writing skills.

• No significant difference was found in the mean posttest score (2.13) of control group of students with dysgraphia on ‘Incorrect letters’ of notes taking skills than mean pretest score (2.13). It reveals that the performance of students with dysgraphia in control group was neutral due to the non-exposure to specially designed intervention programme.

• Significant difference had been found between the mean posttest score (24.53) and mean pretest score (26.06) of students with dysgraphia in control group on ‘Missing words’ of notes taking skill. It highlights that missing words in notes taking skill of students with dysgraphia of control group also reduced gradually even after no exposure to treatment.

• No significant difference had been found in the mean posttest score (5.00) of control group of students with dysgraphia than pretest mean score (4.33) on ‘Correct sentences’ of notes taking skill. It reflects that the performance of control group of students with dysgraphia was neutral even though they were taught by conventional method.

5.2. EDUCATIONAL IMPLICATIONS

For Policy Planners and Administrators

As the present study shows that approximately 15 per cent of the total public schools students are suffering from dysgraphic syndrome, it is necessary for policy planners and administrators to take cue from this fact and make such policies which suit them. This
fact can give a direction to policy planners and administrators to make appropriate policies for those children. This rate of dysgraphia is high enough to accelerate the dropout rate and degenerate the quality of education as writing is also exclusively related to school failure and academic retardation. If this situation persists for a long time without giving proper attention, the dropout percentage would augment with greater extent and the long cherished purpose of universalisation of elementary education and right to education of every child cannot be achieved. So, the present study would be an eye opener to all who are concerned with it because writing skill of the students has greater impact on academic achievement and professional endeavor. The study would have greater utilization and implications for easy identification of students with dysgraphia. It would also sensitize the national and state level personnel about writing issues which are an acute problem among these children. Although the study has been conducted in public schools, the same condition is bound to be found in other type of schools. So, the findings of the study can also help planners and administrators to look into the matter seriously. Hence, appropriate preventive as well as remedial measures should be taken from time to time through various plans and policies. The teachers and educators should be made aware of this kind of problems among children.

So, it seems inevitable that some modifications are required in the existing policies such as incorporating learning disability as a type of disability which is right now not comes under the purview of Person with Disabilities Act (PWD), 1995 and RCI act. Some other changes like providing extra time and other facilities as given to the students who are visually challenged, can also be given to students of writing disabilities. It is necessary because these students cannot write at par with other children.
For Teaching Community

The findings of the study would have immense value to teachers and teacher educators. The findings would help to sensitize them about the prevalence of students with dysgraphia in all schools that leads to fiasco in scholastic and co-scholastic area. It would help teachers and teacher educators for the easy identification of students with dysgraphia in the classroom and outside through their observable behaviour. The findings would provide inputs to teachers and teacher educators about the needs of students with dysgraphia by giving extra time in examination, using oral method for evaluation, frequent use of computer for writing. The teachers should create conducive writing environment and instigate them to write more in order to build their self confidence and writing efficacy. The teachers should not discourage or rebuke even for minor mistakes in writing or messy writing. The study would throw light in view of problem of students with dysgraphia, a need to modify the existing curriculum, pedagogy and mode of evaluation. It would also have great value for teacher trainers and teachers to know about various types of intervention programmes for developing writing skills viz. handwriting, spelling, written expression and notes taking of students with dysgraphia. For the development of handwriting, the teachers could expose the students with activities such as clay modeling, tracing, drawing on sand, clay and floor, joining dots etc. which would improve their writing skills. They can also use handwriting strategies like alphabet warm-up, alphabet practice, alphabet rocket, and alphabet fun for good handwriting performance. Further, the teachers should expose the students to a lot of coloring and drawing with enclosed space/pictures, so that they can have control over fine motor part of body which are pre-requisite for handwriting. They should encourage students to write short and simple assignments which give interest to them instead of focusing
on long essays. They should divide a writing task into small units and also tell them to write few sentences in small parts from a story instead of writing the whole story in one go. They should make writing a regular activity by encouraging them to write from own experiences. They should encourage them to plan, brainstorm, organize, write, edit and revise, before writing anything. They should expose the students to multi-sensory approach, cover-write method, imitation method, repetition-drill method, word puzzle, phonemic-morphemic approach etc. for spelling skill development. In the classroom, teachers should acquaint the students with dysgraphia with various abbreviations, symbols, contractions along with column style and webbing style notes taking which would develop their notes taking ability. The above said strategies should be incorporated in the teacher training curriculum in order to acquaint and train the teacher educators and teacher trainees with knowledge and skills for educating the students with dysgraphia.

**For Students**

The present findings would contribute a lot to students with dysgraphia, in particular, and other students, in general, to solve their writing problem. The findings of the study focus on students to use regularly the strategies which would develop their writing skills. The activities can be such as shake and rub hands together, writing on carpet and air, sand and clay writing, trace on clay or sand, string some beads, squeeze and twist various balls, select letters from newspapers by cutting and arrange them alphabetically, tear papers, cut papers and cardboard with scissor, roll clay between fingers, play marbles, hold and catch various things, coloring various pictures and figures for writing readiness together with the pre-writing activities such as scribble, trace curves from left to right, from up and down, horizontal and vertical direction in order to develop their visual perception, kinesthetic perception and gross-fine motor skills.
These activities are prerequisite for appropriate handwriting. The students with dysgraphia should practise strategies viz. alphabet warm-up, alphabet practice, alphabet fun and alphabet rocket for development of both manuscript and cursive upper and lowercase letters writing skill. In addition, the students should do motor imitation of letters coupled with numbered arrow cues and memory retrieval that would be more effective for developing their handwriting fluency. Hence, it can be said that the improvement in handwriting performance among students with writing difficulties leads to gradual reduction of dropout rate in education and to improve the quality in academic performance along with to boost the confidence level of students.

The intervention programme has greater implications for students with dysgraphia in order to develop their spelling performance. The findings suggest that the students should practise some spelling strategies viz. letter proof reading, whole word correction, visual-auditory-kinesthetic approach, cross word puzzle game, word chunking (words within words, common letter pattern, base word, prefix and suffix), phonemic and morphemic awareness, spelling conscience through puzzle grid, word construction through game of anagram etc for developing spelling accuracy in writing words and sentences.

Moreover, the findings have greater utilization for students with writing difficulties to develop their written expression skills in narrative and expository essays. The use of self regulatory strategies improves the writing efficacy among students with dysgraphia in terms of organization, coherence, systematization and meaningfulness. This strategy helps them to plan, brainstorm and organize their thought process before actual writing through the use of mnemonic like POW+WWW, What=2, How=2 and POW+TREE, graphic organizers, visual organizers and picture prompts.
Furthermore, the findings have significant effect upon the notes taking abilities among students with dysgraphia. In order to write down or copy words and sentences from books, chalkboard and teacher’s dictation, students should be given practices in various types of symbols, abbreviations and contractions. The study contributed immensely by inculcating the value of tolerance, frequent practice, self confidence, self efficacy in writing.

**For Parents**

The present findings would give light to parents about the problems of students with dysgraphia. The parents should create congenial writing environment at home by allowing them to eat food by spoon, to draw and paint in clay or sand or floor; draw zig-zag and straight lines; play with blocks; use different pens etc. They should also encourage them to write letters, daily notes on diary; plan and write for a day; prepare house hold lists; prepare menu and recipes; prepare shopping lists; prepare holiday calendars; write thank you notes; sign name in the greeting cards; provide different width lined papers; arrange activities for sequencing and allow them to play games. At home they should allow their children to use computer for writing that would help them to correct spelling and written expressions. They should also make appropriate arrangement for their sitting by providing adequate height table and chair. They should possess positive frame of mind and encourage their children for writing instead of harassing or embarrassing them.

**5.3 SUGGESTIONS FOR FURTHER STUDIES**

Research is a continuous process and the findings of this study cannot give final information by itself due to many limitations the investigator encountered during the process of research. In order to cope with the changing pattern of educational system, suggestions are required for further enquiry in this area and other related areas.

Viz.-
● The study was conducted on writing disabilities of learning disabilities. The study may be further conducted in the other areas of learning disabilities.

● The study was taken on class VII students of public schools. The study may be undertaken by taking different classes and also Hindi medium schools.

● The sample for the study was taken from urban locality. The study may be further conducted by selecting sample from rural, semi rural, semi urban and slum areas.

● The present study is based on a small sample drawn from a limited number of schools. For the wider generalization a study can be undertaken by covering a variety of samples like Govt. schools, Govt. aided schools, urban schools, rural schools, girls’ schools, boys’ schools.

● The result of present study threw valuable light on some intervention strategies that have had positive impact on writing skills development. Other intervention strategies and new frontiers in writing instruction should be devised or developed and implemented in culture specific context for writing skills’ development of students with dysgraphia coupled with other students who have problems in writing.

● Further, research is also needed to illuminate how and why task specific and self regulation strategies jointly contribute to the mastery of composition skills.

● More research is needed to identify instructional settings and techniques that are both effective and feasible when strategies for composition and self regulation are to be integrated by teachers into the daily routine classrooms.

● Further researches may be required to administer standardized tests to assess more exactly the added effects that self regulatory
components of writing interventions have on students’ skill development.

- Similar effort is needed to clarify whether students’ use of graphic organizers independently, is an effective strategy to enhance their writing composition. Researchers must also keep in mind both the type of graphic organizers (e.g., semantic organizers, framed outlines) and the duration of instruction as factors influencing how effective students’ use of graphic organizers independently can be at improving students’ writing comprehension.

- Some related studies revealed that the word processing has contributed significantly in the writing performance of students with dysgraphia. Hence, further study should be conducted with the use of word processor for spelling skills and composition skills development of students with dysgraphia.