CHAPTER II

REVIEW OF RELATED LITERATURE

In the foregoing chapter the background, objectives, hypotheses and rationale of study have been discussed. The present chapter is devoted to review of related literature.

2.1 INTRODUCTION

The review of related literature is of paramount importance for the researcher. An investigator must be aware of the researches conducted in the field of the study in the past and only then s/he is in a position to contribute something in original. It is through the review of related studies that the researcher knows the works that have already been done over a period of time. S/he knows the areas untouched or unexplored and has an idea of the scope of the subject or the study in all aspects.

To quote Good (1972), without a critical study of the related literature the investigator will be groping in the dark and perhaps uselessly repeat the work already done. Therefore, to save time, energy and resources, it is necessary to undertake a detailed and penetrating study of all available literature.

Review of related literature serves as a guiding post not only with regard to the quantum of work done in the field but also enable us to perceive the gap and lacuna in the concern field of research. The investigator’s analysis and review of such resourceful studies work as an impetus which pushes the investigator into greater details and wider applicability of the problems in hand to provide new ideas, theories, explanations, or hypotheses. Good remarks, it might be suggested that finding the way in which studies are comparable in which they are related to one another is a more important problem.
Goods (1972) further remarks “the orientations provided by survey of related literature are helpful in making a straight forward statement of need for the investigation”. The review of related literature promotes a greater understanding of the problem and its crucial aspects and ensures the avoidance of unnecessary duplication. For conducting research in any field, the research worker is required to have full acquaintance with the library and its many sources to take advantage of studies undertaken earlier.

Every research project should be based on relevant thinking and proper plan and procedure. When a new research is not based on relevant thinking and proper plan and procedure, when a new research is not based on a thorough review of related literature, it becomes an isolated entity, bearing at best accidental relevance to what has been done before. The findings of earlier experiments encourage the new worker to give importance to useful projects in education, and the research worker is able to avoid the past mistakes or defects in the procedure.

This chapter is devoted to review of available literature relevant to the present study. An effort has been made to present a review of pertinent literature which is likely to have a direct or indirect bearing on this study.

2.2 STUDIES CONDUCTED IN INDIA

Desai (1985) carried out a study to investigate the learning disabilities of primary school children. The main objectives of the investigation were: (i) to study different types of learning disabilities commonly found in grade IV children in Ahemdbad city, (ii) to investigate their probable causes, and (iii) to devise and try out remedies for correcting those learning disabilities. Diagnostic tests in language and arithmetic were prepared and administered. It was found that seventy five per cent of the pupils showed deficient achievement in language and arithmetic. The remedial programme
was administered for one month. The same test that was used in pre test was again administered to all the seven groups. The major findings were: (i) the most potent cause of learning disability was poverty, (ii) the second cause of the malady was the apathy of teachers to their duties in schools,(iii) the third cause of learning disability was the abolition of examinations from standards I and II in the schools of Gujarat (iv) low intelligence was also one cause of the malady.

Rao (1986) conducted a study on the nature and incidence of reading disability among school children. The objectives of the study were:(i) to examine and analyze the reading disability cases, (ii) to identify the reading disability cases in a typical school population, (iii) to examine whether rural/urban difference existed in reading disability of school children, (iv) to examine relationship between language deficiency and reading disability in school children, and (v) to identify the factors operating in specific cases of reading disorders. A reading diagnostic test was administered to the sample of students to examine the language deficiency of the children. The major findings were: (i) reading disability was found in about twenty percent of students in the primary schools, (ii) sex differences were not significant with regard to reading disability, (iii) students in rural area were significantly backward when compared to the students in urban areas in reading skills, (iv) the reading disabilities was closely related to language deficiency in school children, (v) the disabled readers were found to be very poor in the sub-skills of language development, namely, word meanings in isolation and context word synthesis in some grammatical aspects of the language and in paragraph comprehension, (vi) besides, language deficiency was due to poor social cultural background of the family, poor study habits and lack of motivation for reading were found to be the causal factor of reading disability, (vii) low reading achievement was found not to
be evidence of low reading potential, and the reading deficiency of children in several cases could be improved by remedial teaching and constant practice.

The influence of grade, age and religion on the learning disabilities among elementary school children was studied by Srivastava & Afiah (1992). Hypotheses of the study were (i) age will not have any bearing on the elementary school children’s disability in reading, arithmetic, language, writing and spelling, (ii) sex will have an influence on elementary school children’s disability in reading, arithmetic, language, writing and spelling. Findings of the study were: (i) age was found to have a significant influence on reading and spelling disabilities. Effect of age was observed on language and writing disability, but no definite effect on arithmetic disability, (ii) sex had a significant effect on writing disability. Small difference between male and female responses on reading, language, arithmetic and spelling was found, (iii) no effect of religion on reading, arithmetic, language, writing and spelling was found. Remedial instruction was provided for four months to a group of one hundred seventy three, third grade pupils out of a total of four hundred twenty three.

The effect of cognitive-behavioral training on the written syntax of the learning disabled children was studied by Swarup & Sharma (1993). The objectives of the study were: (i) to identify the learning disabled studying in regular schools and investigate the incidence, degree and types of syntactic errors that they make in their written expressions, and (ii) to study the effects of cognitive-behavioral training on the written syntax and on self-directing skills in the writing tasks of the learning disabled children. The findings were: (i) improvement in overall quality of writing which could be attributed to the students’ mastery of lower level writing skills such as formulation of sentences and mechanics. The facility in these skills
(syntax, mechanics) is assumed to have reduced interference and cognitive overload, thus freeing the mental capacity to deal with context generation and organization of the same, (ii) development of the ability to self-direct. It was speculated that the subjects aware of the tasks demands and their ability to deal with these tasks would enable them to develop task specific strategies. Four out of the five subjects were observed to sub-vocalize what they were going to write supporting factor to the speculation. Spurts in improvement were observed in children when they started using this strategy.

Prasad (1995) studied hypoxican characteristics in learning disabled (LD) and non-learning disabled (NLD) children. It was investigated on hypoxican characteristics in 10 learning disabled and 10 non-learning disabled children with reference to their attention, perceptual sensitivity. Dogherty, Nuechterlin and Drew formula was used to assess subjects’ sensitivity. Identification ability was measured by Marianne Frosting Development Test and Sinha’s Indo-African Embedded Figure Test. Findings indicate that LD subjects showed poor level of information processing, sensitivity and also inefficient discriminating abilities than the NLD subjects.

Sharma (1997) studied the effect of educational remediation for children with learning disabilities. She examined the usefulness of an intervention programme for learning impaired. An educational remedial programme based on the assessment of scholastic achievement levels in spelling, dictation, oral reading, oral comprehension, and arithmetic skills of learning disabled pupils was developed. A group of 12 children with each type of learning disability (dysgraphia, dyslexia and dyscalculia) from Grade III to V from rural and urban primary schools of Andhra Pradesh were administered the programme. A significant improvement in the pre versus post intervention achievement test performance was observed.
Prasad (1998) in a comparative study analyzed the learning capabilities, performance, confidence and hesitation of expression in learning disabled and non-learning disabled children. He described the development and validation of quantitative assessment tool for measuring learning capabilities, performance, confidence, and hesitation of expression. The learning capabilities formula applied to 113 children (aged 6-9 years) revealed a normal distribution of learning capabilities. Two extreme groups of 29 learning disabled and 29 non-learning disabled children were applied the formula for performance, confidence and hesitation of expression. The NLD group was significantly higher on learning capabilities, performance and confidence whereas the LD group was significantly higher on hesitation of expression.

Sobhana(2004) conducted a survey to identify the difficulties in written English among secondary school learners. The objectives of the study were (i) to develop a competency based achievement for measuring the existing level of competencies required to write well in English among secondary school learners; (ii) to develop an English language usage inventory for measuring the ability to use written English language among secondary school learners;(iii) to find out the mean differences in competency based achievement of learners on some school related variables; (iv) to find out the mean differences in the ability of learners to use written English on some selected school related variables;(v) to study the association between performance of students in written English and some school related variables and (vi) to study the association between performance of students in written English and family related variables. The main finding were (i) there was significant difference in both the competency based achievement and the ability to use written English among the students in term of locale of residence, type of school and medium of instructions studying in English and Telgu medium of
schools; (ii) there was a significant association between the performance of students in written English and different variables related to school and family.

Prema(2009) conducted a study on written expression of children with writing disabilities and normal children. The objective of the study was to compare the performance of children with writing disabilities and normal children on ideation based on stories written by them in grade IV, V and VI of English medium schools. Poteet’s Checklist (1980) was used for informal assessment of written expression through writing story, picture, or themes. The findings of the study were (i) more than half the children with writing disabilities and all normal children were able to label and describe at least briefly objects, characters etc in their stories. The exception were a few writing disabled children who used meaningless language, (Since this could be because of invented spelling, faulty handwriting and spacing, such children were asked to read their stories aloud). These children were found to be unable to express ideas about what was happening in the picture or beyond their immediate context. (ii) in comparison with writing disabled children, more normal children in each grade exhibited an awareness of the need for a plot with all normal children in grade VI writing stories with plots. (iii) Only about half the number of normal children (54%) explicitly stated and discussed moral issues or themes. A few writing disabled children in all grades, were also found to make references to value conflicts in their stories albeit incoherently.(iv)The number of words used by normal children far exceeded those used by writing disabled children in all the grades. (v) A major difference between the two groups of children lay in the comparative ease with which the writing of normal children could be comprehended.(vi) while repetition of words and ideas (tough not perseveration) as well as lack of organization was found even among normal children, they were not acute enough to
cause their writing to be incomprehensible as the writing of some writing disabled children. (vii) Only a small number (less than 30 per cent) of writing disabled children seemed unable to perceive correctly the task at hand. Such children either used meaningless language or wrote a few words/lines which they seemed to have memorized or learned to write. (viii) Some normal children in grade IV responded inaccurately by writing about one aspect (for example, merely the physical description of people or animals in a picture or in their lives), leaving out the actual story in their writing. Thus, while majorities of writing disabled children were able to perceive the task given, they were not to respond to it like their normal peers. (ix) Normal children wrote more number of complete sentences than writing disabled children of the same grade. Normal children in grade V tended to experiment with longer, more embedded sentences for example: The woman screamed loudly as the young masked man held a knife tearing her diamond jewellery..... (Grade V). Writing disabled children on the other hand strung together a series of isolated and sometimes meaningless phrases as in: Once, boy, Raju, go to, garden, Honeybee tel my Bice you go to no school. [Once, boy, Raju, go, to, garden, Honeybee, tell my bees you go to no school] (x) writing disabled children wrote more sentence fragments than normal children of the same grade with writing disabled children in grade VI using longer sentences (instead of sentence fragments) than writing disabled children in grade IV and V because they had more ideas to convey. (xi) in all grades normal children tended to use more simple, compound and complex sentences than writing disabled children of the same grade. With an increase in the number of words required to be used by them in writing a story, normal children used more simple sentences but there was no visible increase in the number of compound sentences and complex sentences used. Compound/complex sentences were used only by very few normal
children. Complete sentences written by writing disabled children were simple sentences. Attempts at writing compound sentences (use of and) and complex (if clauses or clauses of time) were largely run on sentences with frequent errors in them. (xii) Apart from declarative sentences, writing disabled children of grade IV and V used no other type of sentence in their writing. Very few normal children used sentences other than declarative sentences suggesting that in order to improve the quality of their written narrative, normal children in all the grades needed practice with using different types of sentences to express diversity of thoughts, feelings, ideas and issues which made up the content of their stories. (xiii) More number of informal and colloquial words were used by normal children than by writing disabled children in all grades. Formal words were not used by children in both the groups in grades IV and V. However, normal children in grade VI were found to use formal words. Examples of formal words occurring among children in grade VI are ‘to recover’ for ‘to get back’, ‘in wonder’ for ‘in surprise’. There was significant difference in the number of colloquial words in the writing of both groups of children in all grades with normal children using far more than writing disabled children of the same grade. (xiv) More number of simple and multisyllabic words was used by normal children. Both groups of children in grades IV and V used the full form of a word rather than contractions. For example: ‘did not’ rather than ‘didn’t’. (xv) There were far more vague words in the writing of writing disabled children than that of normal children. The frequency with which vague words occurred in the stories of writing disabled children caused their incomprehensibility. Vivid words and figures of speech were found to be used more by normal children in grade VI in comparison with normal children in IV and V. They were not found in the writing of Children With Writing Disabilities (CWWDs). The simile was the most preferred figure of speech but examples of
hyperbole “I thought he must be the fattest man in the world” was also found in the stories of normal children. (xvi) Inexact words and repetitions were found more among writing disabled children in comparison with normal ones. Repetitions among writing disabled children were because of perseverance of words and ideas. Among normal children repetition was in terms of words which could be avoided by using a different sentence structure. More omissions of words were found among writing disabled children than normal children. There was no significant difference among them on this account in grade VI. This was because normal children in grade VI in experimenting with the language and while trying to write sentences which were embedded also made a number of omissions.

2.3 STUDIES CONDUCTED IN ABROAD

Myklebust (1973) reported significant retardation (more than one year) in syntax and content of moderate learning disabled children’s written expressions, when they compared to those of their third and fourth grade peers. The severe learning disabled children showed greatest deficit in syntax (more than 2.5 years retardation).

Hartley (1978) conducted a naturalistic research with skeletal notes and found that students who get skeletal kinds of notes about half as many notes of their own, compared to students who were not given notes; yet, students who were given skeletal notes recall more. The amount of space left for note taking was a strong influence on the amount of notes that students took (i.e., the more space provided, the more notes taken). Although skeletal notes lead to better recall than either the student’s own notes or the instructor’s notes, the best recall occurred when students received skeletal notes before the lecture and the instructor’s detailed notes afterward.

Poplin et al. (1980) found significantly lower scores in word usage, style and overall writing skills of third and fourth grade learning disabled students in comparison to their normal peers.
Hillock (1984) reported that effective writing lessons had clear and specific objectives and prepared students to write about specific topics. Effective writing instruction was characterized by planned brainstorming activities that helped students to organize information prior to writing. He noted that older writing activities, such as combining simple sentences into more complex sentences, were less effective than the integrated series of lessons that traversed the entire writing process. Even less effective were methods in which students merely write a good deal of text with minimal guidance from a teacher or attempted to emulate features of good writing found in the work of others. Least effective were approaches that focused on studying parts of speech sentence fragments.

Karen et al. (1985) conducted a study to determine whether a self control strategy training procedure was effective in improving learning disabled students’ compositions. Training effects on three objective aspects of compositions (number of different action words, action helpers, and describing words) were investigated using a multiple baseline across behaviors nested within a multiple baseline across subjects design. Results indicated that students’ use of the selected parts of speech increased substantially above baseline as did mean number of words per story. Additionally, stories written after training received substantially higher quality ratings than those composed during baseline. Generalization and maintenance probes took 14 weeks after training continued to yield positive results.

Kiewra (1985) found that students who only review detailed notes provided by the instructor after the lecture generally do better on subsequent fact based tests of the lecture than do students who only review their notes. In fact, students who not even attended the lecture but reviewed the instructor’s notes scored higher on such tests than did students who attended the lecture and took and reviewed their own notes. He also found that students remember a
greater proportion of the information in their own notes than in provided notes, and those students who take the same amount of time to review both their own and instructor’s notes perform best of all on fact based tests.

Issacson (1987) compared unskilled writers with skilled writers and found the following problems of unskilled writers: They spent very little time in planning before they started to write; no rough notes were prepared before writing; ideas were not composed in a logical order; either very simple sentence structure was used, or long and rambling sentences were constructed with repetitive use of conjunction; simple words were favored over more interesting and expressive words; certain words were used repetitiously (e.g., ‘and then’, ‘nice’, ‘really big’, ‘really small’, ‘really fast’, etc.); no much material was produced in the available time; the writers were reluctant to review and revise their work; many spelling errors were made; punctuation was often omitted, or was added idiosyncratically.

McShane et al. (1988) reported that students are able to achieve the most on tests when they are provided with only partial notes to review. Specially, partial notes led to better retention than did comprehensive (full notes) or no notes, despite the fact that the students expressed an understandable preference for receiving full notes. Several formats for partial notes have been examined, from outlines, to matrices, to skeletal guides. Of these, the skeletal format has gained the widest support. In this format, the main ideas of the lecture are provided, usually including the hierarchical relationships between them and spaces are left for students to fill in pertinent information, such as definitions, elaborations, or other explicative material, as they listen to the lecture.

Graham et al. (1989) conducted a study to determine if self instructional strategy training would improve learning disabled
students’ writing. Students were taught a strategy designed to facilitate the generation, framing, and planning of argumentative essays. Training effects were investigated using a multiple baseline across subjects design, with multiple probes in baseline. Strategy instruction had a positive effect on students’ writing performance and self efficacy.

Graham & Harris (1989) demonstrated that when students were taught a very specific question answer strategy, they wrote better stories than students who were not taught this strategy. The question asking strategy was similar to the story grammar questions used by Idol (1987) in her reading comprehension research, showing how reading comprehension instruction and expressive writing instruction can be linked and integrated and how specific text structures are excellent basis for generating instructional approaches. Students were taught a question answer strategy to improve their narrative writing. Awareness of narrative text conventions was a prominent feature of all stages of the intervention. Initially students were taught to identify stories they read. A mnemonic for seven story grammar questions was used during this phase. Once students could recite the mnemonic and discuss its meaning, they moved to the next phase, which involved generating story grammar elements while looking at a picture. A five step learning strategy was used to help students write stories using the picture prompt. In modeling the strategy using think aloud techniques, teachers were careful to stay close to the story grammar framework. Students then practiced the five step learning strategy as they wrote their own stories. In the feedback dimension, the stories were read by the teacher and students as a group. If any of the story elements were missing, the group discussed how and where it could be added. Stories were returned to the students for revision based on teacher and student recommendations.
Cunningham & Stanovich (1990) conducted the first experimental study investigating whether learning to spell by writing words with a pencil was better than learning to spell by using letter tiles or a computer. They found that first grade students who were taught to practise spelling through motor production of writing letters were able to spell more words correctly on post test spelling assessments than students taught to spell words with letter tiles or students taught to spell words by typing on the computer. They speculated that using handwriting to spell words contributed to better spelling skills because physically writing letters and words contributed to a reinforced redundancy of the perceived orthographic representations needed to recall a word’s spelling. However, Vaughn, Schumrn and Gordon (1992) did not find significant differences among the use of pencil writing, letter tiles, or the computer in their replication of Cunningham and Stanovich’s (1990) study with first grade children. In a subsequent study exploring the handwriting-spelling relationship, Berninger, Abbott, et al. (1998) included whole-word and sub word level spelling in addition to the phonemic spelling instruction used by Cunningham and Stanovich and Vaughn et al. (1992). Berninger, Abbott, et al. found that second grade students who received instruction in spelling with a pencil performed better in their spellings of highly predicable words—for example, CVC words like pet and cup than students who received spelling instruction on the computer. Differences between the pencil and the computer were not apparent when more difficult target words were used.

Englert et al. (1991) conducted an experiment on the effect of cognitive strategy instruction in writing upon general and special education settings and included the students both with and without learning disabilities. Students in the cognitive strategy instruction condition received 5 months of instruction that consisted of four phrases: Text analysis, Modeling the writing process, Guided student
practice in composition, and Independent writing. Students in the control classrooms received regular writing instruction, which included opportunities to compose texts two to three times per week. The experimental curriculum centered on a set of think sheets with the acronym POWER (Plan, Organize, Write, Edit, and Revise). Think sheets were used during every stage in the writing process. Teachers were taught to extensively model the inner dialogue that competent writers engage in during the writing process and to support students during lessons and writing activities. Think sheets facilitate the organization of explanatory writing. Students explained and shared their think sheets with their peers before actually writing their brief essays. The result was that consistent, positive effects were attained across achievement levels, indicating that the approach benefited both special and general education students equally.

Englert et al. (1991) examined the effects of an intervention that attempted to improve students’ expository writing abilities through an instruction emphasis on teacher and student dialogues about expository writing strategies, text structure processes, and self regulated learning. The findings suggested that the dialogic instruction was effective (a) in promoting students’ expository writing abilities on two text structures taught during the intervention and (b) in leading to improved abilities on a near transfer activity, in which students wrote using a text structure not taught during the intervention. Although students in control groups exhibited some pre-test post-test gains on specific text structures. It supports the importance of instruction that makes the writing processes and strategies visible to students through teacher student and student-student dialogues.

Englert et al. (1991) taught fifth and sixth graders with special needs how to use think sheets to plan, organise, write, edit, and revise two types of expository texts( explanation and
compare/contrast). Teacher modeled aloud how to use the think sheets and accompanying strategies such as brain storming, and students were provided with assistance until they could apply them independently. During modeling and guided practice, teacher student dialogue about writing performance and strategy use was encouraged, and student supported each other by sharing and talking about their work with classmates. Over the course of a year, this instruction led to improved writing in the two instructed genres as well as in an uninstructed genre chosen by student.

**Marilyn (1991)** conducted 32 studies that compared two groups of students receiving identical writing instruction but allowed only one group to use word processing for writing assignments. Word processing groups, especially weaker writers, improved the quality of their writing. Word processing students wrote longer documents but did not have more positive attitudes towards writing.

**Englert et al. (1992)** examined the effects of interventions designed to increase the students’ metacognitive knowledge as it expressed through talk about writing. In this study, 32 upper elementary learning disabled and non learning disabled students participated in a socially mediated writing intervention emphasizing the process of writing, writing strategies, and the role of teacher student and student-student dialogue. The intervention programme was administered 3 times per week over one year period. The talk of intervention students about writing process and strategies was compared to that of a similar group of students who had not participated in the intervention. The result suggested that, following the intervention, both LD and NLD students’ talk revealed more meta-cognitive knowledge about writing. Students who had participated in the intervention showed greater ability to talk about planning, drafting, and revising as well as to discuss their purposes and intended audience. Further, when LD and NLD students from
the intervention group were compared, the talk of LD students showed greatest progression from an emphasis on other regulation to self regulation. Finally, the quality of students’ meta-cognitive knowledge was positively related to measures of academic performance in writing and reading.

**Marshall (1992)** investigated the effectiveness of a metacognitive strategy, PLEASE strategy, for teaching students with learning disabilities to write paragraphs. The investigation examined (a) students’ metacognitive knowledge about prewriting planning, composition, revision and parts of paragraph; (b) student writing samples; and (c) student attitudes towards writing paragraphs. Results suggest that, compared to the traditional language arts curriculum used with a comparison group, the experimental treatment was significantly more effective in developing the metacognitive abilities of VIth graders with learning disabilities for prewriting planning, composition, and revision. Finding also suggests that students’ attitude towards writing and writing instruction improved significantly following the experimental treatment.

**Hamstra & Blote (1993)** conducted an epidemiological study, by using the scripts of 121 Dutch primary-school children annually, starting in Grade 2. The children were followed for 5 years. An evaluation scale for children’s handwriting (the BHK scale) was used for rating the scripts on 13 characteristics and for measuring the speed of writing. Principal component analysis of the LONG matrix (in which the data collected on the five occasions are arranged beneath each other) yielded three clusters of items: (a) fine-motor ability, (b) structural performance, and (c) stylistic preference. It was found that the children with dysgraphic handwriting (10% scoring highest on the BHK quality items) had lower fine-motor ability and, in the higher grades, showed less preference for a personal style. Their structural performance also was poorer than that of the other
writers. Children with and without dysgraphic handwriting did not differ in writing speed.

**Berninger et al. (1995)** studied twenty-four children with writing problems who were given instruction in handwriting automaticity, spelling strategies, and the composing process (plan, write, review, revise) in 14 one-hour individual tutorials during the summer between third and fourth grade. Half the children (8 boys, 4 girls) received extra practice in composing, while half the children (8 boys, 4 girls) received special training in orthographic and phonological coding. Hierarchical linear modeling of growth curves was used to compare the treatment groups to a non-contact control group (10 boys, 5 girls) on a standard battery at pre-test, mid test, post-test, and the two treatment groups with each other on probe measures of handwriting, spelling, and composition in each tutorial session. The treatment groups improved at a faster rate than the control group on some measures of handwriting, spelling, and composition (fluency and quality) in the standard battery, but Verbal IQ did not predict rate of improvement. Differences were found between the two treatment groups in some probe measures of writing and a motivation variable (work avoidance). ANOVA was used to compare treatment groups to a non-contact control group at pre-test, mid test, post test, and follow-up. Differences between the treatment and control groups favoring the treatment groups were maintained at 6-month follow-up on some handwriting, spelling, and composition (quality) measures. Individual differences were found in learner characteristics prior to treatment and in response to the same treatment. The importance of affect and motivation as well as cognitive variables is emphasized.

**Langone & Willis (1995)** compared the use of a computer based word processor with the use of a paper and pencil for teaching writing skills to elementary school students with LD. An alternating
treatment design was used to compare the relative effects of each instructional strategy. The results indicated that both strategies were effective for teaching writing skills, with individual differences between students. A longitudinal study comparing two groups of elementary school students with and without access to a word processor found that the students who were using word processing demonstrated significantly greater writing competence in meaning, in content quality, in writing form, and in surface features (Owston & Wideman, 1997). Students with LD can derive great benefits from using word processors. The ability to produce a product that can be edited; spell checked, read and presented to the teacher can increase motivation and encourage writing, because specific problems with handwriting and spelling can be circumvented.

MacArthur et al. (1995) evaluated the effectiveness of a model of writing instruction that integrated word processing, strategy instruction, and a process approach. Teachers established a social context for writing in which students worked on meaningful tasks, shared their writing with peers, and published their work for real audiences. The classroom structure support extended cycles of planning, drafting, and revising. Teachers supported the development of writing strategies through conferencing and explicit instruction in strategies for planning and revising. Word processing supported fluent production of text, revising, and publishing. The experimental model was implemented for a full school year in 12 classes with 113 students with learning disabilities. Students in the experimental classes made greater gains in the quality of their narrative and informative writing than 94 students with learning disabilities in 10 control classes.

O’ Connor & Jenkins (1995) investigated whether the application and transfer of segmentation and letter knowledge to word reading could be accompanied by instruction in letter sound
correspondences and word spelling. Students in the experimental group received 20 minutes of daily individual spelling instruction during May of the kindergarten year. In beginning lesson, students pointed to and wrote a letter that made a particular sound, started a particular word, or ended a particular word. Lesson at the end of the instructional sequence required students to use magnetic letters to spell words from a selected word list and to write two or three of the same words on paper. Instead of spelling, students in the control group practiced reading the same words as on the word lists from the experimental group in individual, teacher directed sessions. After one of the students from the experimental group met with the session teacher, his or her matched pair from the control group met with the session teacher. With the teacher’s corrective feedback students in the reading control group were given the same number of trials to read a word from the target word list as the children in the spelling group received to spell a particular word. The results of the study indicated that students who participated in the spelling treatment outperformed control students on dictated spelling, word and nonsense word reading, and on word identification and word attacked subtests on the Woodcock reading mastery tests- revised (Woodcock, 1987).

MacArthur et al. (1996) studied one single-group and examined the effects of word processing with a spell checker and reported that students were able to correct more spelling errors when using a word processor to write compositions as compared to handwritten compositions. Furthermore, two single-subjects studies examined spelling interventions with word processing technology. The addition of speech synthesis and word prediction capabilities was more effective than word processing alone in increasing the number of legible words(legibility based on spelling) and the number of correctly spelled words for individual students in one
study (MacArthur, 1998). Multiple baselines for four of five students indicated that improved spelling occurred only when the speech and prediction capabilities were in place. MacArthur (1999) found similar results for the effects of speech synthesis and word prediction technology for students writing 3dictated passage (study 2) but found few differences between handwriting and technology use when students wrote journal entries (study 1). However, the students demonstrating no differences in outcomes generally had lower rates of word prediction use (MacArthur, 1999). The second single-subject study included explicit instruction in a strategy for using the spell checker component of a word processor. Following intervention, students were able to correct twice as many spelling errors in their own writing and in the writing of others (final error rate = 2%-4% McNaughton et al., 1997).

Wong et al. (1996) conducted an impact to know the effect of peer editing as an instructional strategy for the students. Pairs of students alternated their roles as student writer and student critic. The student-critic identified ambiguities in the essay and asked the writer for clarification. With help from the teacher, the students made revisions. The teacher also provided the student writer with feedback on clarity and on the cogency of the supportive arguments. Once the clarity and cogency of the essay met the teacher’s standard, the pair moved on to correct capitalization, spelling, and punctuation. Through this process, the student-writer had to explain his or her communicative intent to the peer and revise the essay to faithfully reflect it. These clarifying interactive dialogues led the student critic and student writer to understand each other’s perspective. In this way the trainees developed a sense of audience for their writing.

Berninger et al. (1997) compared the efficacy of five different approaches to handwriting instruction. These instructional
approaches are motor imitation, visual cues, motor retrieval, visual cues + memory retrieval, copy and control. Students who received handwriting instruction that included visual cues and memory retrieval performed significantly better on printing accuracy, letter copying, and word copying, and they demonstrated significant improvements in handwriting quality compared to students from the other instructional conditions.

Berninger et al. (1997) investigated whether there are differences in children’s spelling if children are taught to spell by writing words, typing words on a computer, or spelling words with letter tiles. Research examined if the use of writing during spelling instruction yields better outcomes than other forms of instruction, such as the use of letter tiles or a computer, for learning the spelling of words has been limited to three identified studies with first and second grade students. Their results have revealed somewhat discrepant findings.

Berninger et al. (1997) conducted a study on first grade children with poor handwriting. They were randomly assigned to 1 of 5 handwriting treatment groups or a contact control condition (i.e., instruction on phonological awareness). The handwriting treatments evaluated 5 alternatives for learning how to write the lowercase letters of the alphabet: (1) write the letter after seeing the instructor write it; (2) write the letter after examining a copy of it containing numbered arrows showing the order and direction for each stroke; (3) write the letter from memory after examining an unmarked copy of it; (4) write the letter from memory after examining a copy containing numbered arrows; (5) write the letter while looking at an unmarked copy. After 8 hours of instruction with a specially trained tutor, children in the five treatment groups made greater improvements in handwriting than students in the contact control condition, with the most successful treatment being one where
children wrote the letter from memory after examining a copy containing numbered arrows. This same group had higher scores on a norm referenced measure of compositional fluency, assessing students’ ability to craft sentence than children in the contact control condition or the other handwriting conditions. This finding is especially noteworthy because it showed transfer from instruction in handwriting to composition fluency, at least for the group that made the largest handwriting gains.

Gleason et al. (1997) conducted a study that compared four types of teacher assistance on the first draft writing of students with learning problems. After students provided one base line composition, they were taught one of four methods to overcome the spelling barrier to writing. Students in all four groups generated ideas before writing, but only in the pre-cueing condition were ideas written on the board as spelling resource. This pre cuing condition did not have a significantly different effect overall than the three composition interventions on fluency. Most students in pre cuing group as in the other intervention groups, slightly decreased the number of misspellings in their compositions, making them a little easier to read.

Gleason et al. (1997) taught one group of students to use a personal word book (calling it My Spelling Dictionary). They found that a few students with learning problems used it to good advantage. In fact most, for most, especially those who already wrote stories of 50 or more words, the word book was a distraction, that is, it focused attention away from their story, even when it was not used until after the drafting of the story. From baseline to intervention, the number of words that students in the word book wrote decreased anywhere from 10 to 80 per cent, whereas most students in the other three conditions increased in fluency. On the other hand, word books or spelling dictionaries do improve the readability of the message.
Using the word book does not necessarily improve spelling if a student does not suspect a word is misspelled. Having the student look up a word in the dictionary is seldom an effective strategy, because knowing how to spell the word is necessary in order to find it.

**Jones & Christensen (1997)** demonstrated that supplemental handwriting instruction improved not only the handwriting of 1st grade children with poor penmanship, but the quality of their writing as well. Over the course of an 8 week period, the participating children received extra handwriting instruction (individually or in a small group) from a teacher aide or parent volunteer (10 minutes per day). Instruction focused on learning how to form the lower case letters of the alphabet, correcting errors in letter formation, and writing letters fluently. At the end of eight week period, both the handwriting and story writing quality of children who received this extra instruction improved to the point where it was indistinguishable from that of their regular peers who were initially better hand writers and story writers.

**Wong et al. (1997)** conducted studies on adolescents with LD who were taught planning strategies for three different types of essays: informative report, compare/contrast, and opinion. Students were taught to search their memory for relevant topics and ideas, re-visualize events, re-experience emotions, detect and dialogue writing problems, and evaluate the clarity of the central theme of the paper when planning and writing informative reports. To teach these strategies, the instructor first modeled their use and then helped students learn how to use them independently by providing collaborative assistance in their application. Interactive discussion or dialogue also was an integral part of the regimen and occurred mostly during one on one conference that focused on the writer’s goals or on the clarity of the written product. This instruction resulted in more clearly written essays with better developed themes.
Wong et al. (1997) conducted a study on the effect of frequent feedback to students on the overall quality of writing, missing elements, and strengths. When feedback is combined with instruction in the writing process, the dialogue between student and teacher is strengthened. Giving and receiving feedback also helps students to develop “reader sensitivity” and their own writing style. Across the studies of successful writing instruction, teacher and students had an organizational framework and language to use in providing feedback on such aspects of writing as organization, originality, and interpretation. Students and teachers provided feedback so that they would attend to the surface features of writing (e.g., spelling and punctuation) as well as to the presentation of ideas.

Berninger et al. (1998) focused on the impact of supplemental spelling instruction on writing performance. Second grade children who were poor spellers were randomly assigned to 7 spelling treatment groups and a contact control condition (i.e., receiving instruction in phonological and orthographic awareness skills). Specially trained tutors provided approximately 8 hours of instruction to students. Children in the spelling groups made greater gains in spelling than those in the contact control condition. For one of the experimental groups, spelling instruction also resulted in improved writing performance (i.e., longer compositions). Students in this group were taught common phoneme spelling associations; practiced new spellings by pointing to each letter in a left to right order while simultaneously saying the sound; and use their spelling words when writing a short composition. Although additional replication is needed, the findings from this study suggest that early and extra spelling instruction can also have a beneficial effect on compositional fluency.
**Bryan et al. (1998)** examined the effects of various spelling homework interventions. The homework interventions were weekly reinforcement for completing homework; real life homework assignments (e.g., finding spelling words in a newspaper); and a combination of reinforcement and real life homework. Group of students received each of these interventions in succession. For students with LD who had no previous homework problems, the weekly reinforcement intervention yielded the highest effects on spelling outcomes. Real life assignments and the combination intervention, implemented in immediate succession following the reinforcement intervention, yielded moderate effects for homework completion for students without homework problems. However, these students’ scores on weekly spelling tests decreased over time. Weekly test scores for students with homework problems remained relatively stable across base line and interventions.

**Lewis et al. (1998)** examined spelling outcomes for students after receiving instruction in assistive technology for improving spelling in written compositions. Two of the studies employed a treatment-comparison design to examine the effects of word processing interventions. Interventions including spelling with assistive technology using various word processing programmes that included components such as speech synthesis, word prediction, and spell checking yielded positive effects on measure of students’ spelling accuracy and correction. The researchers found no differences in spelling outcomes between five different treatments using various word processing interventions. However, all of the students with LD participating in the treatment interventions significantly outperformed (i.e., produced fewer spelling errors in compositions at post test) students without LD participating in typical classroom writing instruction.
Troia et al. (1998) examined if basic planning strategies could be taught effectively to students with LD using an explicit and highly teacher directed procedure. Fourth and fifth grade students with LD were taught how to incorporate three common planning strategies into their current approach to writing: setting rhetorical goals, brainstorming ideas, and effectively organizing those ideas. The teaching routine used in this study employed a variety of components that are considered essential to effective strategy instruction including teacher description and modeling of the target strategies; individually tailored support(scaffolding) that was faded as students moved towards independent use of the strategies; explanations about how the strategies work and what potential impact they have on performance; clarification of when, where, and how the strategies could be used in the future; homework assignments designed to extend the use of the strategies to different settings and task; and feedback on the effects of using the strategies.

Gersten et al. (1999) suggested instructional approaches for teaching written expression to students with learning disabilities, including ways to teach students how to analyse material learned in the classroom and how to write personal narratives, persuasive essays, and other genres. All of the instructional interventions studied improved the quality of students’ written products, and there was evidence of positive impact on students’ self-efficacy, i.e., their senses of being able to write.

Harris & Graham (1999) conducted studies examining the effects of planning instruction on the narrative and expository writing performance of students with LD. Using the Self Regulated Strategy Development (SRSD) model, they taught elementary and middle school students with LD a variety of planning strategies, including goal setting, brainstorming, semantic webbing, generating
and organizing writing content using text structure, and reading to locate information. With SRSD, the teacher models how to use the target strategies along with procedures (e.g., self monitoring, goal setting, and self instruction) for regulating the strategies, the writing process, or behaviors that might impede writing performance (e.g., impulsiveness). Students are provided with temporary and calibrated support from the teacher and from their classmates as they learn to use the strategies, and their role as collaborators is stressed throughout instruction. Dialogue about the value, application, maintenance, and generalization of the strategies also frequently occurs. Teaching planning strategies via SRSD has led to improvements in four aspects of students’ performance: quality of writing, knowledge of writing, approach to writing, and self efficacy.

Raskind & Higgins (1999) found small effects in treatment group who used word processors with a speech recognition component. Students with LD in the comparison group were given instruction in typing and using a computer. The treatment group received modestly higher scores on measures of orthographic choice (ES=0.11) and standardized written spelling (ES=0.16) after intervention. At a practical level, however, students in the treatment and comparison groups were nearly at ceiling on the orthographic assessment at pre test, and the gain for the treatment group on this measure from pre test to post test was 1 point.

Telecsan et al. (1999) examined observational learning of spelling words through a reciprocal peer tutoring intervention. Each student alternated between serving in the role of tutor and tutee. A set of words was chosen for each student to learn. As the tutor, the student taught a set of words to another student using time delay methods. As the tutee, the student learned a different set of words from his or her partner. Students showed increases in accurate spelling of both sets of words. Post test assessments of words that
students taught to their partners yielded a mean gain of 38 per cent (range=20%-74%).

Darch et al. (2000) examined the effects of spelling instruction on spelling outcomes. Students were randomly assigned to groups, increasing the chances of group similarity prior to the intervention. Common elements of the interventions employed in these studies included explicit instruction and/or multiple practice opportunities in spelling words with immediate feedback and students were taught strategy spelling sequence: say the word, write and say the word, check spelling, trace and say the word and write the word from memory. The comparison group was described as following a traditional pattern of verbal and written rehearsal, sentence practice, and spelling puzzles. Effects were smaller, though still in the moderate range of assessments designed to determine generalization effects on untrained words.

Graham et al. (2000) found that supplemental handwriting instruction can boost compositional fluency, but it did not replicate the finding that it enhances writing quality as well. First grade children with poor handwriting were randomly assigned to a handwriting treatment condition and a contact control condition (i.e., instruction in phonological awareness). The handwriting treatment included instruction in naming, identifying, and writing the lower case letters of the alphabet as well as repeated writing exercises designed to increase handwriting fluency. After approximately 7 hours of instruction provided by specially trained tutors, students assigned to the handwriting condition made greater improvements in handwriting than those in the contact control group. They also evidenced greater gains in crafting sentences and generating text when writing a story. Handwriting instruction, however did not improve the overall quality of the stories that these children produced. On 6 month follow up probes, most of the advantages
obtained by the handwriting group were maintained, including their superiority in crafting sentences.

Graham et al. (2000) in another study same the impact of intervention activities on handwriting instruction. These activities included Alphabet Warm-Up (2 minutes), Alphabet Practice (6 minutes), Alphabet Rockets (5 minutes), and Alphabet Fun (2 minutes). During the Alphabet Warm Up, children learned the name of each letter, matched the letter name with the appropriate letter, and practiced producing letters in the context of the alphabet sequence (e.g., the instructor would say a letter, and the child would identify what letter came before or after that particular letter in the alphabet). During Alphabet Practice, the instructor modeled how to form letters by tracing target letters and verbally discussing how to form letters. Children also independently practiced tracing and writing target letters with numbered arrow cues, and then on regular line paper. During practice activities, children were instructed to say the name of letters and circle their best-written letter. As the handwriting instruction progressed, children also practiced writing words. Whereas Alphabet Practice emphasized letter formation and skills related to accuracy, Alphabet Rockets targeted handwriting fluency. Children were asked to copy a sentence (26 to 34 letters long) that included several instances of the target letters for a particular unit. Children were required to copy the sentence quickly without making mistakes for a period of 3 minutes. Finally, the Alphabet Fun activity focused on manipulating letter forms. Overall, the result comparing the supplemental handwriting instruction to a control condition in which students received phonological awareness instruction indicated that handwriting instruction of this nature is casually related to learning how to write. In other words, children who received such handwriting instruction outperformed children who received the supplemental phonological awareness instruction
on measures related to both handwriting and content writing. Overall, results suggest the importance of handwriting instruction for young children because “the mastery of handwriting skills not only appears to facilitate the initial process of learning to write, but may also affect the outcomes of the learning process overtime, at least up to a period of six moths”.

Graham et al. (2000) taught first grade children the lower case manuscript alphabet. Children who received this supplemental instruction were experiencing difficulty with both handwriting and content writing. Three new letters were introduced in each instructional unit (e.g., l, I, t), and each unit included three lessons. Easier and more frequently occurring letters were taught first. Each lesson included four activities. With the first activity, alphabet warm up, student learned to name each letter of the alphabet, match letter names with their corresponding symbols, and identify where each letter occurred in the alphabet. Because the name of a letter serves as a cue for retrieving the motor programme for writing it, children needed to be fluent in naming, identifying, and accessing alphabet knowledge. The second activity, Alphabet Practice, focused on teaching students how to write specific letters. In the first lesson, the teacher modeled how to form each target letter and discussed with children how the letters were similar and different. This was followed by practice with tracing, copying, and writing each letter. Children circled their best-formed letters. Letter practice in the next two lessons were similar, except that the children also wrote the letters in the words and hinky-pinkys (tutti-frutti and will-nilly). Children circled their best-formed word and hinky-pinky. The purpose of the third activity, Alphabet Rockets, was to increase the students’ handwriting fluency or speed. In the first lesson, children spent three minutes copying a sentence that contained multiple instances of the target letters (e.g., “little kids like to get letters” for l, I, t). The
number of letters written was recorded on a rocket graph. In the next lesson, children tried to beat their previous score by at least three letters. The teacher placed a big star above the rocket chart as the goal was met. The same procedures were applied during the third session. During the final activity, Alphabet Fun, the teacher modeled how to write one of the letters in an unusual way (e.g., long and tall) use it as part of a picture (e.g., the letter I as part of a butterfly). The primary purpose was to ensure that each lesson ended with an enjoyable activity. The instruction had positive impact on children’s handwriting as well as their content writing performance. Effects included faster and more correctly formed handwriting, greater facility in constructing sentences, and greater output when writing stories.

Graham et al. (2000) compared the supplemental handwriting instruction to a control condition in which students received phonological awareness instruction indicated that handwriting instruction of this nature is casually related to learning how to write. Children who received such handwriting instruction outperformed children who received the supplemental phonological awareness instruction on measures related to both handwriting and content writing. Children from the supplemental handwriting were more accurate in naming the letters of the alphabet, producing the letters of alphabet, and copying and producing more text fluently. He also found six months later that all but one of the differences between the children in the handwriting and control groups was maintained; the exception was the copying / fluent text production task. Overall the results from the study suggest the importance of handwriting instruction for young children because “the mastery of handwriting skills not only appears to facilitate the initial process of learning to write, but may also affect the outcomes of the learning process over time, at least up to a period of six months.
Rankin et al. (2000) investigated the writing instruction practices of effective elementary special education teachers of literacy and primary grade teachers with high personal efficiency that is confidence in their ability to be effective in their teaching. Both of these groups of teachers provided their students with frequent writing practice, taught the writing process as well as grammar and usage skills, and expressed a preference for methods that viewed the teacher as coach and placed importance on writing for real audiences. Teachers in their study provided environmental supports such as classroom libraries, chart stories, poems, wordlists posted in classroom, learning centers, and big books. To begin instruction, these effective teachers started with the students' demonstrated skill level rather than where teachers taught the student should be. They encouraged risk taking and viewed writing as enabling purposeful communication for life. They also provided opportunities for using a variety of tasks and genres (e.g., stories, journals, complete books, shared writing) and embedded basic skills instruction within authentic writing experiences. Moreover, they tended to use themes across subject areas.

Darch et al. (2002) conducted a study on students with LD who struggle with spelling use than students without learning disabilities. The effect of two spelling programmes was compared: Selling Mastery Programme (Dixon & Engelmann, 1990) a programme that teaches students to use spelling rules; and the Laidlaw Spelling program (Roser, 1987) that utilizes writing activities based on word families, practice and motivational activities. Results demonstrated that spelling of students with learning disabilities improved significantly more than students in the motivational model.

Graham et al. (2002) taught a variety of spelling skills to second grade children experiencing difficulty with spelling, writing, and reading. This included spelling patterns involving long and short
vowels e.g., long vowel in Consonant Vowel Consonant + alphabet ‘e’ at the end of words (CVCe); the spelling of words that followed these patterns (e.g., made); rimes that matched these patterns (e.g., make); and specific sound letter associations. Each instructional unit included six lessons that contained five instructional activities. During the first lesson, children completed a word sorting activity (activity 1) that focused on the spelling patterns taught in that unit. With the teacher’s help, children first sorted word cards into two or three spelling pattern categories. Each category was represented by a master word (e.g., made for the long sound in a CVCe word), and children placed each word card in the appropriate category. If the children placed a word in the wrong category, the teacher corrected the miscue and modeled aloud how to decide where the word should be placed. Once all words were placed, the teacher helped students state rules for the patterns emphasized in that word sorting (e.g., when you hear a long /a/ in a small word, the a is often followed by a consonant and silent e). Students then generated words of their own that fit the patterns. Next, the word cards were reshuffled, and students completed the word sorting by them, getting help and feedback as needed. At the end of each lesson, students were encouraged to hunt for words that fit the target patterns (activity 2). During the second lesson, student began studying eight new spelling words (activity 3). These were words that students had misspelled previously, and each word matched one of the spelling patterns emphasized in that unit. Students used two basic study procedures to learn these words. One procedure was called Graph Busters and involved students recording the number of times they correctly studied the words during a lesson using a traditional study strategy. The second procedure involved studying words while playing a game with a peer. An example of one of the games was Spelling Road Race. A laminated board with a racing track was divided into 30 segments.
When a child correctly spelled one of the spelling words, he/she moved a place on the board for each letter or word. Also starting in the second lesson, students learned and practiced sound letter associations for consonants, blends, digraphs, and short vowels (activity 4). Using flash cards with a picture on one side (e.g., a dog) and the corresponding letter on the other side, students practiced 9 to 16 associations during each lesson. Students further completed a word building activity during most lessons (activity 5). This involved building words with rhymes that fit the target spelling patterns. Students were asked to create as many real words as they could from a rhyme (e.g., ig) and 18 different consonants, blends, and digraphs.

In the final lesson of each unit, students completed three tests. One test was on the eight words they had studied, a second was on the words that had been studied in the previous two units, and a third was on the words that matched the rhymes used during the word building activity. Not only did students learn and maintain almost all the words taught, but their performance on two standardized tests of spelling also improved dramatically. Even more important, there was a corresponding improvement in their sentence writing skills.

**Maki et al. (2002)** evaluated an intervention designed to promote the spelling skills of elementary school students with severe writing difficulties. The intervention comprised strategy instruction, procedural facilitation, and computer assisted tutoring. Transfer was facilitated involving teacher and parents. The result showed gain in spelling accuracy, spelling revision skills decoding accuracy, and knowledge about the writing process from baseline to post treatment phase.

**Steve et al. (2002)** carried out a study based on intervention-Self Regulated Strategy Development (SRSD) for students who struggle with academic task. SRSD has been used successively for students, with learning disabilities in writing, reading, and math.
The instructional implications and evaluation of performance for one student with learning and behaviour difficulties highlights the usefulness of this instructional approach for students with emotional or behaviour disorders.

Troia & Steve (2002) examined the effectiveness of a highly explicit, teacher directed instruction used to teach three planning strategies for writing to fourth and fifth graders with learning disabilities. In comparison to peers who received process writing, children who were taught the three planning strategies – goal setting, brainstorming, and organizing- spent more time planning stories in advance of writing and produced stories that were qualitatively better. One month after the end of instruction, students who had been taught the strategies not only maintain their advantage in story quality but also longer stories than those produced by their peers who were taught process writing. However, the highly explicit, teacher directed strategy instructional routine used in this study did not promote transfer to an unstructured genre, persuasive essay writing.

Jongmans et al. (2003) conducted two studies to investigate the effect of a task-specific self-instruction intervention to improve handwriting ability of children with poor handwriting quality in schools for regular education (Study 1) and children with poor handwriting quality in schools for special education (Study 2). Study 1 showed that children with poor handwriting quality who received handwriting intervention on an individual basis for three months improved on average more on quality of writing than control children without handwriting problems who did not receive intervention. In contrast, the control group improved more in speed of writing after the intervention period. At an individual level, three out of the seven children with poor handwriting quality before intervention were not classified as such anymore after the intervention period. Study 2
showed that after six months of intervention in a group setting children with poor handwriting quality improved their quality of writing more so than children with poor handwriting quality who had not received intervention. On speed of handwriting no significant group differences emerged. They concluded that the task-oriented self-instruction method applied in this study seems to improve especially the quality of handwriting, not speed, of children initially identified as having poor handwriting quality.

**Berninger et al. (2006)** evaluated Tier 1 early intervention for handwriting at a critical period for literacy development in first grade and one study evaluated Tier 2 early intervention in the critical period between third and fourth grades for composing on high stakes tests. The first study found that neurodevelopmental training (orthographic-free motor activities and motor-free orthographic activities) led to improved accuracy and legibility of letter formation, but that direct handwriting instruction with visual cues and verbal mediation led to improved automatic handwriting (rate of writing legible letters) and transfer to improved word reading. The second study found that neither motor training nor orthographic training alone added value to direct instruction in automatic letter writing and composing practice in developing handwriting skills, which transferred to improved word reading; but the added motor training did improve performance on a grapho-motor planning task for sequential finger movements that is relevant to composing. A related analysis showed that direct instruction with visual cues and memory delays may reduce reversals. A third study found that adding handwriting to reading instruction improved handwriting but did not add value to reading outcomes for at risk readers; reading instruction alone was beneficial for word reading, decoding, and comprehension. The fourth study showed that comprehensive, explicit instruction in the processes of composition led to more
significant improvement, based on group and individual data, than did the regular fourth grade program, on high stakes writing assessment.

Monroe & Troia (2006) examined the effect of less than 8 hour of instruction in the use of strategies to facilitate planning, self-regulation, and revising while writing opinion essays, a group of 3 middle school students with Learning Disabilities (LD) made substantial gains in each of 5 quality traits on which their papers were scored. On average, post test scores of students with LD were better by 1 point on a 6-point scale than were those scores obtained by a group of LD students who served as controls. Participants’ scores approached the level of writing performance exhibited by a group of peers without disabilities. The authors also observed treatment effects for number of functional essay elements; students who received strategy instruction gained an average of 1.3 functional elements from pre test to post test. However, generalization to narrative writing was not obtained.

Schmalzl & Nickels (2006) described a successful single case treatment study for FME, a woman with acquired dysgraphia, which was conducted within a cognitive neuropsychological framework. Pre-treatment assessment revealed a semantic deficit, impaired access to output orthography and probable additional degradation of the actual representations within the orthographic output lexicon. The treatment study was, therefore, directed towards relearning spellings by strengthening, and facilitating access to, specific orthographic representations for writing. In order to maximize the functional outcome for FME, treatment was focused on high frequency, irregular words. The treatment programme was carried out in two phases, one without and one with the use of mnemonics, and the results showed a selective training effect with the mnemonics alone. Treatment benefits were item specific but long
lasting, and a significant improvement in FME’s spelling performance was still evident at 2 months post-treatment. The study confirms how cognitive neuropsychological theories and methods can be successfully applied to the assessment of acquired spelling impairments, and exemplifies how treatment with carefully designed mnemonics is of benefit if the inability to retrieve orthographic representations for writing is aggravated by a semantic deficit.

**Nicasio & Raquel (2008)** examined the mediational role of gender in the effects of two patterns of cognitive and self-regulatory strategy interventions in the writing self-efficacy calibration of students with learning disabilities (LD). One hundred twenty one 5th and 6th Primary grade students with LD (43 girls and 78 boys), ranging in age from 10 to 12 years were randomly allocated either to one of the experimental intervention groups, (n = 48, 19 girls and 29 boys), and followed an intervention program based on the Self-Regulated Strategy Development Model, or they received training based on the Social Cognitive Model of Sequential Skill Acquisition (n = 31, 15 girls and 26 boys), or alternatively they were allocated to the ordinary instruction group (n = 32, 9 girls and 23 boys). Writing performance was assessed using two types of writing evaluation: a reader based score concerned with structure, coherence and quality, and a text based score regarding productivity, coherence and structure. Writing self-efficacy beliefs were also assessed using a self-report scale including eight items about the students’ confidence in completing a writing task and to gain specific writing skills. The results suggest that the miscalibration of writing self-efficacy in girls with LD was significantly modified to a more realistic calibration of their writing competence after experimental intervention. However, the findings do not confirm the same clear statement for boys.

**Brenda & Glucroft (2009)** examined the effectiveness of behavioral intervention for dysgraphia in a case of primary
progressive aphasia. A longitudinal single-case study was carried out to examine the effectiveness of a non-intensive spell-study-spell intervention procedure. It did so by comparing performance on four sets of words: trained, repeated, homework, and control words at five evaluations: baseline, during intervention, after the intervention, and at 6- and 12-month follow-up. Outcomes & Results were that (1) at the end of the intervention, Trained words show a small but statistically significant improvement relative to baseline and an advantage in accuracy over Control, Homework, and Repeated word sets. (2) All word sets exhibited a decline in accuracy from the end of treatment to the 6-month follow-up evaluation, consistent with the degenerative nature of the illness. Nonetheless, accuracy on trained words continued to be superior to that of Control words and not statistically different from pre-intervention baseline levels. (3) Repeated testing and practice at home yielded modest numerical advantages relative to Control words; but these differences were, for many comparisons, not statistically significant. (4) At 12 months post-intervention, all words sets had significantly declined relative to pre-intervention baselines and performance on the four sets was comparable. This investigation documents—for the first time—that behavioral intervention can provide both immediate and short-term benefits for dysgraphia in the context of primary progressive aphasia.

2.4 AN OVERVIEW OF RELATED LITERATURE

Keeping in view the cited literature in the area of study, there is ample evidence that gender and age have significant bearing on the writing performance of dysgraphic students. The boys are more prone to writing disabilities than girls and with increasing of age the writing problems also diminish gradually. It is observed that the probable causes of writing disabilities are due to poverty condition of parents, poor instruction at school and low intelligence. The studies highlight that students with dysgraphia exhibit more problems in
handwriting and spelling. They also display more behaviour problems like more socially isolated, pessimistic, possessing negative attitude towards writing, depressive and sensitive to criticism than non disabled students. While writing they use meaningless language, repeat words and ideas, omit words, use vague words, incomplete or fragmented sentences, and are unable to express ideas about what is happening in a picture or theme or incoherent writing. The number of words used is less than their normal peers. The studies reflect that children with writing disabilities write compound and complex sentences with more error and favored more declarative sentences or simple sentences. No punctuation marks and contractions are used by these children or used idiosyncratically. The writing disabled children exhibit more deficits in syntax, spend little time in planning before writing, do not prepare rough notes before writing, do not compose ideas in logical order, ramble sentences constructed with repetitive use of conjunction.

Some studies reflect that the positive gain of handwriting treatments for lower case letters of alphabet improved the handwriting performance and compositional fluency of children with writing disabilities through use of techniques viz. write letter after seeing the instructor write it, write the letter after examining a copy of it containing numbered arrows showing the order and direction for each stroke; write the letter from memory after examining unmarked copy of it; write the letter from memory after examining a copy containing numbered arrows; write the letter while looking at an unmarked copy. The studies also highlight the use of supplemental handwriting instructions like instruction in naming, identifying, how to form lower case letters of alphabet, correcting errors in letter formation, repeated writing exercise and writing letters fluently improve the handwriting performance and compositional fluency. It is evidenced from research studies that the handwriting intervention
such as alphabet warm up, alphabet practice, alphabet rocket and alphabet fun followed by tracing, copying, and writing individual letters have significantly improved the handwriting performance of dysgraphic children. The neurodevelopmental training (orthographic-free motor activities and motor free orthographic activities) also led to improved accuracy and legibility of letter formation. Direct handwriting instruction with motor imitation, visual cues, motor retrieval, visual cue to motor retrieval and verbal mediation are also found to led to significant improvement in handwriting quality, automaticity or rate of writing legible letters.

Some related studies give insights about writing disabled students who are taught through motor production of writing letters who were able to spell more words correctly on post test spelling assessment than students taught to spell words by typing on the computer. Students who received instruction in spelling with pencil performed better in their spelling than students received instruction on the computer. The studies reveal that supplemental spelling instruction on writing performance that is instruction on phonological and orthographic awareness skill make greater gain in spelling than the control group along with improvement in compositional fluency. Reciprocal peer tutoring intervention in which students serve the role of tutor and tutee for spelling words yield positive gain point. Spelling words with immediate feedback coupled with taught strategy spelling sequence: say the word, write and say the word, check spelling, trace and say the word and write words from memory (visual, auditory and kinesthetic approach) develop the spelling performance of students with writing difficulties. The traditional pattern of verbal and written rehearsal, sentence practice, spelling puzzles and word families also improved significantly the spelling outcomes.
Some reviews also highlight the significant positive effect of planning instruction on the narrative and expository writing performance of students with writing difficulties. In planning strategies for writing different essays students are taught to search their memory for relevant topics and ideas, re-visualize events, re-experience emotions, detect and dialogue writing problems and evaluate clarity of central theme of the paper. Planning instruction or self regulatory strategy development for writing essay comprise steps viz. Goal setting; brain storming; semantic webbing; generating and organizing writing content using text structure and by use of this strategy students with dysgraphia knowledge of writing, approach of writing, quality of writing and self efficacy of writing are accentuated. In addition, students taught by question answer strategy coupled with mnemonic and picture prompt develop their writing skill abilities than the students who are not taught these strategies. The studies also gives ideas about the use of think sheets to plan, organise, write, edit and revise two types of expository text (explanation and compare/contrast) to improved writing among dysgraphic students.

Studies also highlight the use of partial notes to review to better retention and in better note taking ability than the comprehensive notes or no notes. The skeletal notes lead to better recall than either the student’s own notes or the instructor’s notes, the best recall occurred when students received skeletal notes before the lecture and the instructor’s detailed notes afterward.

A perusal and critical scrutiny of review of related literature gives insight to the researcher about studies undertaken in India and abroad. The literature reveals that in India there have been very few studies conducted in learning disabilities particularly in dysgraphia. Perhaps, no study has been conducted in India so far in order to identify their prevalence rate and what type of intervention
programmes are required in Indian context in order to improve the writing skills of students with dysgraphia. By realizing the importance and long felt need of contemporary educational system, the study has been realized and planned in order to improve the writing skills of students with dysgraphia through various intervention programmes.