The present study attempted to identify children with RD and to examine the comparative effectiveness of three intervention programmes, i.e., PALS, CAI and TCR on the reading acquisition of students with RD. The primary emphasis of the study was to explore if PALS would result in significantly greater gains in reading comprehension, word recognition and reading fluency than TCR. Secondly to explore the comparative effectiveness between CAI and TCR and lastly to compare PALS with CAI. Thus the present research aimed at a comparison of different intervention programmes within a pre- post- follow- up design so as to explore the behavioural change an individual exhibited as a result of treatment.

To carry out the study, a matched group of 36 children were selected and randomly assigned to three different groups of 12 each. The three intervention programmes were implemented on these three groups. Each intervention was assessed on three parameters (oral reading, cloze ability concerned with semantics of reading and comprehension skill based on critical reading) of the overall reading skill. The study was conducted under two settings: school and laboratory setting. Teacher’s report, psychometric assessments and direct observations were taken into consideration for screening and diagnosis. Ekwall Reading Inventory, Cloze Ability test as well as Curriculum based Comprehension test were used to assess the reading ability and RCPM were used to measure intellectual functioning of the children.

The findings of the present study pertaining to these three remedial measures on different reading skills have been discussed in the following sections.

5.1. Oral Reading

As rightly said by Aaron & Joshi (1992), poor readers are either poor at decoding or comprehension or both. Goodman showed that there are two types of errors: semantically acceptable or unacceptable errors and errors that are graphophonemically similar or dissimilar to the specific word in the passage (Goodman, 1969; Goodman & Burke,
Findings suggest that poorer readers tend to make more graphophonemically errors that are similar to the specific word in the passage but semantically unacceptable whereas better readers tend to make semantically acceptable errors. Thus, good readers use both context and graphic cues whereas poor readers tend to be dependent over context cues only (Juel, 1991; Stanovich, 1991). Usually researchers tend to categorize oral reading errors at the overall rate of reading errors and particular types of errors like substitutions, omissions, and insertions, etc. (Leu, 1982).

In the present study, the most occurring oral reading errors amongst all the 36 children were letter-by-letter reading (LLR), poor pronunciation (PP), pause and substitution. There were other types of errors too such as guessing, omission, reversions, etc. that were also committed by the children but they were not so prominent. Since long many researchers have advocated that these errors are the indicators that children are encountering reading difficulties (Duffy & Durrell, 1935; Swanson, 1937; Daw, 1938; Madden & Pratt, 1941; Malmquist, 1958; Weber, 1968).

For letter-by-letter reading, people with reading problems are quite poor in letter naming and thus the LLR is inaccurate. Poor letter naming accuracy leads to poor letter naming speed (Lott & Friedman, 1999). Perceptual proximity could also be one of the reasons for LLR error. The nearness or proximity between letters helps the children to develop words from letters and sentences from words (Mahakud, 2008).

Poor pronunciation was also frequent amongst these participants. Pronunciation has its important role in oral reading. It can even change the meaning of what is to be communicated like ‘bed’ for ‘bad’ or ‘ship’ for ‘sheep’. In this study since the medium of instruction was Hindi, children were mispronouncing words like ‘और’ for ‘आर’ or ‘राजा’ for ‘राजा’. It was found that these participants had confusion between certain graphemes like स-र and phonemes like औ, औ, that’s why they were mispronouncing the words. Secondly, poor letter naming was also one of the factors for poor pronunciation. Pronunciation also includes intonation, timing, rhymes, phrasing and stress (Gilakjani, 2012). Readers showing high on LLR errors will definitely exhibit poor pronunciation because by reading slowly, the person forgets the details from paragraph to paragraph and they miss the important details.
Pauses were another oral reading error that was commonly found in the study. Pauses are extra breaks within the paragraphs or at the end of the paragraphs. Before longer words, one may find, the reader giving a big pause due to hesitation. Pause errors increase the reading time and hence affects the fluency. That’s why they are also called dysfluencies (Williams & Reiter, 2004).

In this study, most of the participants either kept quiet or gave the pause for the words starting with letters -श, छ, ख, ढ, ठ, ह

Substitution was another reading error committed by some of the participants. Substitutions occurred when a reader substituted one word for the target word in the text (e.g., छुका दिए for छुका लिए) or initial letters of a word was read correctly but any or all subsequent letters were read incorrectly. For example the participant read ‘समा’ as ‘सजा’ or ‘समास्त’ as ‘समाप्त’. Many researchers have emphasized such errors (e.g. Cohen, 2001; Kendall & Hood, 1975; Hood & Kendall, 1975). The other errors committed were guessing, omission, reversions and insertions, etc. Insertions consisted of adding an extra word to the text; omissions consisted of deleting a word from the text.

The three intervention programmes reduced different oral reading errors. PALS was found to be highly effective in reducing errors like Letter-by-Letter Reading (77.16%), Word-by-Word Reading (62.01%), Poor Pronunciation (82.18%) and Omission (84.89%) as compared to the baseline scores. Peer tutoring is a useful technique for reducing errors of omission and mispronunciations of words by using error correction procedure (Hook & DuPaul, 1999) where the tutor corrects the mistakes and the tutee follows that correction (Shannon, 2005). In a study by Fuchs and Fuchs (2005), PALS showed better gains on measures of phonological awareness, decoding and word recognition. With repeated reading, the students outperformed on fluency. Good fluency clearly indicated the reduction in LLR, WWR errors and poor pronunciation.

CAI was more effective in reducing errors like Inversions and Reversions (82.13%) and Substitution (66.18%). For Pause and Repetitions both PALS and CAI were equally effective in reducing the oral reading errors. CAI works efficiently in reducing oral reading errors where the individual hesitates, pauses and substitutes, by interrupting
when an error is not self-corrected, responding to the requests for help, providing corrective feedback and drill and practice. (Mostow & Aist, 1999). Because CAI uses larger highlighted sometimes colourful prints, this increases the motivation level and interest of the reader and most importantly this point out left- to- right progression of letters, sequencing of words and common sight words. This feature helps in reducing inversions and reversions (Shanker & Cockrum, 2009).

Comparing all the three intervention programmes on the oral reading parameter, the difference of mean between pre-test and follow-up for PALS was 29.29, whereas for CAI it was 21.93 and for TCR it was 6.12. It indicated that of the three remedial programmes, PALS intervention improved the oral reading skill of the children with R.D. All the three intervention programmes are significantly different at 0.01 level at the follow-up level. PALS programme is a form of cooperative learning where the students learn reading skills by working in small groups and the success of each team member is responsible for the success of the overall team (Rohrbeck, Ginsburg-Block, Fantuzzo, & Miller, 2003; Slavin, 1995; Webb & Palincsar, 1996).

There are many other studies that provide supportive evidence for this finding. Mathes and Fuchs (1993) in their study on learning disabled students found a significance difference among sustained and control groups on words read correctly. Mathes et al. (1998) reported a statistically significant positive effect on the low-achieving group and no statistically significant differences for the average- and high-achieving groups on fluency measure (CPM Oral Reading Fluency subtest). In another study (Mathes et al., 2003), when PALS was compared with the usual curriculum group, statistically significant positive effects on two of three measures: word reading efficiency, phonemic decoding and word attack was found. Mathes and Babyak (2001) reported that low- and average-achieving students made greater gains than comparison students on fluency measure (CPM Oral Reading Fluency subtest). Some other studies (Simmons et al.1994; Fuchs et al. 1997) also support the findings of the present study where PALS effectiveness on students’ oral reading scores has been statistically significant and sizeable.
The results indicated that PALS showed greater gains than CAI on oral reading. Mathes, Torgeson & Allor (2001) examined the efficacy and feasibility of Peer-Assisted Learning Strategies for 1st-Grade Readers and the impact of adding 8–10 hours of phonological awareness instruction via the computer to the curriculum already including 1st-Grade PALS with low-performing children. The results indicated that 1st-Grade PALS enhanced reading performance although not equally for all learner types. Results also indicated that CAI did not impact student performance in phonological awareness as compared to PALS. From the feedback it was found that both students and teachers were comfortable and satisfied with the implementation of PALS.

Slavin et al. (2008) in their reviewed article “Effective Reading Programs for Middle and High Schools: A Best-Evidence Synthesis” found the efficacy of four types of approaches for improving the reading skills of middle and high school students: (1) reading curricula, (2) mixed-method models (instructional methods combine with computer activities), (3) computer-assisted instruction, and (4) instructional-process programs (like cooperative learning PALS). Instructional-process programmes involving cooperative learning (PALS) and mixed-method showed positive effects. In contrast, the effects of CAI were small. In case of PALS students were given corrective feedback by their peer tutor and there were no restrictions for the revisions to be carried out. PALS thus provided a friendly and conducive environment for learning a task without any botheration and interferences (Gersten, Baker, & Marks, 1998). Use of cooperative and competitive features for learning amongst the team members gives a motivating environment for learning reading skills (Long & Porter, 1985).

The results also indicated high performance of PALS in comparison to Traditional teaching on oral reading. Marston, Deno, Dongil, Diment, and Rogers (1995) in their study used Peer tutoring with repeated reading turn by turn between partners. Comparison group was given conventional teaching. Peer tutoring group showed good results on oral reading fluency. Fuchs et al. (1997) compared a partner reading intervention that included repeated readings of text and comprehension activities using paragraph summarization and prediction activities to a traditional reading program. The result yielded a low to moderate mean effect size, the effect sizes for comprehension were moderate and enhanced for fluency. Fuchs, Fuchs, Mathes and Simmons (1997) in
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their study explored the effectiveness of PALS on learning disabled (LD), low-performing (LP) and average achiever (AA) students. The comparison group comprising LD, LP and AA were given No-PALS, i.e., traditional method teaching. Findings indicate that LD, LP and AA students in PALS group made significantly greater progress in reading achievement than their counterparts in No-PALS classrooms.

Many studies have indicated that the typical traditional teaching provides insufficient engaged reading opportunities to enhance reading skills in the students (Gelzheiser & Meyers, 1991; Haynes & Jenkins, 1986; O’ Sullivan, Ysseldyke, Christenson, & Thurlow, 1990; Simmons, Fuchs, Fuchs, Mathes, & Hodge, 1995). Furthermore, most of the students at risk for school failure actually receive less engaged reading opportunities than their higher performing peers (Allington, 1984; Hall, Delquadri, Greenwood, & Thurston, 1982; O’ Sullivan et al., 1990). Out of the three activities of PALS, partner reading is an activity with retelling that has demonstrated its potentiality within PALS to enhance reading accuracy and fluency (Simmons et al., 1994). During PALS students spend time in repeated reading, reading aloud from text or discussing text; thereby providing ample of opportunities to practice reading than do traditional methods (Coelho, 1994; Long & Porter, 1985). Partner Reading involves repeated oral reading which is perhaps the best approach to improving fluency hence reading skills in children (NRP, 2000; Rashotte & Torgesen, 1985; O’Shea et al., 1987) and in college students (Carver & Hoffman, 1981).

Positive effects were also seen for other intervention programs designed to improve the oral reading. Like PALS programme, CAI also focuses on improving oral reading, and has good evidence of effectiveness. The results also indicated high performance of CAI in comparison to Traditional teaching on oral reading. Mioduser, Kaspa and Leitner (2000) in their study examined the unique contribution of computer-based instruction when compared with more conventional modes of instruction to early reading skills acquisition. Results clearly indicated that children at high risk who received the reading intervention programme with computer materials significantly improved their phonological awareness, word recognition, and letter naming skills in comparison to their peers who received conventional reading intervention and those who received no formal reading intervention. Hall, Hughes and Filbert (2000) in their research synthesis
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regarding CAI in reading for students with learning disabilities found students receiving CAI in reading increased performance in reading decoding and comprehension. CAI in reading has been shown to help develop phonological awareness (Mathes et al., 2001; Mitchell & Fox, 2001); phonics (Macaruso et al., 2006; Macaruso & Walker, 2008); for students with disabilities (Clarfield & Stoner, 2005; Lee & Vail, 2005; Lewandowsk et al., 2006) and at-risk students (Lonigan et al, 2003; Mitchell & Fox, 2001). Lonigan et al. (2003) conducted a CAI phonological program for children who were at-risk for reading difficulty. After just 8 weeks of intervention, the children in the CAI condition outperformed control group children on phonological tasks that were explicitly taught by the computer program (e.g., rhyme sensitivity, phoneme segmentation, etc.). Therefore, one can infer that the computer program was responsible for increasing the phonological skills of students in the CAI group.

Researchers have learned that computers have the ability to deliver, “motivating, carefully monitored, individualized…… practice in concentrations far beyond those available in traditional instructional format” (Torgesen, 1986, p. 159). Since CAI programs provided the students with both feedback on their responses and opportunities to correct and practice the correct responses, they were found to be more effective than those not providing elaborate feedback and rehearsal. In addition, the methods of instruction most commonly used to teach special education students, i.e., individualized instruction, drill and practice, and immediate feedback- are typical features of CAI (Schmidt et al., 1985-86). Schmidt et al. cite many reasons why CAI is an effective medium of instruction as compared to traditional teaching. Some of these are: a secure one- to- one learning environment, individualized programs of learning, immediate feedback, mathematical and linguistic modeling and multisensory learning environment. Another reason for the motivating CAI is its attractive and engaging medium. Because the students are able to control activities on the screen, they remain on task for longer periods (Hitchcock and Noonan, 2000). In case of traditional teaching, where students are being instructed directly by the teacher, they spend most of their time passively watching and listening to the teacher or other students. Since the students get very little opportunity to participate actively in reading or so, they are only physically present and mentally absent many a times. Activity makes a person alert and active. (O’ Sullivan et.
In case of CAI, the student gets an opportunity to receive corrective feedbacks on their responses and to correct their mistakes and rehearse the same; this reinforces active participation of the students.

Thus, on oral reading parameter, PALS group has outperformed both CAI and TCR ones. Further CAI has shown its effectiveness over TCR in oral reading. The results are supported by the researches done earlier.

5.2. Comprehension Skill

It is true that fluency does impact comprehension. Students who misread more than 5% of the text or read less than 100 words per minute for 2nd grade and above are considered to exhibit reading difficulty. For them comprehension is significantly impaired (Grossen & Carnine, 1991). According to Eckert et al. (2006) students with strong oral reading fluency develop good comprehension. Thus, increasing a student’s reading rate or fluency will lead to increase in reading comprehension (Sorrell, Bell, & McCallum, 2007). Oral language skills and vocabulary are two of the most important factors impacting a child’s ability to comprehend passage. It is found that children with excellent decoding skills may find difficulty when dealing with an unfamiliar word, if they are uncertain of the pronunciation or meaning. Reading comprehension is the determining factor in developmental milestone at Grades 3 to 6 (Jacobs, 2002). In the present study on comprehension skill parameter, the difference of mean average between pre-test and follow-up for PALS was 35.1, whereas for CAI it was 26.94 and for TCR it was 7.36. All the three intervention programmes are significantly different at 0.01 level. It indicated that of the three remedial programmes, PALS intervention improved the comprehension skill of the children with R.D. Children in the PALS treatment group showed statistically significant improvements in their reading comprehension scores in comparison to children in the CAI or TCR treatment groups. This comparable post treatment status with positive effects on reading comprehension growth among PALS children is very important. PALS purports to achieve reading acquisition amongst children with RD. So, PALS needs to be supported for its important outcome with strong student satisfaction. Children enjoyed the PALS activities. This finding replicates and
extends results from previous studies for the effectiveness of PALS as an instructional technique for teaching reading comprehension to children with RD.

Fuchs, Fuchs & Kazdan (1999) in their study examined the effects of PALS on high school students with serious reading problems. Reading comprehension and oral reading fluency were measured before and after treatment. Results indicated that, compared to contrast counterparts, PALS students grew more on reading comprehension. Calhoon (2005) in her study to examine the effect of PALS on phonological skills and reading comprehension for middle school children with RD found that the students receiving PALS instruction outperformed the contrast group receiving traditional whole-class format on letter-word identification, word attack and passage comprehension. In this study PALS group actually received 10 hours less of direct comprehension instruction than the contrast group. In their study Saba et al. (2007-08) aimed at exploring the effectiveness PALS in enhancing the reading achievement in terms of reading fluency and comprehension in English as a foreign language among different learner types, particularly low-achieving six graders. The study showed significant gains in fluency and comprehension in English reading. The teacher and students were showing positive attitude towards PALS approach.

Of the three activities of PALS, paragraph shrinking (similar to paragraph summarization) and prediction relay are related to comprehension acquisition. Summarization requires readers (a) to read the text thoroughly, make judgments and summarize by giving gist of the textual information (Palincsar & Brown, 1984); (b) to focus and understand the major contents of the text (Palincsar & Brown, 1984); and (c) to elaborate the information provided in text (Doctorow, Wittrock, & Marks, 1978). Paragraph summarization and main idea identification enhance reading comprehension (e.g., Baumann, 1984; Bean & Steenwyk, 1984; Paris, Cross, & Lipson, 1984; Rhinehart, Stahl, & Erickson, 1986). But this is most unfortunate that young and poor readers have difficulty in evaluating and understanding what they have read in the text (Markman, 1981) and predicting what will occur next in text develops slowly (Collins & Smith, 1982). Prediction Relay is the activity designed to help students to understand, evaluate and interpret the text that has been read. Formulating predictions are indicators of good reading comprehension. The main features of PALS are to recall events from stories,
summarize main ideas and make predictions about what has been read. This paves the way to higher order language skills (Coelho, 1994; Long & Porter, 1985). Students with different levels of reading proficiency get benefitted from PALS because of its feature of individualization of instruction for students being tutored in pairs.

On the comprehension skill parameter, CAI has shown greater gains over TCR. CAI has the ability to enhance learning for students with and without disabilities. However, Lee and Vail (2005) noted that there is limited research on the effect of technology-based instruction for students with disabilities. Therefore, they used a computer program, Word Wizard, to teach sight words to four students with developmental disabilities in Kindergarten through second-grade. In addition the students also read storybooks and words on index cards for generalization. The results showed that all four students with disabilities were able to learn their targeted sight words through the use of CAI. The students could also generalize these positive gains on paper-and-pencil worksheets, and by reading words on index cards and in storybooks. Lewandowski and his colleagues (2006) in their study randomly assigned students to three groups namely, computer, tutor, or control group. They were trained on word lists for three weeks. During the computer condition, the students looked at the word on the screen while the computer read the word aloud; students heard the word through headphones, and said the word silently. In the same way in the tutor condition, the tutor read the word aloud from the list; and during the control condition, the student had to read the word from the list without any help. Results indicated that both tutor and computer groups significantly outperformed the control group on word recognition and reading passages, but there were no generalization effects for any group. The National Reading Panel (NRP, 2000) has also emphasized and advocated that computers provide greater opportunities to interact with any task and the material concerned for an extended time depending on the learner’s own pace as opposed to traditional classroom instruction.

The following features of CAI are responsible for its success over TCR. Computers are more objective than teachers. Teachers become free to work with individuals. There is no partiality in regard to race or ethnicity. Computers allow students to work privately, provide correct feedback, applaud, interactive and are fun and entertaining. They provide individualized learning, are self-paced, do not embarrass students rather motivate them
and give a sense of control over learning. Drill and practice and multisensory learning environment using sight, hearing, and touch, make it possible to teach learning to read with immediate feedback. Ali, M. A. (2000) in his study investigated the effectiveness of the Teacher-Based Instruction (TBI) vs. Computer-Assisted Language Learning (CALL) in improving undergraduate Arab learners’ English reading ability in three aspects: fluency, critical reading and semantics. While implementing the intervention, CALL method of reading instruction utilized the two skills, i.e., skimming and scanning, accompanied by different activities such as the warm up, cloze test, summarization and word activities, in addition to the multiple-choice comprehension questions. Findings revealed that CALL enhanced the participants’ abilities in the three reading aspects significantly more than TBI. This significantly improves their reading comprehension ability.

Thus the research evidences support the results obtained where it can be seen that in the present study PALS has proved to be effective in enhancing comprehension skill in comparison to CAI or TCR. CAI has also shown to outperform on this parameter when compared to TCR.

5.3. **Cloze Ability**

In the present study on cloze ability parameter, the difference of mean between pretest and follow-up for PALs was 27.77, whereas for CAI it was 31.01 and for TCR it was 7.43. Of the three intervention programmes, only CAI- PALS is significantly different at 0.05 level whereas CAI- TCR and PALS- TCR are significant at 0.01 level. It indicated that of the three remedial programmes, CAI intervention improved the cloze ability skill, i.e., semantics of the children with R.D. Children with R.D. have significantly poor cloze skill compared to the skilled readers. Cloze techniques have been used as an effective method for learning semantics and word recognition in reading. The “cloze procedure” is based on the Gestalt idea of closure, i.e., an urge to complete a structure and make it whole by supplying a missing element. Closure does not merely mean completing the cloze by simply supplying items in a cloze, but filling them in a way that reveals the meaning to intersential context, and this measures “higher-order skills” (Alderson, 1979, p. 225). This way cloze test measures the psycholinguistic processes underlying
the reading act. This procedure has been used successfully as a test of reading comprehension, as a measure of readability or assessment of the difficulty level of a reading selection, and as a method of improving reading. Cloze tests require the ability to understand context and vocabulary in order to identify the correct words or type of words that belong to the deleted passages of a text. Since CAI incorporates many elements that can facilitate cognitive and emotional skill development (Mevarech & Rich, 1985), it enhances the cloze ability skill. Many studies have endorsed this. A large sample study (Mevarech & Rich, 1985) on disadvantaged children reported that both CAI and traditional instruction improved cognitive scores. These scores were consistently higher for combination of both the treatments than the CAI programme alone. Here, traditional method means teacher-centered, whole class intervention.

Another study (Marston et al., 1995) on students with mild disabilities, a test of six research-based teaching strategies was used. The approaches used in reading instruction included peer tutoring, reciprocal teaching, effective teaching principles, computer-aided instruction, and two direct instruction models. Student achievement was highest in the computer-assisted group, in the reciprocal teaching group, and in one of the direct instruction groups.

Lewandowski and his colleagues (2006) revealed through their study children receiving instructions through the tutor and computer groups significantly outperformed the control group on word recognition and for reading passages because computer used techniques like cloze procedures, direct instruction, error-free modelling and sight-sound associations, i.e., multisensory learning environment.

Keyes, S. E. (2010) in their study examined the effectiveness of a computer-assisted reading program, Read Naturally (RN), on the oral reading fluency (ORF), comprehension, and generalization of second graders who were at risk for reading failure. The results support the use of computer-assisted reading instruction and repeated reading activities.

From the above results regarding cloze ability scores on CAI, it can be concluded that because of the elements of CAI enhancing cognitive skills, the scores on cloze test is higher. Thus, in CAI, programmes can be designed according to the speed and level of
the child. The speed, immediate feedback, reinforcement, as well as numerous drills and practices help the child to learn better. Gleason (1981) reported some of the following advantages for CAI: (1) It is learner-focused and more interactive approach. (2) It saves more time (20-40% time) compared to conventional instruction (Lee & Vail, 2005; Lewandowski et al., 2006). (3) Students pay better attention to CAI and hence retention is more for the learning materials. Computers are flexible with no time burden (Mathes et al., 2001). Perhaps the reason that students benefit from CAI is the active engagement and interaction; working at their own pace and comfort and modeling (Lonigan et al., 2003); immediate feedback (Hall et al., 2000; Lonigan et al., 2003) reinforcement (Lonigan et al., 2003; Macaruso & Walker, 2008). Students are able to work with challenging, user-friendly and motivating activities and are provided with many drill and practice skills (Macaruso et al., 2006) along with no stress of being embarrassed or scolded for committing any mistake (Diem & Katims, 2002). Today the multimedia utility in CAI has made the learning easier to grasp and retain because learning content presented in visual and auditory mode has a long lasting impact (Chambers et al., 2008). All of the aforementioned advantages help students to deal in with their own intellectual abilities confidently. Highlighting information by changing fonts, font size, etc. (Parette et al.) also sometimes proves to be beneficial as it makes certain words, phrases, or content more salient for the learner. Students with learning disabilities get benefitted from CAI because of the corrective feedback that CAI provides on word recognition, thus students do not practice the wrong skills (McCullough, 1995); one to one instruction requiring more time and moving at the students’ pace to practice learning to read and usually does not move ahead until students have mastered the skill. (Hall et al., 2000); providing more direct instruction and repeated drill and practice (Lee & Vail, 2005). Interactive programmes capture the students’ attention because the programs are interactive. CAI presents challenging and exciting task thus utilizes the spirit of competition of the students to increase their scores. Also, CAI Programs provide different lessons to different types of students like at risk, average, or gifted.

Audio and video are the two most prominent features of CAI. In computer-assisted instruction, the printed screen comes alive along with the audio system, i.e., sound. This helps in the acquisition of listening and speaking skills as well as reading and writing
skills. The visual component comprises the screen which becomes the medium for the cultural and paralinguistic information. This visual component is added to the oral/aural components of the technologies so as to obtain optimum output. Word-level reading skills (word recognition) and semantics are enhanced by activities such as cloze activities, anagrams, jumbled words, and so on, which are found in many CAI software programs.

The research evidences have supported the finding that CAI outperforms both PALS and TCR on the Cloze Ability parameter.

Thus, from the results obtained, it can be interpreted that all our proposed hypotheses have come true. Peer-mediated intervention group, i.e., PALS has significantly resulted in greater gains in reading comprehension and oral reading than the traditional reading intervention programme because the involvement of peers makes reading a pleasurable experience and aids to the motivation of the individuals concerned. There has been significant difference amongst the two groups receiving peer-mediated intervention and computer-assisted instructions respectively on all the three parameters of reading, i.e., oral reading, cloze ability and comprehension skill. Peer-mediated intervention has led to better result than the computer-assisted intervention on oral reading and comprehension because peer-mediated intervention involves more human element thus enhancing the motivation and sporting spirit amongst the students whereas computer-assisted intervention is an audio-visual media, a mechanical element, through which the students can visualize their own shortcomings. Whereas on cloze ability parameter computer assisted programme has shown better results in comparison to PALS as cloze ability is the measure of cognitive skills and computer instructions support cognition. There has been significant difference amongst the two groups receiving traditional reading intervention and computer-assisted instructions on oral reading and comprehension skill respectively. Computer-assisted intervention has been better in improving reading skills than traditional reading program. In traditional reading teacher will be responsible for evaluating the students whereas in computer-assisted intervention, the student does self-evaluation.
5.4. Limitations

Several issues crop up while considering the findings of this study. One of the major impediments in carrying out this research study was the small sample size (n=12) in each intervention group. Though matched subjects designs are useful, allowing researchers to perform streamlined and focused research programs while maintaining a good degree of validity, some extraneous factors like parent’s consent for this study limited the researcher to work only on small sample. This limits generalization of the research findings. Because of scheduling difficulties, specific subject times and limited teacher’s availability, the researcher herself undertook the role of teacher. Implementing the programme through the researcher was an additional limitation. An altogether outsider in the classroom to implement the intervention programmes added a dimension to the classroom with which the students were not used to. Another issue to consider is that this study involved teachers selecting students (with differing reading performance levels) from their classes for inclusion in the research sample. On this very sample, the reading assessment measures were carried out. Although the strength of the matched randomized designs compensate for student- selection strategy, the possibility of sample bias is there. Though PALS was executed in systematic manner in which a game-like situation was introduced and there was competition amongst students also but it was found that PALS was not enough to sustain the interests of some students. A structured reinforcement system with tangible reinforcers, seemed important. So, students were given away with prizes as a token of their success. These students were given Rs. 10.00 in every session as an incentive for their participation. While proceeding with CAI intervention, the big problem that turned up was regarding availability of software in accordance with the ability of children with reading difficulties. Though the schools also provided some material but that was not enough so the reading materials used during CAI intervention were to be made which was mostly on the visual mode, the auditory component was relatively weak. This was compensated by oral instruction.

5.5. Conclusion and Future Research

Reading remediation for students with reading difficulties is of utmost importance and is globally the most concerned issue. It is important to identify students at-risk for reading
difficulty early probably during Kindergarten, so that remediation can be started at the earliest. Early identification is the key to prevention of reading difficulties. Different remedial techniques could play an important role in preventing reading problems, thereby reducing the need for remediation in later school years. However, there are no instant ramifications to remediate the reading problems of students who are at-risk. Accordingly, intervention techniques should not be seen as a magic wand for students experiencing prolong academic difficulty. Future research could address the aforesaid limitations by increasing sample size and using school staff or teachers to assist the researcher in the implementation of the programme. There should be collaboration between trained researchers and the teaching community of the school for conducting scientific intervention research. Large sample size would lead to the generalizability of the results found. Secondly, presence of their own school staff will not distract the participants and they will be more comfortable. The significant gains produced by the PALS program for Oral Reading and Passage Comprehension suggest the need for further research to expand on and replicate these results. It remains to be determined for which students with RD for which subskill (phonological skills, decoding, spelling, reading fluency, and reading comprehension) peer tutoring is the most efficacious. Since this study is done under quasi-experimental conditions, the need for practical classroom-based PALS reading programs for students with RD is critical. Every individual has his or her own level of motivation so the PALS motivational system needs to be explored more depending upon the need and interest of the students. The findings from the present study, combined with previous research, suggest that peer-mediated instruction is not only a viable strategy for improving reading comprehension and oral reading but appears to significantly improve cooperative and motivational spirit amongst the students with RD. Like PALS positive effects were also seen for CAI designed to improve the oral reading and comprehension by enhancing cloze ability skill of the children with RD. There is tremendous potential for CAI to have a positive impact on the reading skills of all students. Some important considerations must be made when determining the use of CAI in reading. One consideration deals with the attractiveness of the program to the students. Attractive tasks will make the students to stay on task for longer and learn the reading skills. For this purpose hypertext can be used with modulations in fonts. Computer programs that allow self-paced activities give students more control over their
learning and provide them with the opportunity to practice skills. Though the computers are accurate in their ability to do so, but teachers have the ability to provide individual attention and support to the student at the same time. So, human factor has its own role to play. This can be in the form of simply monitoring students and being available to assist them with any computer related issues. Thus, future research is needed to determine the impact of teacher participation on the effectiveness of CAI.

This study was carried out on primary school children, so more research and development of reading programs is needed to be conducted with a wide range of age groups. Although children in these studies become more fluent readers, their relative gains in fluency are not nearly as dramatic as those in other areas of reading skill. But these findings are nevertheless important and need replication to validate and extend these results.

Despite the limitations in the research, CAI appears to be a powerful tool for reading instruction after PALS, but the use of CAI alone is not sufficient for reading acquisition. A combination of both the intervention programmes, i.e., PALS and CAI can also be taken as another research study to find their total efficacy on overall reading skill. An understanding of socio-cultural context and family-teacher partnerships can also be taken into consideration. So, this study addresses to significant issues and has provided some direction for remedial instruction for children with reading difficulties particularly in Indian context.