Computer Integrated Module on Acquisition of Reading Skills of the Children with Learning Difficulties

SAHAYA GEORGE DHARATHI [1], Dr. G. REXLIN JOSE[2]

[1]Research Scholar, Department of Education, ManonmaniamSundaranar University, Tirunelveli, Tamilnadu, India

[2]Assistant Professor, Department of Education (DD&CE), ManonmaniamSundaranar University, Tirunelveli, Tamilnadu, India.

[1]ydharathi@gmail.com, [2] jose.rexlin@gmail.com

ABSTRACT

The Investigators projected the main objective of this experimental research as the effect of computer integrated module on the acquisition of reading skills of children with learning difficulties. This study was carried out with regard to the level of Intelligence, the intelligence test developed by JC Raven and medical examinations were administered among 50 children with learning difficulties studying standard 5th. The Research design consists of three phases: selection of the sample, word selection, construction of achievement test, and Experimentation. The investigators employed a pre–test–post–test Two Group design. The experimenter introduced the treatment with a module. Data were analysed using descriptive statistics and a t-test. The results revealed that the average achievement scores after receiving the treatment on the module were statistically and significantly high. The mean score of experimental group Post-Test (21.50) was greater than the mean score of experimental group Pre- Test (17.15) on the acquisition of the reading skill of primary school children with learning difficulties. The mean score of experimental group Post-Test (12.10) was greater than the mean score of experimental group Pre-Test (6.42) classified on the basis of decoding of the primary school children with learning difficulties. The School Administrators and teachers can use this treatment as guidance to develop the reading skills of children with learning difficulties.

Keywords: *Computer Integrated Module, Learning Difficulties, Decoding, Acquisition, Reading skill*

INTRODUCTION

"Education is a conscious purpose to train children to fulfil adult life responsibilities. Since children have to enter a complicated society when they grow into adults, education gives them training for their adult life"(Kim, 2006).It develops their thinking and reasoning power to fit them to rise to the occasion when they are forced with the pressing problems of home, community and world. An individual needs training to use his/her reason so that he/she may learn to live orderly or moral life. "True education means training the individual to discriminate between 'good and evil', both on the level of physical responses as well as mental responses" (Schonert, 2007).

Learning a second language is in a way similar to that of the first where the only difference is that the latter is acquired unconsciously while the former needs conscious efforts by the learner. While doing a particular task each one does it in a different manner following a technique of one's own. This technique used by a learner to accomplish a task at hand is what subsequently came to be known as a strategy. Though initial studies focused on identifying those strategies used by good language learners, it later progressed towards more intense research on various other aspects of LLS.

LANGUAGE SKILLS

For complete communication, we require four skills when learning a new language. Typically, when learning a language, we begin with listening, then speaking, then reading, and then writing.

READING SKILL

Reading is defined as creating meaning from printed text by extracting various cues which are related to each other. There's this quote from Game of Thrones that sums this point up nicely.“ My brother has his sword, King Robert has his War hammer, and I have my mind... and a mind needs books as a sword needs a whetstone if it is to keep its edge" (George, 1997). The child creates meaning out of printed text with an impression of past experiences. "Reading, as a process involves three steps, the initial cognitive process, mastering, and automaticity. When a child starts reading it involves all three steps, visual perception, grapheme and phonic. He/she looks at the letter, join the letters make appropriate sound and read. This cognitive process is upgraded as students are upgraded to reach higher standards and the reading becomes more comprehensive. After the initial process comes mastering which is a milestone where the child has achieved expertise at a particular level of text. And the Last stage is automaticity the reader doesn't take a lot of time in the reading process rather with a glance at the print he/she can read the text and understand the meaning of it. The completion of all three steps is often described as a sign of a good reader" (Renu, 2020).

Scanning:

The reading strategy of scanning involves swiftly gazing at the most crucial information in a text. It involves scanning the words with the eyes and taking note of the most crucial details. Bus tickets, invites, and pie charts are a few examples.

Skimming:

Skimming is another fast reading technique that concentrates on a text's "main concept" or "broad summary." Newspapers, periodicals, and travel brochures are a few examples.

Intensive Reading:

Readers must read and become familiar with even the minute aspects of a text in order to engage in intensive reading. During intensive reading, students read extensively and carefully analyse the content by paying attention. It speaks of the standard of reading. Examples include citing all the story's analysed aspects and listing the events that occurred in chronological sequence.

Extensive reading:

Extensive reading is done for "fun" and "pastime". It is used to gather general knowledge. It is comfortable since no task or output is expected after reading. It develops general reading skills. Examples are storybooks, comics, tales, riddles and jokes.

Critical Reading:

It is done for "pleasure" and as a "pastime" to read extensively. It is used to compile broad information. Since no action or product is required after reading, it is comfortable. It improves fundamental reading abilities. Storybooks, comics, tales, puzzles, and jokes are some examples.

DECODING

Decoding is a key skill for learning to read that involves taking apart the sounds in words (*segmenting*) and blending sounds together. It requires both knowledge of letter-sound relationships, as well as an ability to apply that knowledge to successfully identify written words and make meaning, to correctly pronounce written words. Understanding these relationships gives children the ability to recognise familiar words quickly and to figure out words they haven't seen before.

COMPUTER INTEGRATED MODULE

Students are living in the digital era where every work is depending on the internet, text messaging, social media platforms, and other multimedia technologies. Likewise, students also utilise these digital skills in their lives outside the school and they expect an equal degree of technology opportunity in their scholastic lives. Presently every country understands the importance of ICT and focuses on mastering the basic skills of ICT along with the core academic subjects, reading, writing and numeracy (Meenakshi, 2013). The digital world makes learning more fun and interesting.

CHILDREN WITH LEARNING DIFFICULTIES

A learning difficulty is defined as “any mental condition that prevents a person from acquiring the same amount of knowledge as others in their age group” (ldrfa, 2012). Learning difficulties and early signs of learning disorders are often picked up in the first two years of

school when children start classroom-based learning in reading, writing and maths. The Learning Disabilities Association of America lists these specific learning difficulties as the following:

- ***Dyslexia:*** A condition that can affect reading fluency and comprehension, writing, spelling, speech, and recall. Dyslexia might occur along with other related conditions and is also known as a language-based learning disability.
- ***Dysgraphia:*** An individual with dysgraphia might find it difficult to write legibly, space words consistently, spell, compose, think and write at the same time, or plan spatially (on paper). Specifically, this condition affects handwriting and other fine motor skills.
- ***Dyscalculia:*** This condition may have an effect on one's ability to develop math skills, understand numbers, and learn math-based facts. It can be difficult for individuals with dyscalculia to comprehend math symbols, organise or memorise numbers, tell time, and count.
- ***Auditory processing disorder*** (central auditory processing disorder): Individuals with this condition may have difficulty recognising the differences between sounds, understanding the order of sounds, recognising where sounds have come from or separating sounds from background noise.
- ***Language processing disorder:*** This condition, a type of APD, makes it difficult for individuals to give meaning to sound groups in order to form words and sentences. It relates to the processing of both expressive and receptive language.
- ***Nonverbal learning difficulties:*** These typically make it difficult for individuals to interpret facial expressions and body language. Visual-spatial, motor, and social skills may all be affected.
- ***Visual perceptual/visual motor deficit:*** Those with dysgraphia or a nonverbal learning difficulty might also have a visual perceptual/visual motor deficit, which can impact the way a person understands visual information, the ability to draw and copy, hand/eye coordination, and the ability to follow along in text or on paper.

REVIEW OF RELATED STUDIES

Angiulli et al..(2003)" conducted a study on cognitive functioning as measured by the WISC-R: Do children with learning disability have distinctive patterns of performance." (2003). On the WISC-R the data was examined from 121 children with typical achievement (TA), 143 children with reading disabilities (RD) and 100 children with a specific arithmetic disability (AD), ages 6-16 years. Results indicate that the patterns of performance on intelligence tests are not reliable enough for the diagnosis of learning disability in individual examined the gender differences in severity of writing and reading disabilities.

Ashwani (2021)did a research on "effect of multimedia cross age tutoring and class wide peer tutoring on reading motivation and reading comprehension of students with dyslexia". The present experimental research studied the effect of multimedia, cross age tutoring, class wide peer tutoring and conventional method of instruction based intervention on reading motivation and reading comprehension of 5th grade students with dyslexia... The results of the study have proven the effectiveness of multimedia method, cross age tutoring and class-wide peer tutoring on reading motivation and reading comprehension of students with dyslexia.

Emery, et al..(2009) had done a study on"Academic achievement of middle school students with specific learning disabilities in inclusive co-taught classes." The results demonstrated that general educational classrooms instead of resource classrooms are more effective for the students with specific learning disability.

Kennedy et al. (2015) explored the effects of Multimedia Vocabulary Instruction on adolescents with Learning Disabilities. The purpose of the experimental study was to investigate the effects of using Content Acquisition Podcasts (CAPs) to provide instruction to adolescents with and without Learning Disabilities (LD). 30 urban high school students with LD in an area related to reading were randomly assigned to one of four experimental conditions with instruction occurring at individual computer terminals over a 3-week period.

Scheid (2010) studied the effectiveness of computer aided instruction in mathematics for students with learning disabilities. The findings state that computer-assisted instruction can be an effective intervention in mathematics for students with a learning disability. In order to be the most effective it must be applied intelligently and with constant teacher interaction. It is also helpful when combined with other interventions. There are divergent opinions and a lack of research to unequivocally support its effectiveness. It is a tool that can be effective but is not necessarily the remedy for all difficulties for students with a learning disability.

METHODOLOGY

Research design

TYPE	SOURCE
Variables	Dependent Variable - Reading Skill & Decoding Independent Variable - Computer Integrated Module
Tools used	JC Raven Test b) Self-made Tool (Sahay read tool)
Sample	50 students of standard V of PUS, Alangulam
Validity	The Computer Integrated Module validated by experts. The correction was done as suggested by them.
Treatment	Computer Integrated Module
Durations of the Experiment	2 Months (2 hours a day)
Descriptive Analysis	t-test

MODULE PREPARATION

Based on their mental age, the investigators selected the content. The content is organised by the investigators from simple to complex. Then the subject matter was divided into smaller units and created a lesson plan using a computer-integrated module.

Teaching of Alphabets

The investigators used phonemic sounds to teach the English alphabet.

Teaching of Phonemes

A phoneme is a conscious awareness and knowledge that words are composed of individual sounds and the ability to manipulate sounds in words (Smith, Simmons, & Kameenui, 1995).With the support of audio and video, the investigators taught 44sounds.

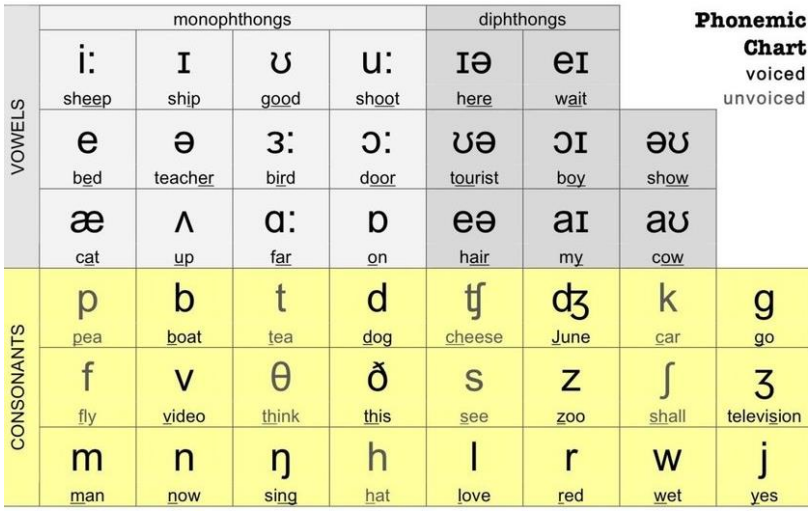


Fig:The 44 Phonemes of the English Language (Geylanioglu, 2017**)**

Teaching of Vocabulary

Children with reading difficulties read less and as such their vocabulary knowledge suffers. Without reading more they cannot learn the vocabulary they need to be able to read further. The investigators taught vocabulary with the help of a PowerPoint presentation.

Teaching of Sentence

The word arrangement in an English sentence is known as sentence structure. It is something that English language learners need to be aware of it in order to make them understand because it adheres to a very precise formula. The investigators taught sentences with the help of a computer game.

TRYOUT

At first, the computer-integrated module was taken to three individual students. They had difficulties in pronunciation. The problems were rectified after consulting the experts. Secondly, it was taken to a group of six students. It was then shown to a group of six pupils. On the basis of academic performance, a diverse group of bright, average, and below-average students were chosen. The bright students could succeed in reading. The average and below-average people had some difficulty reading and decoding the challenging words. The specialists were consulted over the students' issue, and their recommendations led to the deletion of a few words from the content. Thirdly, a traditional classroom was used using the computer-integrated module. Most of the pupils were curious about it. Everyone participated interestingly. Only the average and below average were struggle to read some words. These little flaws were put right in the computer-integrated module it was given a final shape.

TOOL DESCRIPTION

The investigators administered the Module and it consists of 3 Phases.

Phase I: Selection of Content

The investigators selected the content (vocabulary) to enhance the reading skills of primary school children with learning difficulties.

Phase II: Framing the Units

The investigators framed the units in the module and made the scoring key to evaluate the performance of the children.

Phase III: Incorporating and integrating the Module

The investigators integrated & incorporated content with Computer Integrated Module and synchronised these with an audio track by editing the module with the help of numerous editing software. The validity of Computer Integrated Modules was verified by experts. The corrections were done as suggested by them.

DATA COLLECTION PROCEDURE

(i) The investigators explained the purpose and details of the research and requested their cooperation in the research; the intelligence test and medical examination for ethical clearance certificate were conducted on the children with learning difficulties.

(ii) The 25 children with learning difficulties received the treatment on Computer Integrated Module for 60 days. The researchers conducted the treatment session for 60 minutes per day.
(iii) The post-test was conducted after 2 months of treatment administered to the children.

DATA ANALYSIS

The data were analysed as follows:
(i) Descriptive statistics- t-test.
(ii) Compare the difference of means scores before and after receiving the treatment with Computer Integrated Module.

RESULTS

i) PreTest Analysis

Ho1: There is no significant difference between the pre-test scores of control group and experimental group on the acquisition of the reading skill of primary school children with learning difficulties.

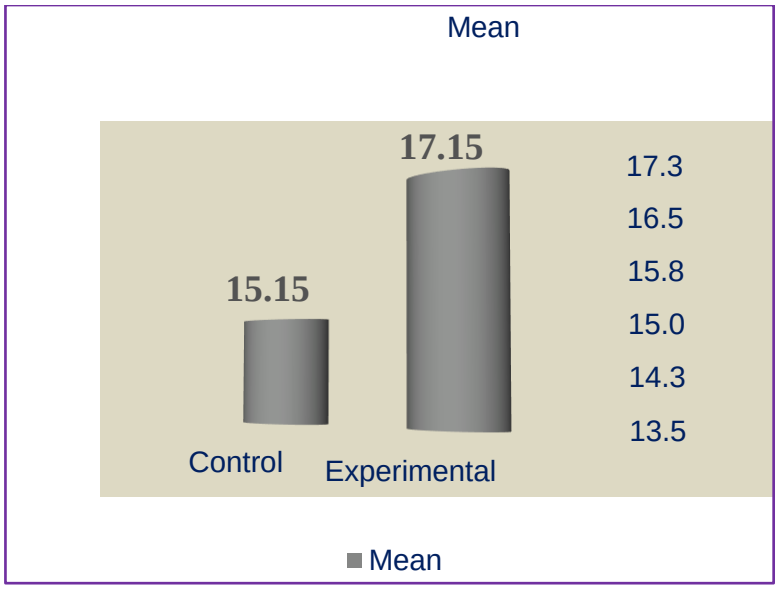
Table 1. Difference between the pre-test scores of control and experimental groups on the acquisition of the reading skill of primary school children with learning difficulties

Test	Group	Mean	N	S.D	Calculated t value	Remarks
Pre - Test Reading Skill	Control	15.15	25	4.234	1.864	NS
	Experimental	17.15	25	4.320		

Not Significant at 0.05 Level

It is inferred from the above table (1) that, the t value is not significant at 0.05 level of significance. Hence, the null hypothesis was accepted. It showed that the students of control and experimental groups did not differ significantly in the pre test level.

Figure 1. Difference between the pre-test scores of control group and experimental group on the acquisition of the reading skill of primary school children with learning difficulties.



It was inferred from the above figure (1) that, the mean score of experimental group (17.15) was greater than the mean score of control group (15.15) on the acquisition of the reading skill of primary school children with learning difficulties.

Ho2: There is no significant difference between the pre-test scores of control group and experimental group on decoding of the primary school children with learning difficulties.

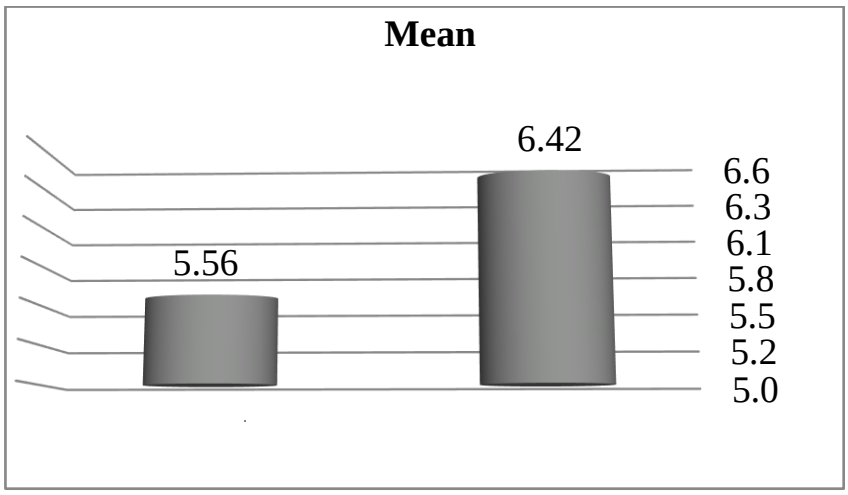
Table 2. Difference between the pre-test scores of control group and experimental group on decoding of the primary school children with learning difficulties.

Test	Group	Mean	N	S.D	Calculated t value	Remarks
Pre - Test Decoding	Control	5.56	25	2.90	0.54	NS
	Experimental	6.42	25	3.25		

Not Significant at 0.05 Level

It is inferred from the above table (2) that, the t value is not significant at 0.05 level of significance. Hence, the null hypothesis was accepted. It showed that the students of control and experimental groups did not differ significantly in the pre test level.

Figure 2.Difference between the pre-test scores of control group and experimental group on decoding of the primary school children with learning difficulties.



It was inferred from the above figure (2) that, the mean score of experimental group (6.42) was greater than the mean score of control group (5.56) on decoding of the primary school children with learning difficulties.

ii) Post Test Analysis

Ho3: There is no significant difference between the post-test scores of control group and experimental group on the acquisition of the reading skill of primary school children with learning difficulties.

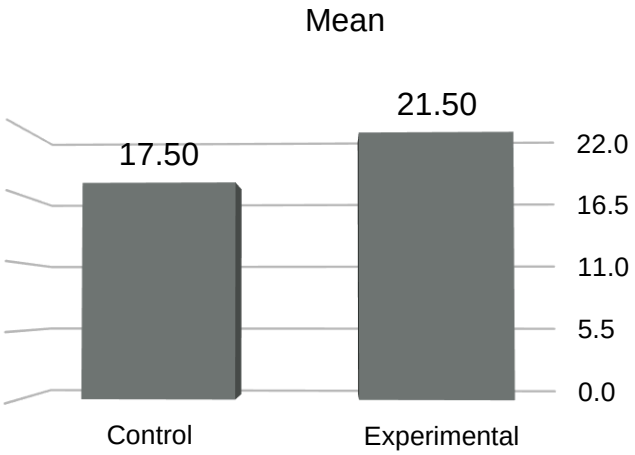
Table 3. Difference between the post-test scores of control group and experimental group on the acquisition of the reading skill of primary school children with learning difficulties.

Test	Group	Mean	N	S.D	Calculated t value	Remarks
Post - Test Reading Skill	Control	17.50	25	3.301	3.515	S
	Experimental	21.50	25	3.120		

S- Significant

It is inferred from the above table (3) that, the t value is significant at 0.05 level of significance. Therefore, the null hypothesis was rejected. Hence, it can be said that the students of control and experimental groups differ significantly in the post test level.

Figure 3. Difference between the post-test scores of control group and experimental group on the acquisition of the reading skill of primary school children with learning difficulties.



It was inferred from the above figure (3) that, the mean score of experimental group (21.50) was greater than the mean score of control group (17.50) on the acquisition of the reading skill of primary school children with learning difficulties.

Ho4: There is no significant difference between the post-test scores of control group and experimental group on decoding of the primary school children with learning disabilities.

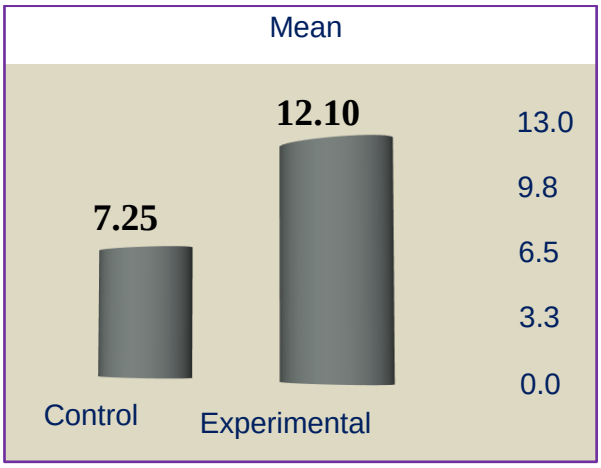
Table 4. Difference between the post-test scores of control group and experimental group on decoding of the primary school children with learning difficulties.

Test	Group	Mean	N	S.D	Calculated t value	Remarks
Post- Test Decoding	Control	7.25	25	6.70	6.25	S
	Experimental	12.10	25	8.25		

S- Significant at 0.05 Level

It is inferred from the above table (4) that the t value is significant at 0.05 level of significance. Therefore, the null hypothesis is rejected. Hence it can be said that the students of control and experimental groups differ significantly in the post test level.

Figure 4.Difference between the pre-test scores of control group and experimental group on decoding of the primary school children with learning difficulties.



It was inferred from the above figure (4) that, the mean score of experimental group (12.10) was greater than the mean score of control group (7.25) on decoding of the primary school children with learning difficulties.

ii) Pre Test – Post Test Analysis

Ho5: There is no significant difference between the pre-test and post-test scores of control group on the acquisition of the reading skill of primary school children with learning difficulties.

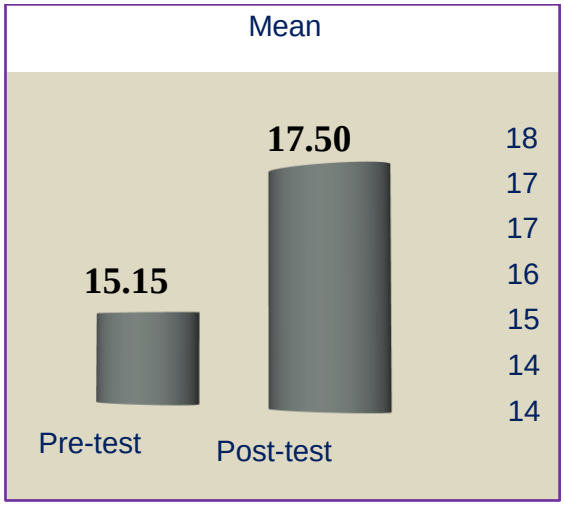
Table 5. Difference between the mean scores of the Pre-Test and Post-Test scores of control group on the acquisition of the reading skill of primary school children with learning difficulties.

Group	Test	Mean	N	S.D	Calculated t value	Remarks
Reading Control	Pre-test	15.15	25	4.234	2.755	S
	Post-test	17.50	25	3.301		

S- Significant at 0.05 level

It was inferred from the above table (5) that, the t value is significant at 0.05 level of significance. Therefore the null hypothesis is rejected. Hence it can be said that there is significant difference between pretest and post test scores of control group students.

Figure 5.Difference between the mean scores of the Pre-Test and Post-Test scores of control group on the acquisition of primary school children with learning difficulties.



It was inferred from the above figure (5) that, the mean score of control group Post-Test (17.50) was greater than the mean score of control group Pre-Test (15.15) on the acquisition of the reading skill of primary school children with learning difficulties.

Ho6: There is no significant difference between the pre-test and post-test scores of experimental group on the acquisition of the reading skill of primary school children with learning difficulties.

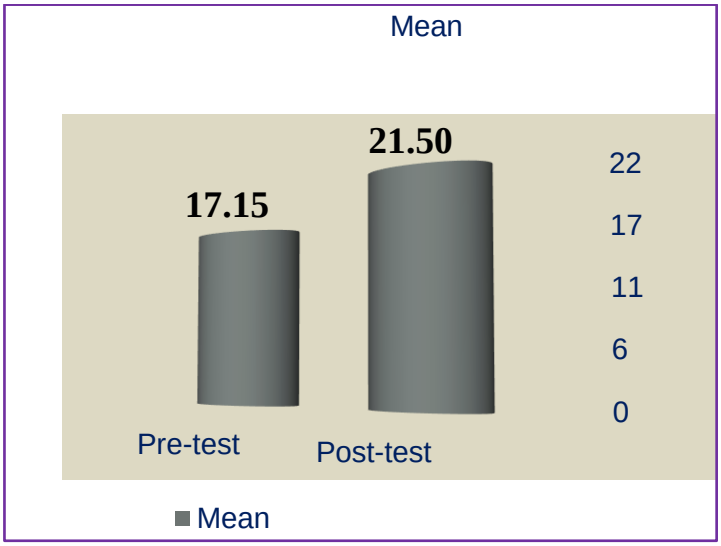
Table 6. Difference between the mean scores of the Pre-Test and Post-Test scores of experimental group on the acquisition of the reading skill of primary school children with learning disabilities.

Group	Test	Mean	N	S.D	Calculated t value	Remarks
Reading Experimental	Pre-test	17.15	25	4.320	6.821	S
	Post-test	21.50	25	3.120		

S- Significant at 0.05 level

It was inferred from the above table (6) that, the t value is significant at 0.05 level of significance. Therefore the null hypothesis is rejected. Hence it can be said that there is significant difference between pretest and post test scores of experimental group students.

Figure 6.Difference between the mean scores of the Pre-Test and Post-Test scores of experimental group on the acquisition of primary school children with learning difficulties.



It was inferred from the above figure (6) that, the mean score of experimental group Post-Test (21.50) was greater than the mean score of experimental group Pre- Test (17.15) on the acquisition of the reading skill of primary school children with learning difficulties.

H7: There is no significant difference between the pre-test and post-test scores of control group on decoding of the primary school children with learning difficulties.

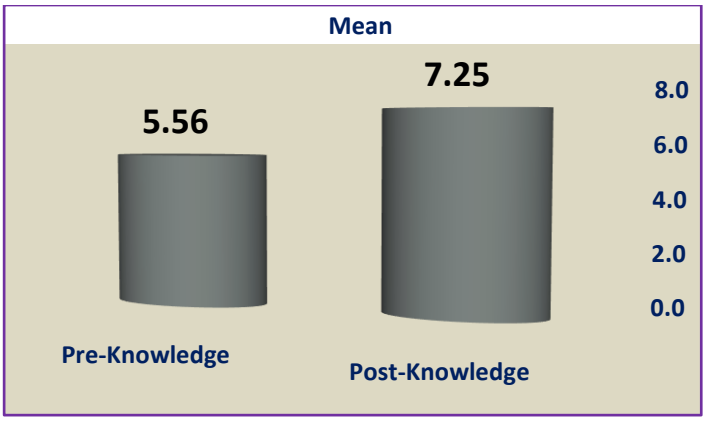
Table 7.Difference between the pre-test and post-test scores of control group on decoding of the primary school children with learning difficulties.

Skill	Test	Mean	N	S.D	Calculated t value	Remarks
Control Decoding	Pre-test	5.56	25	2.90	1.13	S
	Post-test	7.25	25	6.70		

S- Significant at 0.05 level

It was inferred from the above table (7) that, the t value is significant at 0.05 level of significance. Therefore the null hypothesis is rejected. Hence it can be said that there is significant difference between pretest and post test scores of control group students.

Figure 7. ***Difference between the mean scores of the Pre-Test and Post-Test scores of control group classified on the basis of decoding of the primary school children with*** **learning difficulties.**



It was inferred from the above figure (7) that, the mean score of control group Post-Test (7.25) was greater than the mean score of control group Pre-Test (5.56) classified on the basis of decoding of the primary school children with learning difficulties.

H8: There is no significant difference between the pre-test and post-test scores of experimental group on decoding of the primary school children with learning difficulties.

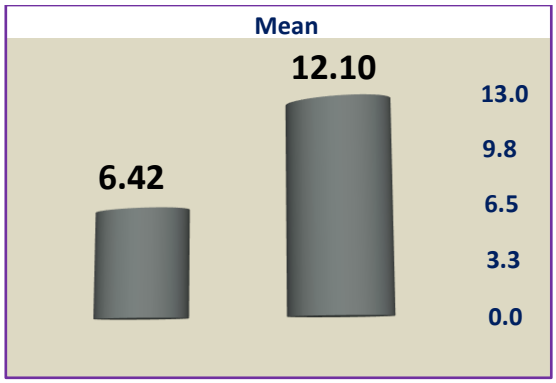
Table 8. ***Difference between the pre-test and post-test scores of experimental group on decoding of the primary school children with*** **learning difficulties.**

Skill	Test	Mean	N	S.D	Calculated t value	Remarks
Experimental Decoding	Pre-test	6.42	25	3.25	7.485	S
	Post-test	12.10	25	8.25		

S- Significant at 0.05 level

It was inferred from the above table (8) that, the t value is significant at 0.05 level of significance. Therefore the null hypothesis is rejected. Hence it can be said that there is a significant difference between pretest and post test scores of experimental group students.

Figure 8. ***Difference between the mean scores of the Pre-Test and Post-Test scores of experimental group classified on the basis of decoding of the primary school children with*** **learning difficulties.**



It was inferred from the above figure (8) that, the mean score of experimental group Post-Test (12.10) was greater than the mean score of experimental group Pre-Test (6.42) classified on the basis of decoding of the primary school children with learning difficulties.

LIMITATIONS OF THIS STUDY

(i) The study focused only on class 5th children with learning difficulties, the sample might not represent other classes.

(ii) The selected computer-integrated modules are limited.

RECOMMENDATIONS

Based on the current search results researcher recommends the Ministry of Education as follows:

- To the government may insist on Educational authorities and give instructions to them to verify whether all teachers use the lab daily for their innovative teaching.
- NCERT may take enough steps to undergo research on improving the English Reading Skill of every primary school child.
- NCTE may insist on Teachers have a separate basic training programme for teaching children with learning disabilities.
- Multisensory strategic orientation is recommended for the teachers as an alternative to enhance the reading performance in English of students with learning difficulties
- The management of the schools could encourage the teachers working in their institutions to use technology in teaching.

CONCLUSION

Computer Integrated Module played a vital role in enhancing the reading skill of primary school children with learning disabilities. Decoding is an important element to cultivate the Reading Skill. So, this study has provided a clear research outcome where this Computer Integrated Module can be implemented in assisting primary school children with learning difficulties to excel in English Reading. The results between Pre-test, and Post-test reflect the

effect of the Computer Integrated Module in developing the reading skill of primary school children with learning difficulties**.**

REFERENCES

Benowitz. Joy, Alison. Social competence of students with learning disabilities using a risk resilience model, Dissertation abstracts International, Vol.71, No.5,**(2010)**.

D ʾAngiulli, Amedeo & Siegel. Cognitive functioning as measured by the WISC-R: Do children with learning disability have distinctive patterns of performance, Journal of Learning Disability, Vol.36,(2003).

Emery, Laurie. Academic achievement of middle school students with specific learning disabilities in inclusive co-taught classes, Dissertation abstracts International, Vol.71, No.3,**(2009).**

George, M. S., Mannes, S., & Hoffman, J. E. Individual differences in inference generation: An ERP analysis. *Journal of cognitive neuroscience*, *9*(6), 776-787, **(1997)**.

Geylanioglu, Savas. Developing English Language Learners Pronunciation Through Conceptualization. Scientific Figure on ResearchGate. Available from: https://www.researchgate.net/figure/The-44-Phonemes-of-English-Language-Underhill-2008_fig1_315516655,**(2017)**.

Kennedy, Michael & Deshler, Donald & Lloyd, John. Effects of Multimedia Vocabulary Instruction on Adolescents With Learning Disabilities. Journal of learning disabilities.**(2013)**.48. 10.1177/0022219413487406.

Kim, Dae-Sang. Effects of text, audio, and graphic aids in multimedia instruction on the achievement of students in vocabulary learning (Indiana State University). Pro Quest, UMI Dissertations Publishing, **(2006).** 3251404.

Kohli, Adarsh & Kaur, Manreet & Mohanty, Manju & Malhotra, Savita. Brief Report Neuropsychological Functioning in Specific Learning Disorders - Reading, Writing and Mixed Groups. J Indian Assoc Child Adolesc Ment Health, **(2006)**.

ldrfa.LD Resource Foundation.**(2012)**https://www.ldrfa.org/the-top-5-most-common-learning-disabilities-their-symptoms/

Meenakshi, K. Importance of ICT in Education. Journal of Research and Method in Education (IOSR-JRME), 1(4), 03-08, **(2013).**

Renu Thakur. Study of visual perceptual skill attentional skill and their correlation with thereading skill of hearing impaired children. Chitkara University, Punjab,**(2020)**. http://hdl.handle.net/10603/301848.

Schonert-Reichl, Kimberly & Hymel, Shelley. Educating The hearts Well As The Mind Social and Emotional Learning for School and Life Success. Education Canada.47.**(2007),**https://www.researchgate.net/publication242544991.

Smith, S.B., Simmons, D. C., & Kameenui, E. J.. Synthesis of research on phonological awareness: Principles and implications for reading acquisition (Tech. Rep. No. 21). Eugene: University of Oregon, National Center to Improve the Tools of Educators.**(1995)**

Terance P. Effectiveness of Teaching English Language Learning Strategies In Improving The Reading Skills Of middle School Students. Department of Educational Technology, Bharathidasan University, **(2017)** http://hdl.handle.net/10603/291944.