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CURRICULUM BASED MEASUREMENT TO IDENTIFY READING DIFFICULTIES AMONG TYPICALLY DEVELOPING CHILDREN

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ABSTRACT

In India there are different boards of education such as State board, Matric board, CBSE, ICSE. There are various standardized tools administered by trained personnel to identify children with learning difficulty or learning disorder. But there is no availability of materials to assess children according to their grade level. Curriculum Based Measurement (CBM) is an assessment tool which has been used by teachers and school psychologists for over three decades and has shown to provide reliable and valid indicators of students' achievement in reading, writing, and mathematics (Deno,1985; Deno, Fuchs, Marston, & Shin, 2001). However, to date very few studies exist that report the use of CBM in identifying students with Reading Difficulties. The study aimed to apply the curriculum based assessment for English reading skills and to identify reading difficulties among children of grade 4, from schools following CBSE curriculum. The research employed in this study is prospective, cross-sectional and Qualitative study that took place at two Schools in Coimbatore city following CBSE . The tool was used to develop probes in English reading skills and the probes were used to assess reading skills such as spelling , passage reading fluency , reading comprehension and listening comprehension among the grade 4 students. The result of this study shows that the grade 4 students had a difficulty in reading fluency . Only 19% of the children were found to be at the mastery level. Children had more difficulty in Spelling with 64% of them in the frustration level, 37% of the children had difficulty in listening and Reading Comprehension with 48% of them in the in frustration level respectively. The girls performed better than the boys in all the three skills. Curriculum Based Measurement can be used by Occupational therapist and other professionals to identify children with reading difficulties and monitor progress of the child on re-evaluation

Key Words: *Curriculum – Based Measurement, Probes, and Reading Difficulties.*

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INTRODUCTION

In the modern society mastery of basic academic skill – reading , writing and arithmetic is a necessary pre-requisite for success in both school and employment setting and in society at large. A large percentage of children suffer from learning disabilities or learning difficulties and therefore do not master these required academic skill. The term ' learning difficulty ' has been applied to those children who have significantly greater difficulty in learning than the majority of their age.

Writing is the important tool for learning. In fact academic progress in school depends on adequate degree of writing fluency (Martlew, 1983). Caldwell and Newby (1990) suggested that almost every child who has reading difficulties has similar or even greater problem with spelling. Spelling is primarily a phonological skill and reading a visual one. By the age of seven and of eight years , the visual and phonological elements become fixed and the child uses both processes, that is why at this stage spelling difficulties are noted. Children who have spelling difficulties may experience frustration and resistance toward written expression activities.

The learning problem significantly interferes with academic achievement or activities of daily living that require reading, mathematical or writing skill.

Teaching and assessment should merge. Initial instruction should be based on an assessment that highlight the student's strengths and weaknesses and establish an appropriate level of instruction. There are many assessment tools available to identify children with learning difficulty or learning problem like Dynamic indicator of basic Early literacy skill (DIBELS) , Gray oral reading test IV (GORT-4) , Test of word reading efficiency (TOWRE) , Degrees of reading power (DRP) , Early reading diagnostic assessment (ERDA) , Woodcock – Johnson III Diagnostic Reading Battery , Suffolk reading scale (SRS) , Ayres spelling scale , CLPE reading , diagnostic spelling test , spelling major scale.

All these tests are standardized tools and are administered by trained and knowledgeable personnel in accordance with the instruction given by the producer of the assessment to ensure validity and reliability.

Whereas Curriculum Based Measurement (CBM) measures a student's achievement on ordinary materials related to the curriculum. This assessment tool better reflect the skills of the student because they provide an accurate and authentic assessment of student's ability across various settings. They are directly related to classroom and easy to administer. CBM is effective to monitor student's progress and to obtain a summative evaluation of a student's achievement. These measures can be used to document progress towards mastery of goals and objectives.

In India there are different boards of education such as State board, Matric board, CBSE, ICSE. There is no availability of readymade materials to assess children according to their grade level.

Thereby developing probes helps to screen children belonging to different boards of education. Probes can be used by any teacher and it can also be used in clinical evaluation. Thus this study aims to

identify reading difficulties in English reading skills for children studying in grade 4, CBSE curriculum by using the English probes.

AIM

The study aimed to use CBM to identify children with reading , spelling difficulties among 4th grade children undergoing CBSE curriculum.

OBJECTIVE

1. To develop probes for English reading and spelling skill for grade four CBSE School children.
2. To find out the percentage of children with reading & spelling difficulties among 4th graders undergoing CBSE curriculum

REVIEW OF LITERATURE

Graham & Harris's (2007) examined the effect of strategy instruction & self regulation procedures on Improving fourth grade students composition skill. The results suggested that the combination of composing strategy with self regulation procedures produces incremental effect on students writing achievement and facilities and maintains generalization of these effects.

Rhona S. Johnston, Sarah Mc Geown & Joyce E. Watson (2011) conducted a study on Long-term effects of synthetic versus analytic phonics teaching on the reading and spelling ability of 10 year old boys and girls. The results showed that with analytic phonics teaching, the boys had equivalent word reading skills to the girls, but were behind them in reading comprehension; boys may need higher level of word reading ability to achieve the same level of reading comprehension as girls.

Mildred C. Templin (2014) conducted a study on Phonic Knowledge and Its Relation to The Spelling and Reading Achievement of Fourth Grade Pupils. This present study was concerned with the relation of phonic knowledge irrespective of how it was acquired, to spelling and reading achievement. Significantly higher scores are obtained when the stimulus is a familiar word rather than a sound or a nonsense-word . The differences among the scores on the tests using three different stimuli are significant above the .05 level for the total sample, the good spelling and good reading deviate groups. For the poor spelling and poor reading deviates , however, the differences between the word phonic and the other recognition tests are significant, but the differences between the nonsense-word and sound phonic tests are not. For the total sample, the correlations between phonic knowledge and spelling are somewhat higher than between phonic knowledge and reading.

Connien Juel (2011) attempted to study Learning to Read & Write. The Simple View of Reading & Writing Received support in this earlier study & was examined in current research. Children who became poor readers entered first grade with little phonemic awareness. By the end of fourth grade, the poor readers had still not achieved the level of decoding skill that the good readers had achieved at the beginning of second grade . The probability that a child would remain a poor reader at the end of fourth grade if the child was a poor reader at the end of first grade. 86 children who were average or good reader at the end of first grade ,

30 remained at the end of fourth grade of these 30 , 26 were still average or good & 4 had slipped to below a 4.3 grade equivalent on the ITBS. Spelling had more of an impact on first grade writing than it did on fourth grade writing predicting written animal stories in first grade spelling accounted for 29% of the variance, where as in 4th grade spelling accounted for 10% of variance. Chall & Jacob (1983), in a cross sectional study of low socioeconomic status children , report that poor reader begin their reading deceleration first in word meaning , beginning around 4th grade.

Joannef Carlisle (2010) studied the Knowledge of derivational morphology & spelling ability in 4th , 6th , & 8th Grade. The result of the study confirm the existence of strong development trends in the learning of derivational morphology. Analysis of the spelling of base & derived word suggests that the student increasing used knowledge of morphology relationship to spell derived word however , on both oral & spelling task the student knowledge of morphological relationship reflected the complexity of transformation between base & derived forms , so that at all gender level they made few errors. Comparisons of the students performance on the morphology & spelling test confirm our expectation that spelling is a more difficult task than orally generating word forms. In addition between the fourth & eighth grades , there was a very large increase in the percentage of instance in which both the base 7 derived form were spelled correctly (33% to 87%). These result suggest that in oral & written language the complex transformation form base to derived form are increasingly learned between the 4th & 8th grade levels.

Sally and Shaywitz (2011) conducted a study on prevalence of reading disability in boys and girls**.** This study hypothesized that results of previous investigation indicating an increased prevalence of reading disability in boys compared with girls reflected a bias in subject selection . In an epidemiologic sample of 215 girls and 199 boys , two group of reading disabled children was identified. Research identified and school identified. Data in this study indicate that school-identified samples are almost unavoidably subject to referral bias and that reports of an increased prevalence of reading disability in boys may reflect this bias in ascertainment . These findings caution against relying solely on school for identification of reading-disabled children**.**

Mogasale et al (2012) analyzed on prevalence of Specific learning disabilities (SpLD) among primary school children in a South Indian City. The investigators found that the prevalence of specific learning disabilities was 15.17% in sampled children, whereas 12.5% , 11.2% and 10.5% had dysgraphia , dyslexia and dyscalculia respectively. This study suggests that the prevalence of SpLD is at the higher side of previous estimations in India ; they express the need for more prevalence studies, remedial education and policy intervention to manage SpLDs at main stream educational system to improve the school performance in Indian children.

Christian (2015) conducted a study on Curriculum-Based Measurement of Oral Reading fluency (CBM-R): An objective orientated**.** This paper specifically focuses on the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Oral Reading Fluency (DORF) curriculum-based measures of reading (CBM-R) and the fundamental importance of teachers in implementing these measures within mainstream inclusive-classroom contexts. Results of the student pictorial surveys identified that 78 of the 94 students 'would like to read more passages', 10 would not and 6 were not sure. Of the 94 students 76 claimed they 'were able to do their best reading' and 52 suggested they enjoyed reading the passages.

METHODOLOGY

The study was carried out in two phases.

Phase I –To develop English reading probes

Procedure

Developing the CBM Probes

Probes in English reading skills that included passage reading fluency, spelling, reading comprehension and listening comprehension were developed from the CBSE English text book of first, second and third grade. Three probes in each component were developed as per the CBM guidelines.

Preparing CBM reading –fluency probes

For assessing the fluency skills of students, the instructor chooses 3 passages at random from the basal text used by CBSE curriculum chosen for assessment. An examiner copy and student copy of each passage was prepared separately. The examiner copy has a cumulative word total listed along the right margin of the passage for ease of scoring.

Phase 2 – Implementation of the Probes

Study Design: Prospective, cross-sectional and qualitative study design.

Sample Size: A total number of 100 children of age 9yr – 9yr 11 month were taken for the study. The research study was carried out in two CBSE schools in Coimbatore

Tools Used

The tool used was curriculum based measurement (CBM) to measure the English reading skills i.e. reading fluency, spelling, reading comprehension and listening comprehension of students in this study. When using CBM , the examiner gives the brief , timed samples or " probes " made up of academic material taken from the school curriculum.

The reliability of CBM tool is found to be 0.92 to 0.96. The validity of CBM tool is found to be 0.62 to 0.75.

Tool consisted of four probes. They are:

- Preparing CBM Probes
- Preparing CBM reading - fluency probes
- Preparing CBM spelling probes
- Preparing CBM Reading and listening Comprehension probes

DATA ANALYSIS AND RESULTS

The data collected was tabulated for statistical analysis. All statistical analysis were done using SPSS 2.0 version. Descriptive statistics was used to find the percentage of reading difficulties among children. The result were determined using independent sample t-test to analyze and to create tables and graph.

Demographic Characteristics of the Participants

The demographic characteristics of the typically developing children are displayed in Table1. The typically developing children ranged from 9yrs -8 years11 months of age. Students belonging to 100 (100%) . The sample was taken from English medium and CBSE school syllabus. There were 50 (50%) male students and 50 (50%) female student (n=100).

Table 1: Characteristics of Study Participants.

Items	Variable
Gender	Male
	Female
Age	9 Years
Medium of instruction	English
Class	4th Grade
School	The NGP School
	The South Indian Baptist School
Syllabus	CBSE

Table 2a. Overall percentage of reading fluency

Levels	No. of Children reading words correctly	% of children reading words correctly	No. of children reading words with errors	% of children reading words with errors
Frustration	12	12	18	18
Instructional	15	15	21	21
Mastery	19	19	15	15

Table 2a indicates that 19% of the 4 graders were at mastery level ,12% of children were at frustration level and 15% of children were at instructional level in reading correct words in one minute.

Table 2b.Comparison of Performance on Reading fluency

Variables	Gender	Mean	SD	T-value	Sig
Correct word/ mint	**Boys**	77.56	38.01	.271	.787
	Girls	77.46	30.40		
Error word/mint	**Boys**	1.34	1.61	-.216	.830
	Girls	1.42	2.07		

Table 2b depicts the comparison of reading fluency between boys and girls which shows that there is no significant difference in reading fluency (correct word per minute) and (error per minute) between boys and girls.

Table 3a. Overall Percentage of Spelling Test

Levels	No.of Children Attended In Spelling Test	% of Children In Spelling Test
Frustration	64	64
Instructional	25	25
Mastery	11	11

Table 3a illustrates that 11 % of children were in mastery level , 64% of children were in frustration level , 25% of children were in instructional level in spelling test.

Table 3b Comparison of Spelling Test between Boys And Girls.

Levels	Gender	Mean	SD	t – value	Sig
Frustration	Male	18.68	8.01	-.313	.755
	Girls	19.31	7.87		
Instructional	Boys	55.06	10.97	-.157	.025
	Female	55.88	15.16		
Mastery	Boys	91.60	15.22	-.812	.023
	Girls	97.66	15.87		

Table 3b and the graph 3.2 , shows that there is significant difference ($p<0.025,0.023$) in instructional and mastery level between boys and girls in spelling test.

Table 4a. Overall Percentage of Listening Comprehension

Levels	No. Of children in listening comprehension	% Of children in listening Comprehension
Frustration	37	37
Instructional	27	27
Mastery	36	36

Table 4a and 4.1 , illustrates that 37% of children were in frustration level , 27 % of children were in instructional level and 36% of children were in mastery level in listening comprehension.

Table 4b. Comparison of Performance on Listening Comprehension Skills between Boys and Girls

Levels	Gender	Mean	SD	T – value	Sig
Frustration	Boys	.6154	.5063	-.204	.671
	Girls	.6667	.5164		
Instructional	Boys	2.625	.4945	.358	.498
	Girls	2.571	.5070		
Mastery	Boys	4.307	.4803	-1.233	.067
	Girls	4.52	.5107		

Table 4b shows that there is no significant difference in listening comprehension between boys and girls

Table 5a. Overall Percentage of Reading Comprehension

Levels	No. Of children in reading comprehension	% Of children in reading comprehension
Frustration	48	48
Instructional	20	20
Mastery	32	32

Table 5a illustrates that and 32 % children were at mastery level , 48% at frustration level and 20% of children were at instructional level in reading comprehension.

Table 5b. Comparison between boys and girls in Reading Comprehension among Grade 4 students.

Levels	Gender	Mean	SD	T – value	Sig
Frustration	Male	.77	.440	.665	.273
	Female	.60	.547		
Instructional	Male	2.23	.429	-.328	.518
	Female	2.27	.455		
Mastery	Male	4.13	.351	.062	.172
	Female	4.11	.927		

Table 5b shows that there is significant difference in three levels (frustration, instructional, mastery) in reading comprehension

FINDINGS & DISCUSSION

Curriculum – Based Measurement (CBM) consists of brief fluency measures that are considered valid indicators of students performance in basic academic skills (i.e., reading, spelling, mathematics and written expression).

Curriculum – Based Measurement has been demonstrated to be useful for numerous activities such as screening to identify at risk student and progress monitoring student's growth.

This study was conducted in typically developing children in 4 grade studying in CBSE School to identify the reading difficulties using CBM.

Overall reading fluency

It was found that in reading correct words in one minute, only 19 % of the grade 4 students were at mastery level. .This finding was supported by Ben Clarker study that only by grade five ; many students have mastered basic skills and are employing reading as a tool for learning rather than learning to read There was statistically no significant difference in reading accuracy between boys and girls. (Table 2a and Table 2.1).This correlates with the conclusion drawn by Berninger and Fuller (1992) found that female advantage did not extend to oral verbal fluency , with boys outperforming girls in this area. According to LaFrance and Harris (2004), male responses may be equal in quality to the female responses in reading .However, there is evidence suggesting that differences in cerebral laterality between boys and girls (Clements et al., 2006; Jaeger et al., 1998) as well as genetic and environmental factors (Olson, 2002) can contribute to gender differences in reading. Girls are generally found to perform better than boys in many tasks related to reading (Guthrie & Greaney, 1991; Joseph, 2000) and more boys than girls experience reading problems (Wheldall & Limbrick, 2010).

Spelling skill

The result shows that there is no significant difference in frustration level (p=.755) There is significant difference in mastery level (p=.023) and instructional level (p=.025) between boys and girls.

Listening comprehension

There is no significant difference in listening comprehension between boys and girls. Here girls performed better in all levels (frustration, instruction, and mastery).

Reading comprehension

The result shows that there is no significant different between boys and girls in three level. By seeing the mean value the boys performed well in mastery and frustration level. Building on earlier research studies of Guthrie and Collegues (2006) demonstrated that combining motivation practices with strategy instruction in comprehension increases reading comprehension. Several studies also demonstrated that beginning readers were able to successfully transfer knowledge of comprehension strategies from one literacy activity to another after repeated exposure to explanation and questioning.

CONCLUSION

This study determines the percentage of reading , spelling , listening and passage reading comprehension in fourth grade students. The result shows that there is no significant difficulties in reading fluency , spelling in frustration level , listening and passage comprehension. There is significant difference in spelling in instruction and mastery level. Hence there is a great need for screening and monitoring of progress in word reading , spelling , reading comprehension and listening at an early age. Teachers should be trained to administer curriculum-Based Measurement in classroom at regular intervals and the students at risk of reading failure can be suggested for specialized teaching. Curriculum-Based Measurement can be used by occupational therapist to identify children with reading difficulties and monitor progress of the child on re-evaluation.

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