Academic Tasks to identify students with Reading Disability in Malayalam among Upper Primary Students

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Introduction

Reading launches formal learning and attainment of knowledge, children begin to learn reading from the pre-primary level. It becomes more formal at primary level, and the difficulties in reading become perceptible. For this reason, primary teachers, teacher educators, educational psychologists and school counselors discuss reading disability, or dyslexia, commonly. Definition of dyslexia by British Dyslexia Association reflects the neurological bases of the condition. Dyslexia is evident when accurate and fluent word reading and/or spelling develops very incompletely or with great difficulty (British Psychological Society, 1999). Early detection of dyslexia and other learning difficulties is desirable in order to obtain appropriate help for the student. The earlier dyslexic difficulties are identified, the better are the chances of putting children on the road to success in their academics. Hence, identification of dyslexic students is usually made during the first years of primary school when reading and writing problems are found that go beyond the normal starting difficulties.

Need and Significance of the Study

Children likely to have difficulties in learning to read can be identified at elementary level. However, for practitioners especially teachers and school counselors, it is frequently not possible to differentiate between students who have dyslexia, and students who are at risk for other learning problems like academic backwardness, below normal general ability, and other language difficulties like problem with writing. The indicators of dyslexia are better understood in relation to languages like English. The clearest indicators of dyslexia in kindergarten are difficulties acquiring phonemic awareness, learning letter/sound correspondences, and learning to decode print using phonemic decoding strategies (Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg, 2001).There are reliable screening and progress monitoring tests to identify students falling behind in reading growth. In Florida, many schools have been using the Dynamic

Indicators of Basic Early Literacy Skills (DIBELS) (Nicolson & Fawcett, 1996) to identify students as early as kindergarten who are struggling in the development of phonemic awareness, letter knowledge, and phonemic decoding skills. Aston Index (Newton & Thompson, 1982) , Bangor Dyslexia Test (Miles, 1997) , Children's Test of Non-word Repetition (Gathercote & Baddeley, 1996) , Lucid Cognitive Profiling System (CoPS) (Singleton et al., 1996) , Phonological Abilities Test (Muter et al., 1997) Phonological Assessment Battery (PhAB) (Frederickson et al., 1997) , Self-Perception Profile for Learning Disabled Students (Renick & Harter, 1997) , Wechsler Intelligence Test for Children (WISC) (Wechsler, 1992, 2004) Woodcock Johnson III (WJIII) (Woodcock et al., 2001) , Response to Intervention (RTI) (Fuchs & Fuchs, 2001), and Dynamic Indicators of Basic Early Literacy Skills (DIBELS) (Good & Kaminski, 1998) are some of the important tests available to identify dyslexic individuals. But in Indian context especially in Malayalam, these kinds of tests are not available. Hence, understanding of indicators of dyslexia is much weaker in Malayalam, and in schools where Malayalam is the medium of instruction and learning. It shows the necessity of screening tasks that will help identify learners with dyslexia from those learners who have other forms of academic backwardness, using items/ tasks in Malayalam.

Objective of the Study

To identify tasks/items that can be used to spot students with Reading Disability in Malayalam among Upper Primary students.

Methodology

Sample

Secondary data from Gafoor and Kaleeludheen. (2009), Gafoor and Sajeev, (2009) and Gafoor and Sheela, (2010) are used for the study. The original sample consists of pupils in Upper Primary schools representing south, central and north zones of Kerala, with near equal representation for each zone. From each district, two urban schools and three rural schools were

randomly selected. Data was drawn from eight government and seven aided schools. Locale and type of schools and pupil's gender were adequately addressed in the total sample consisting of Grades V (n=478), VI (n=510), and VII (n=512) pupils. The sample is pooled from three separate studies, originally used to identify difficulties in reading (Gafoor & Kaleeludheen., 2009), writing (Gafoor & Sajeev, 2009) and arithmetic (Gafoor & Sheela, 2010) among Upper Primary pupils.

The analysis in this study is limited to 45 pupil identified as dyslexic on the basis of scores on Test of Primary Writing Abilities (Gafoor & Sajeev. 2008), Test of Elementary Arithmetic Concepts and Processes (Gafoor & Sheela, 2008) and Test of Fundamental Reading Skills in Malayalam (Gafoor & Kaleeludheen, 2008). These students were identified as dyslexic and poor academic performers on the following selection criteria.

1. The students who scored lower than one standard deviation below the mean on reading test, but higher than one standard deviation below the mean on writing and arithmetic test were identified as dyslexic.

2. Students who scored lower than one standard deviation below mean on all the three tests (reading, writing, arithmetic) were identified as poor academic performers.

Measures

The measures used are Test of Primary Writing Abilities (Gafoor & Sajeev, 2008), Test of Elementary Arithmetic Concepts and Processes (Gafoor & Sheela, 2008) and Test of Fundamental Reading Skills in Malayalam (Gafoor & Kaleeludheen, 2008). Students were given 45 academic tasks. Of these 19 related to reading 10 related to writing and 16 related to arithmetic. The natures of tasks are clear from the self-descriptive names given in table 1.

Procedure

After identifying students with reading dyslexia and poor academic performers using the criterion cited above, the students' performance on the 45 select academic tasks were obtained. The indices on each task for the two groups were estimated by diving the total score on each task with number of items on each task. Thus index of performance on each task is a mean score with maximum "1" and minimum "0". The indices of performance of the normal achievers among the same population were obtained from the previous studies viz., Gafoor & Sajeev (2009), Gafoor & Sheela (2010) and Gafoor and Kaleeludheen (2009). The tasks on which index of any of the three groups differ from others were identified, classified and tabled. Tasks that help in distinguishing dyslexic pupil from normal learners and tasks that help in distinguishing dyslexic pupil from low achievers were separately plotted as line graphs to visualize the difference in performance of the said groups on the identified tasks. The language related tasks that are especially useful to distinguish dyslexic pupils from the other two groups were especially recognized. The Malayalam language tasks identified as discriminating among the three groups were factor analyzed to reduce the number of tasks that are required to identify dyslexic learners.

Findings

How do dyslexic perform on select academic tasks?

Academic tasks that are helpful to distinguish dyslexic pupil from normal learners and other learning difficulty groups are given in table1.

Relative performance of dyslexic	**Academic task**	Mean score on the task in three groups		
		Dyslexic (n=45)	*Normal**	*Low achievers(n =39)*
Near to low achievers	Concluding from a read passage	0.20	*0.49*	*0.18*
	Interpolating a passage	0.26	*0.52*	*0.33*
	Reproducing from read passage	0.30	*0.72*	*0.26*
	Extrapolating a read passage	0.43	*0.78*	*0.44*
	Recognising similarly pronounced words	0.47	*0.79*	*0.40*
	Identifying correct incorrect spelling	0.60	*0.84*	*0.58*
	Mechanics of reading	0.66	*0.87*	*0.60*
	Comprehension of word relation	0.61	*0.90*	*0.53*
	Distinguishing similarly written words like *va pa*	0.78	*0.95*	*0.79*

Near to normal learners	Develops outline into story	0.23	*0.28*	*0.10*
	Relating addition and subtraction	0.38	*0.39*	*0.13*
	Copying sentences correctly	0.42	*0.49*	*0.19*
	Division	0.45	*0.50*	*0.12*
	Order words according to consonants	0.45	*0.54*	*0.03*
	Simple vocabulary	0.58	*0.62*	*0.30*
	Choosing symbols for vowel sounds	0.56	*0.64*	*0.26*
	Subtraction	0.72	*0.73*	*0.38*
	Identifying odd even nos.	0.75	*0.74*	*0.35*
	Knowledge of units	0.81	*0.84*	*0.41*
	Order words according to vowels	0.77	*0.86*	*0.22*
	Addition	0.90	*0.86*	*0.45*
	Identifying shapes	0.85	*0.87*	*0.51*
	Choosing and completing with glides	0.85	*0.91*	*0.47*
	Writing numbers in figures	0.94	*0.94*	*0.74*
Better than normal	10/100 in a lac	0.58	*0.44*	*0.13*
	Understands <>= symbol	0.76	*0.60*	*0.32*
	Multiplication	0.66	*0.54*	*0.21*
	Identifying correct spelling	0.92	*0.84*	*0.42*

*based on studies on the same population by Gafoor & Sajeev (2009), Gafoor & Sheela (2010) and Gafoor and Kaleeludheen (2009).

Table 1 shows 28 academic tasks that differentiate among the three groups, dyslexic, normal and low achievers. Of these, on nine tasks dyslexic are near to low achievers, on 15 tasks they differ from low achievers and are similar to normal learners; and on four tasks they outperform even normal learners.

The students scored low in the factors alphabet order, glides, word literacy, relating elements of the task, comprehension and summarizing symbolic expressions. However, these students are average or above average in letter discrimination, numerical operations, passage reading, graphic discrimination, word recognition, units and shapes, numerical seriations. These factors can also use to discriminate dyslexic and non-dyslexic students in Malayalam.

The tasks on which dyslexics differ from low achievers and their performance thereof are depicted in figure1.

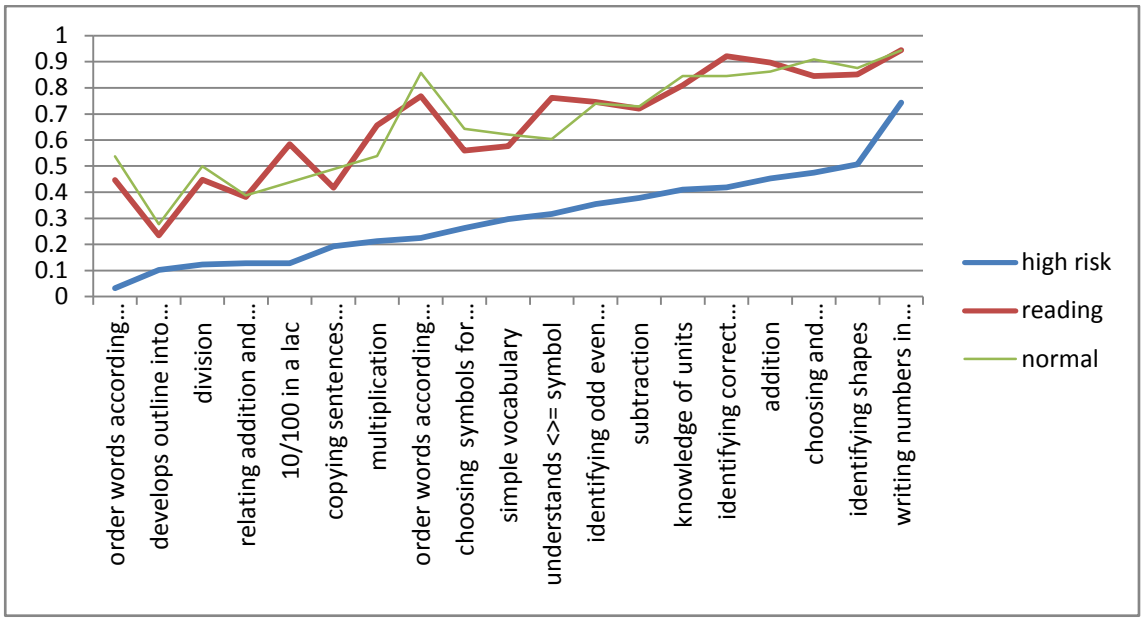

Figure 1: How do dyslexics perform on select academic tasks in relation to low achievers

The tasks on which dyslexics differ from normal learners and their performance thereof are depicted in figure2.

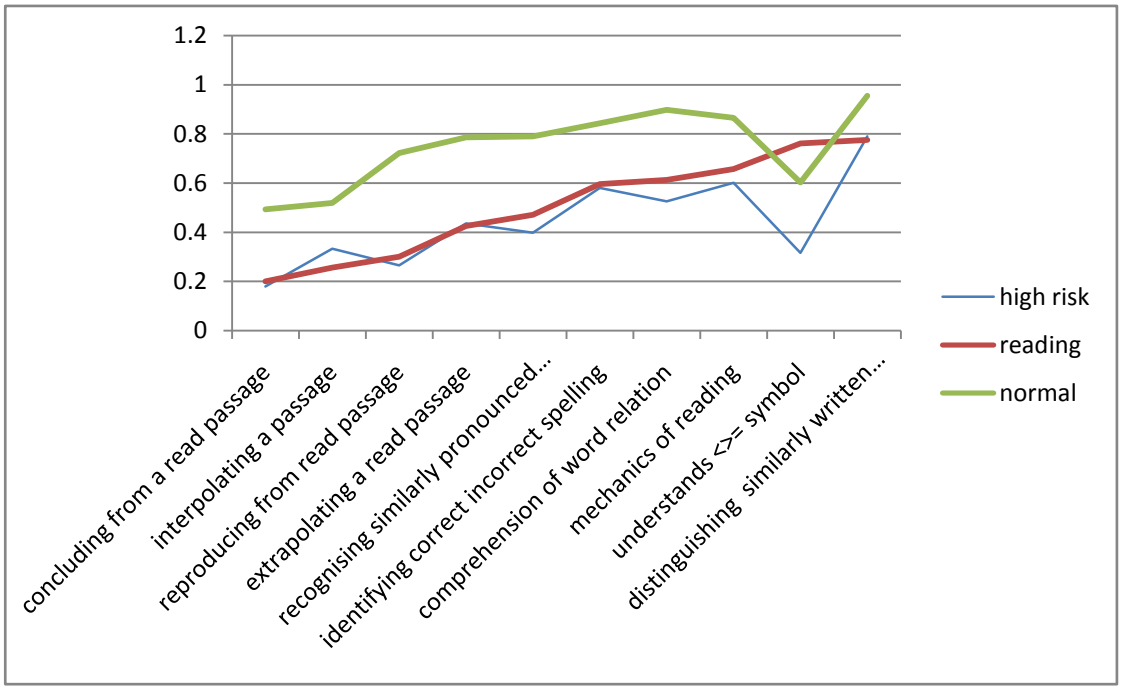

Figure 2 : How do dyslexics perform on select academic tasks in relation to normal group

Based on table 1 and figure 1 and 2, seven language tasks are identified as especially useful for identifying dyslexic. They are identified on the logic that they are language tasks that

are not evidently reading related, and even then, in combination, help to discriminate dyslexics from the other two groups. The tasks thus identified are viz., Order words according to vowels, Order words according to consonants, Choosing and completing with glides, Identifying correct/ incorrect spelling, Identifying correct spelling, Simple vocabulary for picture, and Choosing and completing with symbols.

The language tasks on which the dyslexics perform at par with normal students are; order words according to consonants, simple vocabulary, choosing symbols for vowel sounds, order words according to vowels, choosing and completing with glides and identifying correct spelling, however they are not so with incorrect spelling. Identification of correct spelling is especially useful in this respect. Identification of incorrect spelling is especially useful as dyslexic are good in recognizing correct spelling, but not so with incorrect spelling. So what can be done? If a student perform well on numeric tasks and copy sentences correctly, but fails in some other language tasks, apply the tasks; Identifying correct incorrect spelling, Order words according to consonants, Simple vocabulary, Choosing symbols for vowel sounds, Order words according to vowels, Choosing and completing with glides, Identifying correct spelling and see how they perform. If it matches with present findings, students are dyslexic. Observation of glides as useful for identifying dyslexia is highly valuable, as these observations cannot be had from western studies that have syllabic languages.

The Malayalam language tasks identified as discriminating among the three groups were factor analyzed to reduce the number of tasks that are required to identify dyslexic learners. Result is in table 2.

Table 2

Rotated Component Matrix obtained in Factor analysis of seven language tasks that were identified as able to discriminate between dyslexic learners from normal learners and low achievers

	Component			
	1	2	3	4
Order words according to vowels	.937			

Order words according to consonants	.887			
Choosing and completing with glides		.810		
Identifying correct/ incorrect spelling		.718		
Identifying correct spelling			.853	
Simple vocabulary for picture			-.643	.475
Choosing and completing with symbols				.922

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 5 iterations.

Table 2 shows that there are four factors that can be considered for identifying dyslexic learners in Malayalam from other categories of learners namely normal learners and low achievers. They are ordering words according to alphabet, identifying incorrect spelling involving but not limited to glides, spelling of simple vocabulary, and use of symbols for vowels.

Conclusion and suggestions

This study suggests the following. Tasks that can be used to mark students with writing difficulties and arithmetic difficulties may also be identified by similar manner. This will enhance the usefulness of the presently identified tasks to delineate pupil with difficulties in reading and writing in Malayalam and those with arithmetic difficulties. If a series of tasks thus identified are used concurrently, it will contribute to enhancing quality of education in mother tongue. It will also contribute making elementary education more inclusive and catering to individual differences, and, thus provide possibilities to use more powerful interventions to help dyslexic students. Further, this sort of studies can help future test developers in building screening tests in the area of disabilities. Theoretically, the findings of the study will prop up the understanding of development of language difficulties in Malayalam among young learners.

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