

Catch Them Before They Fall: A Simple Test of Sight-Word and Pseudo-Word Reading in Kannada for a Quick and Early Assessment

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Abstract

The challenge of mastering reading is universally seen across all populations and languages. A small fraction of students all over the world, however, fail in learning to read proficiently. Early assessments can help children who are likely to get into the vicious circle of failure in mastering word reading, leading to poor academic performance and eventually to low motivation in academics and possible lifelong socioeconomic and mental health consequences. In languages such as English, there are quite a few tests available for early assessment and interventions. In India, a multilingual society, all children going to school learn to read at least in three languages, including English. Dearth of suitable assessment tools in local languages is a major impediment in clinical services and research. Here, we report an attempt at developing a quick and reliable test for assessment of decoding and sight-word reading skills in Kannada language.

Keywords

sight-word reading, pseudo-word reading, Kannada, early assessment, primary schoolchildren

Introduction

During the early schooling phase, the ability to master reading is undoubtedly the premier academic achievement. It prepares the children for all their educational endeavors and is a key to the possibilities that the future has in store for them (Bialystok, Luk, & Kwan, 2005). When beginning to receive formal instruction in reading, a large majority of children show no difficulty in learning how to read and write under normal conditions. However, several millions of children and adults worldwide, despite having average or above average cognitive abilities, adequate educational conditions, normal hearing and vision, have specific impairment in picking up reading (Schulte-Körne et al., 2007). Well-designed literacy assessments help identifying the problem of students in literacy development and guiding appropriate instruction needed (Black & Wiliam, 2003; Helman, 2005; Hu & Commeyras, 2008; National Council of Educational Research and Training, 2006; Shaywitz & Shaywitz, 1994; Torgesen, 2000).

India is one of the largest functionally multilingual countries in the world (Annamalai, 2001). The Report of the Education Commission (1964-1966) of Central Government of India recommended the Three-Language Formula (TLF), which necessitates all primary schools to teach three languages to pupils (Kothari, 1966). The TLF includes mother-tongue or the regional language; the official language of the

Union or the associate official language so long as it exists; and a modern Indian or foreign language not covered above and other than that used as a medium of instruction. After the approval of the parliament, it was incorporated into the National Policy on Education in 1968, and today almost all schools in India expose their students to the learning of three languages. In the state of Karnataka (where the present study was conducted), majority of the schools teach Kannada, English, and Hindi. Kannada, a Dravidian language, is the official language of Karnataka State and is spoken by about 50 to 60 million people in India. It is an agglutinative, highly inflective language, which follows subject-object-verb order canonically. Kannada orthography is an alphasyllabary, in which orthographic units (called akshara) represent syllables. It is a transparent orthography. As the grain size is larger, it has a larger set of symbols. Furthermore, it has hardly a few monosyllabic words, the most common words having two or three syllables (more details of Kannada may be seen in Prakash & Joshi, 1989, 1995). Hindi, a major

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language used all over India, belongs to the Indo-European family of languages. Both Kannada and Hindi orthographies are derived from a common source, Brahmi (Coulmas, 1989). English and the Indian writing systems have contrasting features with respect to transparency, grain size, and the orthographic principle (Padakannaya & Mohanty, 2004; Padakannaya & Ramachandra, 2011). Furthermore, different writing systems put different cognitive demands on readers, which are reflected in the way reading and spelling/spelling are acquired in those languages (Chengappa, Bhat, & Padakannaya, 2004; Padakannaya, Rekha, Vaid, & Joshi, 2002; Perfetti, 1999; Wang, Liu, & Perfetti, 2004; Ziegler & Goswami, 2006). In such multilingual settings where children are formally exposed to two or three languages simultaneously, testing needs to be done in all the languages children are learning for any assessment or diagnostic purposes.

There are several standard tests available for assessing reading ability in languages such as English that facilitate research studies and early assessment of reading skills in normal and at-risk children. However, in a multiliterate setting like India, there is dearth for such tools in local languages. There is an urgent need to develop tests in the Indian languages, which will help identify children in need for intervention. This will save them from the vicious circle of the mental trauma they would experience on account of academic difficulties. Here, we report an attempt at developing a quick and reliable measure for assessment of decoding and sight-word reading skills of higher primary and high schoolchildren in Kannada language, one of the major languages of India, in the lines of Test of Word Reading Efficiency (TOWRE) in English (Torgesen, Wagner, & Rashotte, 1999). The TOWRE, a widely used test in English, assesses sight-word efficiency and phonemic decoding efficiency by asking readers to read a list of high frequency words and another list of pseudo-words for 45 s each. The Performance on the first list provides a measure of one's sight-word reading, whereas the Performance on the second list provides an index of one's decoding ability. The present article presents a brief account of our attempt at developing a similar measure in Kannada with an assumption that development of such measures helps cross-linguistic comparisons in multilingual contexts prevailing in India.

Method

Participants

Fifty (30 boys and 20 girls) students, studying in an English-medium school and taught Kannada and English from the first-grade level, participated in the study. Their age ranged from 10 to 18 years. Twenty-six of them were studying at the middle school level (Grades 5-8), and 24 were from the secondary to the higher secondary level (Grades 8-12) as per the Indian school system.

Their inclusion in the study was based on the class teachers' checklist report endorsing that children were average or higher than average performers with consistency in academics

and did not have any observable physical or psychological/behavioral/emotional problems on record. All of them belonged to middle or high socioeconomic families.

Procedure

The first phase involved preparing a list of words for sight-word efficiency (*drishti pada* in Kannada) and pseudo-words (*husi pada* in Kannada) for phonological decoding efficiency sections of the proposed Kannada test. The first author went through Kannada language textbooks of Grade Levels 1 through 5, made a list of words and frequency of their appearing in the textbooks. These words were arranged according to their frequency, that is, words of high frequency were placed at the beginning of the list, followed by words that were less frequent (the frequency ranged from 1 to 117). Following this, we performed a median split and considered the words above the median for the proposed list for sight-word reading. Of this list, we prepared two separate lists A and B of 72 words matching for frequency and mixing words of varied lengths and syllables in complexity. The mean frequency of words in Lists A and B was comparable (13.6 and 17.9), and the difference was not statistically significant. Both the lists were serially rearranged in the order of increasing frequency of words. Furthermore, two experienced primary school Kannada language teachers ranked the words based on their perception of how familiar the words were to schoolchildren. There was a very significant correlation between the raters (.95 and .93, respectively, on Lists A and B).

Two lists of 62 pseudo-words each were prepared for assessing phonological decoding skill. Pseudo-words (*husi pada*) were prepared by substituting a phoneme or a syllable of a real word by another without violating the orthographic rules of Kannada language. The composition and arrangement of pseudo-words within the lists were similar to those of sight-word (*drishti pada*) lists, that is, they were arranged in an increasing order of length and syllable/akshara complexity. Thus, at the end of the first phase, we had two lists (A and B), each for assessing sight-word reading skill and pseudo-word reading skill. The whole process of preparing the final list of words along with two helpers took about a month's time.

Reliability Measures

A new group of 10 students (6 girls and 4 boys) from a higher primary school participated in this part of the study aimed at checking the odd-even reliability and reliability coefficient for the whole test. Every participant was asked to read the lists of words arranged column wise on a sheet of paper, as quickly and accurately as possible on saying "start" until told to stop. They were instructed that they should skip words found difficult and proceed with the subsequent ones. The number of words correctly read in 45 s, and the total number of words read as well as the time taken to read the whole list was noted down. The order of administration of lists was randomized to control the order effect. The odd-even reliability

Table 1. Odd–Even Reliability and Reliability Coefficient of the Whole Test.

Subtest	Coefficient of odd–even reliability	Reliability coefficient of the whole test
Drishti pada A	.92	.96
Drishti pada B	.95	.97
Husi pada A	.96	.98
Husi pada B	.97	.98

Table 2. Test–Retest Reliability Measures.

Subtest	Form	First testing		Second testing		r_{AB}
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Drishti (sight)	A	50.38	13.46	50.10	11.73	.98
Pada	B	52.02	12.04	51.02	10.98	.98
Husi (pseudo)	A	43.22	9.40	44.14	7.55	.91
Pada	B	43.00	8.49	43.06	7.20	.90
Total word	A	93.06	20.87	94.24	17.73	.97
Reading efficiency	B	95.02	19.31	94.08	16.63	.97

Table 3. Correlations Between Parallel Forms A and B.

	Pre-test		Post-test		
	r_{AB}	Significance	r_{AB}	Significance	
Words read in 45 s					
PDE	.84	.0001	.81	.0001	
SWE	.84	.0001	.84	.0001	
Total words read					
PDE	.83	.0001	.72	.0001	
SWE	.78	.0001	.63	.0001	

Note. SWE = Sight Word Efficiency; PDE = Phonemic Decoding Efficiency.

and reliability coefficient for the whole test for sight-word and pseudo-word lists are presented in Table 1. All the measures exhibited a very high degree of reliability and internal consistency.

The stability-over-time or test–retest reliability was determined by administering these tests to a group of 50 children (30 boys and 20 girls from Grade Levels 4 through 12) twice with a gap of 2 weeks between testing sessions. The obtained mean, standard deviations, and correlation coefficient values of the pre- and post-test scores are shown in Table 2. The magnitude of the correlation coefficient values was .91 and above, which definitely meet the required criterion of .90 for such purposes (Nunnally & Bernstein, 1994). The alternate forms, used to assess sight-word and pseudo-word reading, were also found to be highly correlated (see Table 3).

Validity

The lists of sight words and pseudo-words were evaluated for validity. If these tests tap underlying reading skills, the reading scores should increase over the grade levels and the

mean differences between lower and higher grades should be statistically significant.

A gradual increase in performance over the grade levels on all word lists was observed (see Figures 1–3). The results of the independent-samples *t* tests confirmed that the mean differences between lower grades (5 and 6) and higher grades (11 and 12) on the total score of forms A and B of sight words (*drishti pada*) and pseudo-words (*husi pada*) were significant, $t(10) = 3.28$, $p < .01$, and $t(10) = 3.19$, $p < .01$, respectively.

Conclusion

To make important decisions with respect to specific scores, a reliability of .90 is the bare minimum, and a reliability of .95 is considered the desirable standard (Nunnally & Bernstein, 1994). Most values in the present study reached or exceeded the minimum standard of .90. Thus, the reading lists constructed (given in the appendix) for assessing sight-word reading and pseudo-word reading are reliable tools that could be the resources available in Kannada for assessment

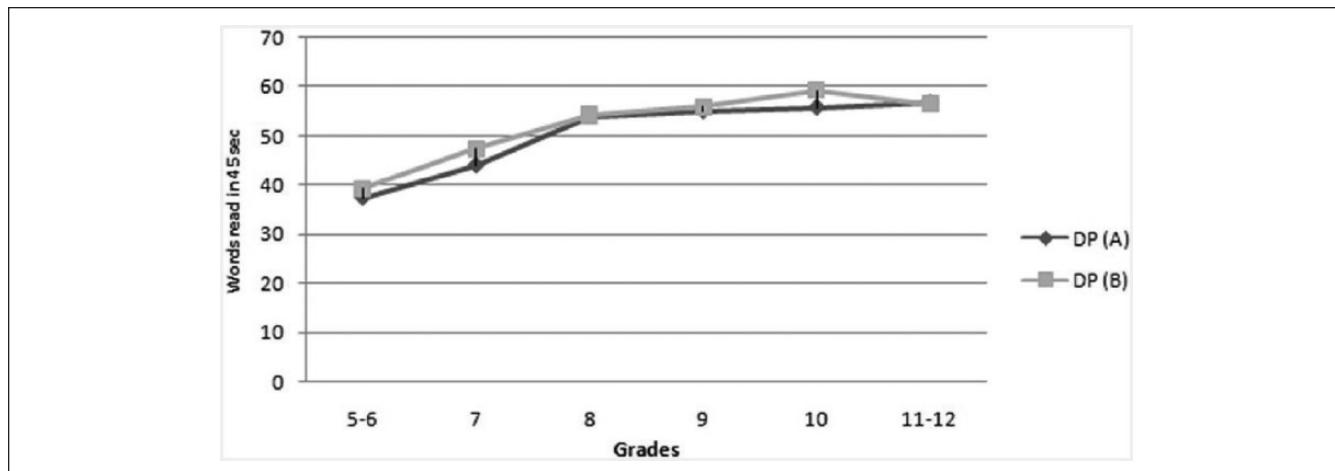


Figure 1. Mean number of sight words (DP) read in 45 s by different grade-level children.

Note. DP = *drishti pada*.

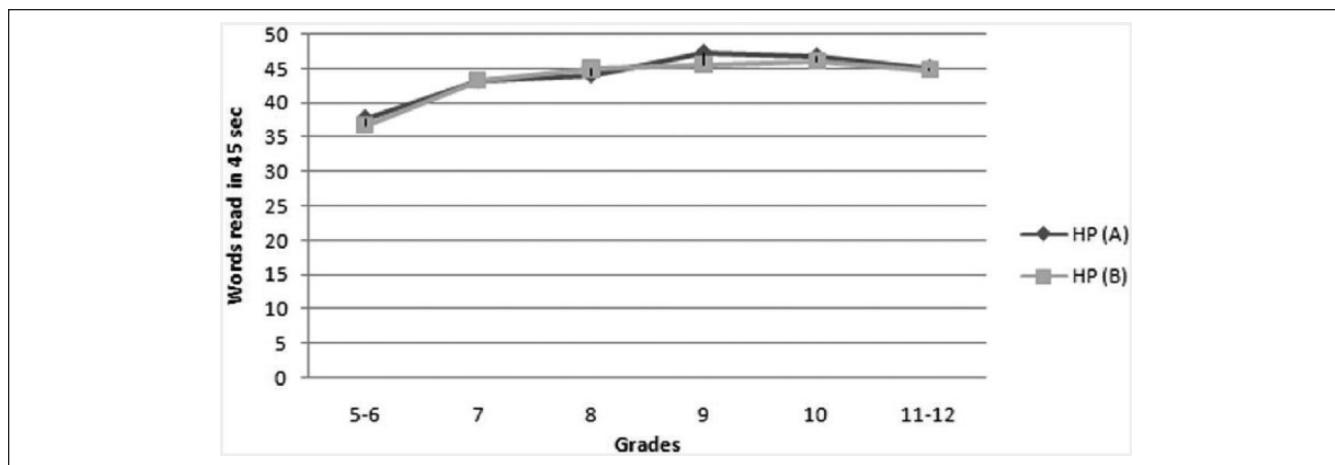


Figure 2. Mean number of pseudo-words (HP) read in 45 s by different grade-level children.

Note. HP = *husi pada*.

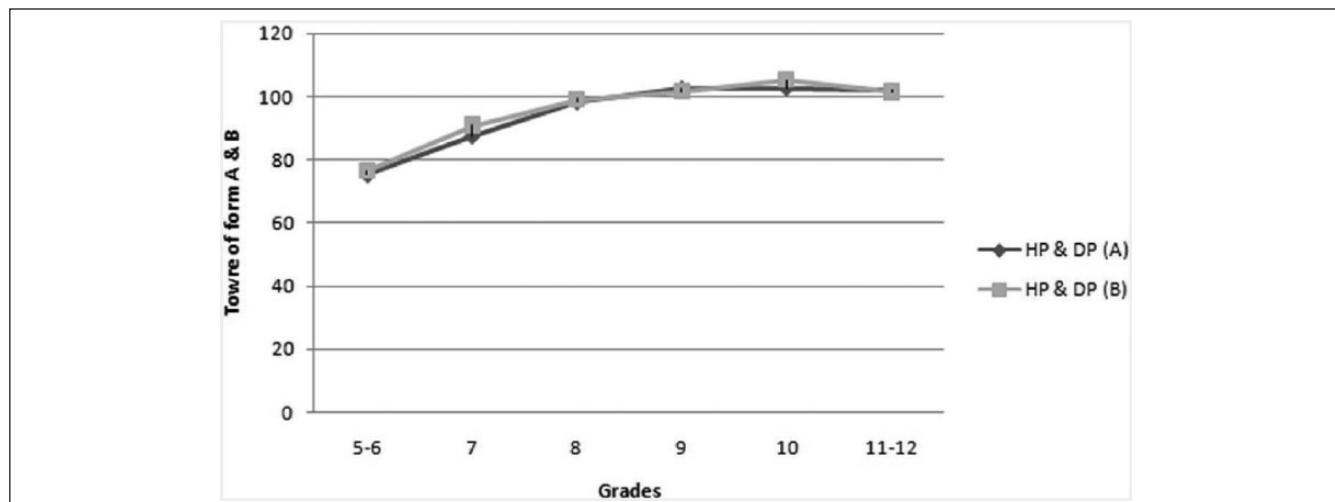


Figure 3. Mean total number of words read by different grade-level children.

Note. HP = *husi pada*; DP = *drishti pada*.

and research purposes. The new measures also exhibited satisfactory criterion validity as the tests successfully differentiated between lower grade-level and higher grade-level students. We do believe that ours is an earnest, albeit small, attempt to address the need for developing valid and reliable measures in languages and orthographies that are less

studied. It is not only beneficial for the population studied but also could be useful in bilingual/trilingual education studies and cross-linguistic comparisons. However, we acknowledge the limitation of the study in having a small sample with a broad age range. Future studies may further validate the measures we have presented here.

Appendix

Kannada pada vaachana pareekshe (Kannada word reading test)

APPENDIX	
ಕನ್ನಡ ಪದ ವಾಚನ ಪರೀಕ್ಷೆ (Kannada Word Reading Test)	
ದೃಷ್ಟಿ ಪದ (Sight Word Reading)	
ತರಬೇತಿ ಪದಗಳು (Practice items)	
ಜನ	jana
ರಾಗ	rāga
ಆಕಾಶ	ākāśa
ಭೂಮಿ	bhūmi
ಸಮೂಹ	samūha
ಬೆಳ್ಳಿ	beḷli
ಮುಖ್ಯಮಾರ್ಪತ್ರಿ	mukhyamārptri

ದೃಷ್ಟಿ ಪದ-Sight Word Reading- A

ಮರ	mara	ಫಾಂಟೆ	gamṭe	ಭಯಂಕರ	bhayaṅkara
ವನ	vana	ವಿಲ್ಲ	ella	ಲುಪವಾಸ	upavāsa
ಉಲು	ūṭa	ಅಷ್ಟು	amma	ಗೌರವಿಸು	gauravisu
ಹಾನ	haṇa	ವಿಲ್ಲಿ	elli	ಅಪಹಾತ	apaghāta
ಆನೆ	āne	ದೊಡ್ಡು	dodḍa	ಗಾಳಿಪಟ	gālipaṭa
ದಿನ	dina	ಸ್ಟ್ರಾ	saṇṇa	ಹಿಂಬಾಲಿಸು	hipbālisu
ಇದು	idu	ಬೆಣ್ಣಿ	beṭṭa	ಬುಬ್ರಸಮಾರಂಭ	subhasamārampba
ಅದು	adu	ಸಾಯಂಕಾಲ	sāyamkāla	ಅಂಗವಿಕಲತೆ	amgavikalate
ಕಾಲು	kālu	ದೇವತೆ	dēvate	ಪ್ರಕೃತಿ	prakṛti
ಗಿಡ	giḍa	ಬೇಸಿಗೆ	bēsige	ಕೊಲ್ಲುವ	kolluva
ನೀರು	nīru	ಭೀಮಾರಿ	chīmāri	ಅಕ್ಕೋಚಸು	ālōcisu
ಗುರು	guru	ಜೀನಹುಳು	jēnuhuļu	ಅಸಂಪೂರ್ಣ	asamikhyāta
ಮಾಲೆ	maṭe	ಸೋಲಿಗರು	sōligaru	ನಿಸ್ಹಾಯಕ	nissahāyaka
ಕೋತಿ	kōti	ದಾರಿಹೋಕರು	dārihōkaru	ಕಂಗೋಳಿಸು	kangoļisu
ಬೇಕು	bēku	ಸೂರ್ಯಾ	sūrya	ಅಕ್ಷಯ್ಯಾ	āścarya
ಹೇಗೆ	hēge	ಹತ್ತಿರ	hattira	ಸ್ವಾತಂತ್ರ್ಯ	svātaṇtrya
ತಾಯಿ	tāyi	ಪುಟ್ಟಿ	puṭṭa	ಪ್ರತಿಳ್ಳೆ	pratijne
ದೇಶ	dēśa	ಸುಮಾನೆ	summane	ದೃಷ್ಟಾಜಾಲಿ	dhairyāśāli
ಮಾಡು	māḍu	ಘ್ರನಿ	dhvani	ಮೊಷ್ಟುಕ್ಕಳು	mommakkalu
ಬಂತು	banṭu	ಜ್ಞಾನ್	jñāna	ಮುಕ್ಯಾಜಾಫ್ಯಾಲು	mukhyāpādhyāya
ಮೇಲೆ	mēle	ರಾಜ್ಯ	rājya	ಕೃತಜ್ಞತೆ	kṛtajnate
ಗಂಡು	gapdu	ಎಷ್ಟು	eṣṭu	ಗ್ರಾಮಪ್ರದಕ್ಷಿಣೆ	grāmapradakṣiṇe
ನಂತರ	naṇṭara	ಎರಡು	eraḍu	ಕರ್ತವ್ಯಾನಿಷ್ಠ	kartavyaniṣṭhe
ಸಂಜೆ	saṇje	ಸ್ಪರ್ಧೆ	sporti	ಸ್ಪರ್ಧಾಜ್ಞ	sparśajnāna

ದೃಷ್ಟಿ ಪದ–Sight Word Reading-B

ಆಗ	āga	ಆಮೇಲೆ	āmēle	ಮಕ್ಕಳು	makkaļu
ಆಟ	āṭa	ನನ್ನ	nanna	ಕತ್ತಲೆ	kattale
ಹಾಗೆ	īga	ಹಳ್ಳಿ	halli	ಬದ್ದರಾಗು	baddarāgu
ಉರು	ūru	ಇಲ್ಲಿ	illi	ಆರೋಗ್ಯ	ārōgya
ಮಗ	maga	ಅಪ್ಪೆ	appa	ಘಾಯುವಿಹಾರ	vāyuvihāra
ನದಿ	nadi	ಕಳ್ಳು	kaṇṇu	ಸಮಾಧಾನ	samādhāna
ಮನೆ	mane	ಬಣ್ಣ	baṇṇa	ಪ್ರಾರ್ಥಿಸು	prārthisu
ತಲೆ	tale	ಬುದ್ಧಿ	buddhi	ವರದಕ್ಕಿಂತಿ	varadakṣiṇe
ಕಾಡು	kāḍu	ಸಂಭವಿಸು	saṁbhavisu	ಮನುಷ್ಯ	manuṣya
ರಾಜ	rāja	ಸೋದರ	sōdara	ವಿಶ್ವವಿದ್ಯಾನಿಲಯ	viśvavidyānilaya
ಹಾಡು	hāḍu	ಚೇತರಿಸು	cētarisu	ರಾಷ್ಟ್ರ	rāṣṭra
ಶಾಲೆ	śāle	ಫೋಂಡ್	ghōṣaṇe	ದೃಷ್ಟಿ	dṛṣya
ನಾವು	nāvu	ಸಂತೋಷ	saṁtōṣa	ಪ್ರಜ್ಞ	prajne
ಮಗು	magu	ಹೆಂಡತಿ	heṇḍati	ರೋಮಾಂಚನ	rōmāṁcana
ನೀನು	nīnu	ಶಬ್ದ	śabda	ಆಕರ್ಷಿಸು	ākarṣisu
ತೋಟ	tōṭa	ಸ್ವಾನ	snāna	ಅಡ್ಡಪಲ್ಕಿ	adḍapallakki
ಬೇಗ	bēga	ಮೂರ್ಕೆ	mōrkha	ಕಾರ್ಯನಿವಹಿಸು	kāryanirvahisu
ದೂರಿ	dōri	ಕಟ್ಟಡ	kaṭṭada	ತೀರ್ಮಾನಿಸು	tīrmānisu
ಎಂದು	emdu	ಬ್ರಿಷಧ	auṣadha	ಸೂರ್ಯೋದಯ	suryōdaya
ಒಂದು	omdu	ಸಂಖಾರ	saṁcāra	ಪ್ರಥಮಚಿಕಿತ್ಸ	prathamacikitse
ಮುಂದೆ	mumde	ಬಲಶಾಲಿ	balaśāli	ಮೃದುತ್ವ	mṛduṭva
ಅನಂದ	ānaṁda	ತರಗತಿ	taragati	ಶಿಕ್ಷಾಪತ್ರಿ	śikṣāpatajne
ಗುಂಪು	guṇpu	ಗೆಳೆಯ	geleya	ಗೃಹಾಲಂಕಾರ	gṛhālaṁkāra
ಗಂಡ	gaṇḍa	ಭಂಗನೆ	chamgane	ಕರ್ತವ್ಯ	kartavya

ಮುಸಿ ಪದ (Pseudoword Reading Test)

ತರಬೇತಿ ಪದಗಳು (Practice items)

ಉಪ	ūpa
ದಿಳ	diḷa
ಜಂತ	śamta
ಮಾಣಿಗ್ಯ	māṇigya
ಚೌಂಗರ್ಯ	caumgarya
ಭಕ್ಷಿಲು	bhakṣilu

ಹಂಸಿ ಪದ-Pseudoword Reading Test-A

ಅಗ	aga	ಪೆರಿಟ	periṭa	ಧುಗ್ನ	dhugna
ಅಡ	aṭa	ಸಂಡಿ	simḍi	ಬೊಕ್ಕೆ	botme
ಹಗ	haga	ಪೀನಿ	pīni	ಗದ್ಧುಣಿ	gadbhūṇi
ವಮ	vama	ಸುಟ್ಟಿ	sutṭi	ಕೃತಾನೆ	kṛṭāne
ಕಾಪ	ēpa	ಜೋತು	jōtu	ಸ್ವಾಶನ	svāśana
ಜನ	ḍana	ಬೋಗು	caugu	ಹಿಸ್ಕಾರ	hiskāra
ಟಲ	ṭala	ಮೆಸೀಟು	mesiṭu	ಬೆಕ್ಸ್ಟೆ	bekṣṭi
ವಿಜ	khaca	ಹೆಂಬು	hempu	ನಿಚೆಷ್ಟು	nicēṣṭha
ಕಂ	hama	ಮಂಗಿ	mampgi	ಬ್ರಿನರ್ತಿ	brinarti
ದೀತಧ	autadha	ಗುಡ್ಡಿ	guḍḍi	ನಿವಾಂಜ	nirvāpa
ಬಫ	bapha	ಸೆಳ್ಳಿ	sellā	ಶಕ್ತಾದಿ	śaktādi
ಕಂದಿ	īdi	ಪವ್ವ	pavva	ಯಾಶ್ವೇತ	yaślēpa
ಬಾವೆ	bāve	ಮುಬ್ಬಿ	mubbi	ನೆಂಪತ್ತ	nēspatra
ದಾಯಿ	dāyi	ಭಂಡೆ	bhamme	ಸ್ವಾಮಂತ್ರ್ಯ	svāmaṇtrya
ಹಿರಮ	hirama	ಸ್ಕಾಳ	skaṭa	ಸಾಂಕೃತಿ	saṅkṛti
ತಿನೆ	tine	ತಿಸ್ತು	triska	ಹಮ್ಯಾಕಿ	hamyāki
ಕೌಡೆ	kaude	ಜ್ಞಾರ	jñāra	ದಿಕ್ಷಾಳ	dikṣāla
ದೇಸು	dēsu	ಬ್ಲುತ್	bluṭha	ಬ್ಲೆಕ್ಕೆಮು	beklēma
ನೀಪ	nīpa	ಕೇಲ್ಲಾ	kēlla	ಎಸ್ಟ್ರಾ	esmṛti
ಪಾಷು	pāṣu	ಗುಷ್ಟು	gupna	ಉತ್ಪಾದ್ಯ	utkṛmya
ದುಕೆ	duṣe	ಗಟ್ಟಿ	gabda		

ಹಂಸಿ ಪದ-Pseudoword Reading Test-B

ಇಬ	iba	ಮಂಟ	maṭa	ಸ್ವಾರ್ತ	stāle
ಇಕ	ēka	ಲೋಟ	lōṭi	ಪ್ಲಿಂಬ	plimbha
ಲುಕ	uka	ಜಂಬ	caṁba	ನಿಂಸ್	nīsma
ಎಬ	eba	ವೀಫ	vīpha	ಸ್ವಾರ	smaṇara
ಒಮ	oma	ಗೊಂಬ	gōku	ಸ್ವಾಸಿ	svāsami
ಒದ	ṭada	ಮಾರಳ	māraṭa	ಡಾಬ್‌ಮಾರೆ	dābmare
ಹಗ	paga	ಲಂಡಂ	edama	ರಾಷ್ಟ್ರಂ	rāṣṭraya
ಪವ	pava	ರಂಣಿ	ruṇake	ಬೆಂಜ್	bempla
ನಸ	nasa	ಮುಂಬಿ	muḍḍi	ನುಲ್ಕಾಂ	nulkaṇa
ಮಿಬ	miba	ಮೊಂಬಿ	bokku	ಪೆಗ್ವಾಟ	pegvāṭa
ರಾಳ	raṭa	ಮೆಂಬಿ	peṭṭa	ಭಾಕ್ತಾ	bhaktāca
ಹಾಚ	haca	ಲಂಬಿ	luṭṭi	ತಾಂಡೆ	taślepa
ಶಮ	śuma	ದಿಸಿ	diṣi	ಫೆಂಡೆಸ	plenḍesa
ಮೈಪ	maipa	ದೊಗ್ಗ	rogga	ಸ್ವಿಂತ್ರಕ	sliṇṭrka
ಬಿಸೆ	bise	ಹಂಸ	kīssa	ಹೊಬ್ಬಿ	hobsama
ವಾಂಜ	vāmpa	ಜ್ಞಾಳ	jnāla	ಸಾಂಪ್ರದ	sāpnaja
ಪರ್ತೆ	ṭapai	ಫ್ರೆಂಟಿ	prēṭa	ಸುನ್ಯಾಲ	sunyāla
ದೋಲಿ	döli	ಗ್ಲಾಂಪ	glāmpa	ಫ್ರಾಲ	smṛjala
ಬೆಕ್ಹ	bēkha	ತ್ರಾಬೆ	trābe	ಸಿಕ್ಕಾರ	sikṣāra
ಶಾಮ	śāma	ಜ್ಞಾಳ	plāka	ದುಷ್ಕಾಳ	duṣkṛāla
ಶೌರಿ	śauri	ಪೆಕ್ಟ	pekta		

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