

SPELLING ERRORS (SE) AMONG STUDENTS WITH VISUAL IMPAIRMENT (SWVI) AND STUDENTS WITH NORMAL VISION (SWNV)

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Abstract

This study aimed to indentify the level of spelling errors (SE) among students with visual impairment (SWVI) and students with normal vision (SWNV); to compare the spelling errors between SWVI and SWNV, and to study the differences in spelling errors among SWVI based on type of disability (blindness and low vision) and medium of instruction (English &Tamil). Survey research design was employed in this study. Following a purposive sampling technique of convenience type (chunk type), 93 SWVI and SWNV studying in different levels of school education were selected from 12 inclusive schools of Coimbatore District as sample for the present study. Word Inventory Test was used for collecting the required data. Face and content validity was obtained for the tools while Test-retest reliability method was used to test the reliability of spelling test. Quantitative data analysis using Mean, Standard Deviation, Mann-Whitney U test was done. The major findings revealed that SWVI across the four levels of school education significantly committed 62.46% SE, and at .05 level of confidence, which is significantly more than the SE committed by SWNV which was 25.79%. SWVI who are studying in English medium schools significantly committed less SE comparing to SWVI who are studying in Tamil medium schools, but both of the groups significantly committed SE. It can be summarized that SWVI commit significant spelling errors. And it is recommended that spelling skills should not be ignored among them, and educators should help them adopt effective study strategies and habits that compensate their visual deficiencies and develop the same.

Keywords: Spelling Errors, Spelling Mistakes, Students with Visual Impairment.

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Introduction

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A good education is the key to success, and every person deserves an equal opportunity to receive a good education based on inclusive education principles. Inherent to being educated is being literate. Literacy correlates to academic success, higher income and employment. Overall, literacy improves student success, confidence and independence. Furthermore, the ability to read and write means access to information that, in turn, leads to proper

communication, understanding and knowledge (Jernigan Institute, 2009, p.2). Therefore, independent writing is very much important to everyone including students with visual impairment (SWVI). Nevertheless, they still have more difficulties in spelling than their sighted peers due to many factors including lack of opportunities for language skills development, lack of fairness and the negative practices in the inclusive schools due to the educators' misconception about inclusive education. That made SWVI less exposed to written words, and a variety of opportunities for language development was affected. In inclusive schools, a huge number of blind children are not learning to read and write because they are not being taught Braille or given access to it, which means, there is a Braille literacy crisis emerged beside inclusive education (Jernigan Institute, 2009, p.2). Therefore, SWVI should be empowered with proper education that help them read and write as well as make use of variety of assistive technology for effective communication and manipulation which is very much needed in the study and career journeys of SWVI.

Rationale of the Study

Spelling is considered as one of the biggest challenges for SWVI when they come to study a foreign language. They continue to have considerable difficulties with spelling after the age of eight. Because they do not perceive the shape of the letter correctly when looking at a word, these children, therefore, will find it difficult to see the visual pattern of a word, and will experience even greater difficulty in trying to remember. Additionally, because of the heavy workload and to save time, some SWVI at upper primary or secondary levels practice study habits which have negative effects on their spelling ability which may be reflected on their academic success, independence, future career and employment. The importance and ignorance of this area impelled the researcher to unearth the spelling errors among SWVI in order to help them by highlighting this problem and suggesting some solutions that enable them to be successful learners and effective communicators meeting the demands of their career.

Operational Definitions

• Spelling Errors

In this study, spelling errors refer to the regular errors made by students when they write or spell a word.

• Students with Visual Impairment (SWVI)

In current study, SWVI refer to the students having blindness or low vision who are studying at various levels of school education such as primary, upper primary, secondary and higher secondary levels at the inclusive schools of Coimbatore District.

Research Questions

- 1. What is the level of spelling errors among students with visual impairment (SWVI)?
- 2. What is the level of spelling errors among students with normal vision (SWNV)?
- 3. Is there any significant difference between SWVI and SWNV in spelling errors level?
- 4. What is the level of spelling errors in English language among SWVI studying in Tamil medium schools?
- 5. What is the level of spelling errors among SWVI studying in English medium schools?
- 6. Is there any significant difference between SWVI in the level of spelling errors based on the type of disability (blindness and low vision)?
- 7. Is there any significant difference between SWVI in the level of spelling errors based on medium of instruction (Tamil medium and English mediums)?

Literature review

Seven studies explored the most common types of spelling errors among their samples such as Argyropoulos and Martos (2006), Lennox and Siegel (2008), Arndt and Foorman (2010), Arter and Masom (2015), Subhi and Yasin (2015), Eskirovic et al. (2017) and Deacon (2017). The common types of SE were phonological errors, orthographic, orthographic image, transposition, spelling related to writing composition, inability to write dictated words, grammatical errors, errors in letters and syllables, adding, leaving out, separating and concatenating words, vowel than consonant letters and graphic choice errors.

Seven studies explored the causes or the factors contributing to SE among their samples such as Douglasa et al. (2011), Dumessa and Miressa (2011), Michael (2013), Johnson (2013), Subhi and Yasin (2015), Deacon (2017) and Ranganathan (2014). Accessibility of curriculum, lack of access skills among SWVI, lack of uniform and consistent spelling rules, lack of reading and writing activities, lack of concentration, lack of phonological and spelling skills and practice, the effectiveness of mother tongue and lack of multi sensory experiences were considered the most common factors contributing to SE among students.

Ten studies suggested some strategies to overcome the spelling difficulties among students such as Alexandersson et al. (n. d), Lahav et al. (2000), Argyropoulos and Martos (2006), Douglasa et al. (2011), Alexandersson et al. (2011), Alexandre (2011), Arvaniti et al. (2009),

Dumessa and Miressa (2011), Johnson (2013) and Ranganathan (2014). Some of them suggested the provision of auditory feedback to SWVI when learning spelling, using remedial adaptive computer tool to decreasing the spelling mistakes among SWLV, teaching spelling rules, providing tactile support for SWBL, increasing the accessibility of the curriculum, teaching children 'accessing skills' (including the use of technology), practicing typing, spelling and reading activities by students, giving attention to students study habits, motivate students to learn spelling, and following multisensory approach in providing sufficient sensory experiences for SWVI when learning language.

Five studies compared SE among their samples such as Clark and Stoner (2008), Barker et al. (2017), Eskirovic et al. (2017), Childs et al. (1983), Invernizzi and Worthy (1990), Lennox and Siegel (2008), Deacon (2017) and revealed the following:

- ✓ Absence of significant differences in spelling ability between Braille readers and a normative sample.
- ✓ SWVI initial performance in reading achievement in 3rd grade is lower than the national norms.
- ✓ SWVI mostly make mistakes in form of inability to write dictated words, grammatical errors, errors in letters and syllables including relocation, adding, leaving out, separating and concatenating words when compared to SWNV.
- \checkmark Gender affects the spelling errors in some studies such as in Childs et al. (1983).
- \checkmark IQ and grade level were not having any effect on type of spelling error,
- \checkmark There are significant differences in the spelling strategies among learners.
- ✓ Learners of English as a foreign language make significantly more SE comparing to other learners who learn English as a second language.

Four studies explained the level of spelling accuracy among their samples and shown that:

- ✓ 97.1% of words were correctly spelled in Elliott and Johnson's study (2008).
- ✓ SWVI of elementary school made more phonological-type errors than did the high school and Lyceum as revealed by Argyropoulos and Martos (2006).
- ✓ Blind persons perform a significant number of etymology type errors in Braille spelling as revealed by Argyropoulos and Papadimitriou (2017).

From literature reviewed, it has been found that:

• Only two studies were conducted on SWVI in India and both of them had different objectives comparing to the present study.

- Most of the studies depended on the previous year achievement, rather than present study.
- Studies conducted on SWVI revealed that they are facing spelling difficulties due to number of factors related to vision loss, nature of English language, curriculum adaptation etc. but some studies found out new ways and technology that help SWVI overcome these difficulties which should be utilized in the inclusive schools.
- It is also noted that there is a time gap between the old and the present study.
- There is huge difference between the tools used in previous studies and present study which make the current study more significant.
- Education has a dynamic nature due to rapid development in Assistive Technology (AT) and emergence of new philosophies such as inclusive education and universal design of learning (UDL) that affected the educational practices and achievement which need to be continuously evaluated.

Research Design

Survey research design was employed in this study.

Population of the Study

The target population of this study includes SWVI and SWNV studying at various levels of school educational system including primary, upper primary, secondary and higher secondary at the inclusive schools of Coimbatore District, Tamil Nadu State.

Sample of the Study

As population is covered, a purposive sampling technique of convenience type (chunk type) was followed to select 93 students studying in different levels of school education from 12 inclusive schools as sample for the present study including two groups.

Group (1) included 41 SWVI studying in the inclusive schools of Coimbatore District while group (2) included 52 SWNV studying in the same inclusive schools where group one was selected. The following table provides the details of the sample.

Groups	School level	Primary 4-5	Upper Primary 6-8	Secondary 9-10	Higher Secondary 11-12	Total
Group	English	2	-	2	5	41
1 SWVI	Tamil	4	9	7	12	
Group	English	2	-	3	11	52
2 SWNV	Tamil	6	12	10	8	

 Table 1: Sample of the Study

	Total	14	21	22	36	93				
Tool	Tools of the Studen									

Tools of the Study:

Spelling Word Inventory Test developed from Schonell Spelling Test was used to test the level of spelling errors among SWVI and SWNV. After analyzing the test, the required adaptations were made. It was divided into eight levels which are suitable for the grades IV to XII. After that, the content validity was checked. The vocabulary that is not related to English subject syllabus were replaced with other equivalent words. Additionally, 20 content vocabularies were also replaced with other 20 vocabularies that also have the same difficulty level and value. Finally, sentences were made for every word as examples to facilitate the students' recognition ability and understanding for the given words while testing. Audio records with British accent for the words and sentences were made available with simple, suitable and adjustable reading speed pace which are also suitable for the particular grade.

Reliability of the Tool

Test retest reliability method was followed, and the correlation between both tests was computed using *Pearson's Product Moment Test*. The correlation between the tests was 0.90 which confirms the consistency of the test.

Data Collection Procedure

The data were collected directly by the researcher through conducting dictation tests for SWVI and SWNV after obtaining the permissions of Chief Educational Officer of the District, Head of the schools, guardians of the sample as well as informed consents from the sample themselves.

Data Analysis

Researcher used quantitative data analysis to answer the research questions as following:

- ✓ Mean and standard deviation were used to answer questions 1, 2, 4 and 5 and to find out the level of spelling errors among students.
- ✓ Mann-Whitney U test was used to answer question 3, 6, 7 and to find out the differences in the level of spelling errors based on the determined variables.

Findings

I. Analysis and Interpretation of Research Question 1

Q1. What is the level of spelling errors among SWVI?

To answer this question, spelling performance tests were applied on 41 SWVI studying in primary, upper primary, secondary and higher secondary levels. After that, the data were analyzed using Mean (M) and Standard Deviation (SD) as presented under:

Table 2: The Level of SE among SWVI

Study level	Ν	SE. Mean	Rank	Std. Deviation
Primary	6	68.67	1	40.800
Upper primary	9	65.44	2	10.357
Secondary	9	58.11	4	24.862
Higher secondary	17	61	3	29.400
Total	41	62.46		26.68

From the previous table, it is noted that SWVI of every level of school education committed significant spelling errors. The mean value for their total spelling performance (SP) is 37.54 which is considered as very poor. The mean values for the spelling errors of primary, upper Primary, secondary and higher secondary levels are 68.67, 65.44, 58.11 and 61 respectively. There is a large variation in the responses of the sample as revealed from SD values specially students of primary and higher secondary schools. The SD values for the both groups are 40.80 and 29.40 respectively.

The poor performance can be interpreted to the discrimination practiced against SWVI in the inclusive schools which was caused by the lack of awareness among general educators about the importance of spelling for SWVI. It is proved that general teachers exclude SWVI from homework. On the other hand, SWVI have visual deficiencies that require adaptation in curriculum in which the inclusive schools are not able to make.

Moreover, SWVI do not practice sufficient positive study habits that can develop their spelling abilities. So, it could be inferred that there is lack of training in spelling and related activities such as writing and reading.

II. Analysis and Interpretation of Research Question 2

Q2 What is the level of spelling errors among students with normal vision (SWNV)?

After conducting spelling test on 52 SWNV studying in four levels of school education, Mean and Standard Deviation were obtained from the scores and the major findings are presented in the following table:

Educational Level	Ν	SE. Mean	Rank	SD
Primary	8	36.75	4	26.71
Upper primary	12	31.5	3	19.32
Secondary	13	27.85	2	15.30
Higher secondary	19	16.16	1	14.18
Total	52	25.79		19.15

Table 3: The Level of SE among SWNV

As seen above, the level of spelling errors among SWNV is varied from one level to another. The total spelling errors committed by them is 25.79% while the total performance obtained by all groups is 74.21 which is considered as good. The results revealed that the error level of SWNV is decreased as they move from lower classes to higher classes.

These results can be interpreted to the positive study habits and skills practiced by SWNV; involving them in the related activities; and teaching them the required spelling skills.

III. Analysis and Interpretation of Research Question 3

Q3. Is there any significant difference between SWVI and SWNV in spelling errors level?

To answer this question, the responses of 41 SWVI and 52 SWNV studying in the same educational settings (inclusive schools) on spelling tests were analyzed using non parametric statistics as under:

Gro ups	N	Kolmogo rov- Smirnova Sig.	Shapiro -Wilk Sig.	Mea n Ran k	Sum of Rank s	Mann- Whitne y U	U Asymp. Sig. (2-tailed)
SW VI	41	-	.000	65.11	2669. 50	323.500	.000
SW NV	52	.000	-	32.72	1701. 50		
Tot al	93						

Table 4: The Difference in SE between SWVI and SWNV

It is noted from the above table that the samples variance is significant and the data significantly deviates from a normal distribution; because the Asymptotic Significant (Sig.) value of the Shapiro-Wilk and Kolmogorov-Smirnov tests are less than 0.05. Therefore, Mann-Whitney U test of non parametric tests was used.

It is noted from the above table that Asymptotic significant (2-tailed) of the Mann-Whitney U test is .000 which is less than .05. That means, there is significant difference between the mean rank values of SWVI and SWNV. And SWVI group committed significantly more spelling errors than SWNV as revealed from the mean rank values of the both groups.

That can be interpreted to the insufficient visual stimulations and/or other compensatory nonvisual stimulations provided to SWVI when teaching English language in inclusive settings. It is also due to the frail teaching strategies and absence of curriculum adaptations in the inclusive schools. Moreover, SWVI significantly do not practice most of the study habits that help them develop the spelling skills while the sufficient opportunities are given to the SWNV to develop their spelling skills.

IV. Analysis and Interpretation of Research Question 4

Q4. What is the level of spelling errors in English language among SWVI studying in Tamil medium schools?

Mean (M) and Standard Deviation (SD) were used to answer this questions, and the following findings are revealed:

Medium Instruction	of	N	SP. Mean (M)	SE. Mean (M)	Standard Deviation (SD)
Tamil Medium		32	29.66	70.34	18.866

 Table 5: The Level of SE among SWVI Studying in Tamil Medium Schools

As seen above, the mean value of spelling performance of Tamil medium students is 29.66 which reveals that SWVI performed 29.66% in the spelling test and committed 70.34% spelling errors which was considered as very much significant. The reason may be attributed to the negligence of English language in Tamil Medium Schools. SWVI in such schools prefer to learn in Tamil (State language) rather than English. That led to less exposure to English language comparing to SWVI who are studying in English Medium Schools.

V. Analysis and Interpretation of Research Question 5

Q5. What is the level of spelling errors among SWVI studying in English medium schools? To answer this question, the related data was analyzed using Mean (M) and Standard Deviation (SD) and the major findings are presented under:

 Table 6: The Level of SE among SWVI Studying in English Medium Schools

Medium of Instruction	of	N	SP. Mean (M)	SE. Mean (M)	Standard Deviation (SD)
Tamil Medium		9	65.56	34.44	32.381

From the above table, it is seen that the mean value and the percentage of performance of students on the conducted spelling tests is 65.56. That means, SWVI who are studying in English medium schools performed 65.56% in the spelling tests and significantly committed 34.44% spelling errors. This may be due to the discrimination practiced against SWVI in the inclusive schools. The less opportunities given to the SWVI to engage in activities such as writing and reading and lack of awareness among general educators about curriculum adaptation skills may be attributed as the reasons. Also, SWVI tend to ignore most of the positive study habits that are related directly to the learning of spelling.

VI. Analysis and Interpretation of Research Question 6

Q6. Is there any significant difference between SWVI in the level of spelling errors based on the type of disability (blindness and low vision)?

To answer this question, Mann-Whitney U test of the non parametric statistics was used as following:

Table 7: The Differences between SWBL and SWLV in Spelling Errors Level

Type of Disability	f N	Shapiro- Wilk Sig.	Mean Rank	Sum of Ranks	Mann- Whitney U	Asymp. Sig. (2- tailed)
SWBL	27	.002	23.04	622	134	0.130
SWLV	14	.033	17.02	239		

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Total	41			

From the above table, it is understood that the data significantly deviates from normal distribution; because the Sig. of Shapiro-Wilk Test is less than .05. So, Mann-Whitney U test was used to analyse the data.

The asymptotic significant (2-tailed) of Mann-Whitney U test is 0.130 which is greater than .05. Therefore, there is no significant difference between SWBL and SWLV groups in the level of spelling errors. The mean rank value of SWBL group is 23.04 while the mean rank value of SWLV group is 17.02. The difference between both values is very less. That means, both groups have committed significant spelling errors and performed poorly in the conducted spelling tests. That can be interpreted to the similar situations that SWVI study under. They are affected by the same practices/factors as mentioned previously.

VII. Analysis and Interpretation of Research Question 7

Q.7. Is there any significant difference between SWVI in the level of spelling errors based on medium of instruction (Tamil medium and English medium)?

To answer this question, the data under medium of instruction variable was analyzed using Mann-Whitney U test as under:

Table 8: The difference in Spelling Errors between SWVI based on Medium ofInstruction (Tamil & English)

Medium of Instruction	Ν	Shapiro-Wilk test (Sig.)	Mean Rank	Sum of Ranks	Mann- Whitney U	Asymp. Sig. (2-tailed)
English Medium	9	.064	11.22	101.00	56.00	0.006
Tamil Medium	32	.009	23.75	760.00		
Total	41					

Above table revealed that the data deviate from normal distribution as the asymptotic significant for Shapiro-Wilk test which is less than .05 with regard to Tamil medium.

It is also noted that the asymptotic significant (2-tailed) of Mann-Whitney U test is .006 which is less than .05 which denotes that there is a significant difference between the groups. SWVI of Tamil medium schools conduct more spelling errors than SWVI of English medium schools. The mean rank value of their SE is 23.75 while it is 11.22 with regard to English medium.

This result can be interpreted to the negligence of English language in Tamil Medium Schools. SWVI in such schools prefer to learn/through Tamil language rather than English. This made them less exposed to English language than SWVI who are studying in English Medium Schools.

Recommendations

- The techniques and skills to learn spelling should be taught to SWVI across all levels of school education.
- Proper teaching and learning environment including proper lighting and undistracted environment should be guaranteed for SWVI.
- Regular dictation tests should be conducted to SWVI at schools.
- Schools should ensure the use of effective study habits and should involve SWVI in the related activities.
- Proper feedback should be provided to SWVI when practicing language skills especially when writing.
- General/ special educators who deal with SWVI should update their knowledge by attending Continuous Rehabilitation Education (CRE) programs and empower themselves with required skills.
- English language curriculum should be made accessible for SWVI through ensuring the required adaptation.
- Related resources and technology should be made available for SWVI at their schools and homes.

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