

Asian Journal of Education and Social Studies

Volume 39, Issue 2, Page 1-24, 2023; Article no.AJESS.94627 ISSN: 2581-6268

Spelling Adventure Unveiled: Charting the English Language Journey of Grade Three Students in a Bhutanese School

Sonam Wangmo^{a†}, Dhanapati Sharma^{b#*} and Gembo Tshering^{c#}

^a Gedu Higher Secondary School, Bhutan.
^b Gedu College of Business Studies, Bhutan.
^c Paro College of Education, Bhutan.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJESS/2023/v39i2840

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/94627

Original Research Article

Received: 22/10/2022 Accepted: 25/12/2022 Published: 04/02/2023

ABSTRACT

The aim of this study is to investigate the types of spelling errors made by the Grade three students in English in Gedu Higher Secondary School. The study also tells the major sources underpinning such errors in contextual writing composition tasks. The data were collected from written samples of 18 students (male and female) of grade three students of Gedu HSS. The students were given 45 minutes to write on one of five different short essay topics. The spelling errors found in the writing samples were analyzed and classified into four categories of errors based on Cook's classification: omission, substitution, insertion, and transposition. An analysis of errors showed that errors of substitution were the highest proportion of errors. The most common spelling errors of the students were the wrong use of vowels and punctuation. Furthermore, the problem of spelling errors and the causes of these spelling errors results were also discussed.

Asian J. Educ. Soc. Stud., vol. 39, no. 2, pp. 1-24, 2023

[#] Lecturer;

[†] Teacher;

^{*}Corresponding author: Email: samaadhin82 @gmail.com;

Keywords: Spelling; error; omission; substitution; insertion; and transposition.

1. INTRODUCTION

According to Brown [1] states that "acquiring a second language is a challenging process that requires a lot of effort. Like any other learners of English, Bhutanese learners are expected to face many difficulties while learning English. In the process of learning English, students are going to make various types of errors such as linguistic errors, semantic, syntactic, and phonological". These language errors are considered a natural byproduct of learning Corder [2]. Hence, these language errors provide insight to the educators to know each individual student's needs and in turn, employ teaching methods and remedial plans accordingly.

One of the most common errors that Bhutanese students' written work is spelling errors. Many students keep making the same spelling errors, which causes a major problem through all their educational stages. This poor spelling problem students handicaps in many ways. Smedley [3] considers that spelling errors lose the clarity of the written message, and thus get disconnected the communication between the writer and the reader. Considering the poor spelling impact on writing, it is understood that there is a close relationship between spelling and reading. Some researchers argue that poor spellers a usually poor readers [4-6]. Those researchers believe that the poor spellers are poor reader too and poor readers are poor spellers.

Therefore, addressing spelling errors correctly should be the main part of teaching English language. Poor spelling affects English sentence structure and causes the lots of mispronunciation of words. Although the spelling is important in producing meaningful written text, the English curriculum guide for teachers of Bhutan language programs is mostly focus on teaching listening, speaking, reading, writing, vocabulary building, and grammar and a few spelling instructions were given. We, as an educators and researchers, claims that spelling in Bhutanese context has not been given the importance it should be.

1.1 Problem of Study

My grade three students' essays are rife with several spelling errors, many of which have become embarrassing to both the teachers and the learners. As school teacher, with an average teaching experience of seventeen years. I have experienced that spelling errors are a common problem amongst the Bhutanese students. Writing with correct spelling is one of the effective forms of communication. Assessing students written works through their exams and daily home works, it was found out that the spelling errors was the most pertinent issue identified in their writing pattern. The major source of students' failure in English is the result of students' inability to express themselves in flawless writing. The activities like letter writing, creative writings, dictation and spelling test were the common pattern of writing activities given to students. The English curriculum of Bhutan for grade three prescribed to focus more on short essay. When students were made to write short essays, students often ask spellings to teacher instead of writing themselves. Teacher literally ends up telling all the spellings which is tiresome. That's why teacher spend considerable time in correcting students spelling errors in their writing assignment. The most common errors found in their descriptive essays are: Errors on Omissions (For example, for the word 'butter', 't' is omitted ('buter') resulting in error of spelling). Errors on addition (For example, on addition, for the word 'reply', some students add the 'a' ('replay') resulting in error of spelling). Errors on substitution (for substitution, when a child writes hurt, they write hard). Errors on syllables breaking (two syllables fo/rest as forst and three syllables do/mes/tic as domst.). Errors on three/four graphemes (two letter graphemes: I ea f. The sound/ee/ is represented by the letters 'ea'.) and Errors on homophonic (for the word for they write as four and vice versa).

For instance, if the student writes about a cow for about eight sentences the spelling errors of 35 out of 50 words including all the abovementioned spelling errors are common in their writing.

According to the anecdotal evidences from my teacher colleagues they share the same concern on students making several spelling errors in their writing. It seems there is no specific and deliberate effort on part of teachers and even researchers to address this problem. To the best of the researchers' knowledge, there are hardly any studies done in this area. Students often encounter spelling problem while writing English words and there seem to be little or no effort at helping them overcome this problem. Although it is essential for the students to write any form of write ups in grade three with correct spelling is important specially to give correct meaning of the word written but in recent new normal curriculum for grade three English as well the old curriculum none of them mentioned on importance of spelling. How to teach spelling. Except a few words segmentation and syllable breaking were mentioned and single letter to single sound (SSP packs for pre-primary and grade one is reflected).

Moreover, based on my experience and some anecdotal shared by my teacher colleague mostly we follow the repeat write same words several times so they remember. Spell the word out loud. Keep words on display. Teacher explain the meaning and students tell the word. However, with these strategies students are not able to write correct spelling especially in two and three syllables' words. Besides, In English writing pattern, we come across lot of spelling errors among Bhutanese students. Moreover, the grade three English curriculum of Bhutan demands that a child should be able to write simple descriptive essay correctly without any punctuations, sentence structures and spelling errors. However, majority of the students make lots of spelling errors while writing. To the best of the researchers knowledge, there is no research conducted in the Bhutanese context, anecdotal evidence indicates that writing in general and spelling errors in particular are a common problem amongst Bhutanese students.

Therefore, I am very much concerned that the spelling error trends may keep on rise if not given the right intervention. It certainly bothered me and took this research to looked for the reasons of students making lots of spelling errors while writing. To find out the problem, I took one section of grade three English. I aimed to help the whole class as a key participant. Hence, I would carry out some findings and literature review and employ some strategies to improve spelling errors in their written work of the 3rd graders.

1.2 Research Questions

The following research questions were raised to guide the study.

- (1) What are the most frequent spelling errors in students' writing?
- (2) What strategies did students use to correct spelling errors?

1.3 Research Objectives

Keeping in mind to above research questions, following are the two objectives of this study.

- 1. To investigate the most common spelling errors that grade three students in Gedu HSS made in their writing.
- 2. To find out the reasons of spelling errors that Grade three students of Gedu HSS made in their writing.

2. LITERATURE REVIEW

According to [7-9], opines that poor spelling can be detrimental to the overall quality of writing which can lead to miscommunication. Therefore, the communication skill through writing mainly emphasized on understanding their spelling proficiency because spelling plays a crucial role in students writing. It can help them to improve their writing and the choice of words they use. It can make reading more fun too when they spot the links between letters and sounds. Though spelling is a difficult skill to learn but it is very important. Even grown-ups struggle with spelling words. As far as possible to try to use a correct spelling is important for effective communication because a misspelt word is likely to convey a wrong message [8].

However, it is not an easy task for those English as a second language learners to writers to use a correct form of grammar and spellings. It is obvious to make errors not only in the use of language but also in spelling. Corder [2] defines "errors as systematic and ever-occurring, and mistakes as being unsystematic, ever-occurring, and irregular although distinguishing the two sets in actual practice is not so straightforward or easy. This is because some words look very differently written down to the way they sound when we say them. They should maintain consistency in practicing the spelling while writing. As children head into upper elementary grades, spelling is essential element in expressing their ability in flawless writing. Those students who has spelling problem will have trouble meeting the writing standard of their grade level. Writing with correct spelling is one of the effective forms of communication. If this issue is not addressed at the earliest, it can lead to poor writing skill and further deteriorate the standard of English".

This research aims to find out the strategies that are precise in teaching English spellings in grade three. The approach of this study is to firstly identify the phonemic awareness to address the spelling errors based on existing research. It is essential to understand the phonemic awareness based on spelling approach by analyzing words based on syllable, rhymes, and phonemes [10] (Bourne &Whiting.2004). To improve spelling, it is important to teach students grapheme and phonemic pattern in spelling in order to know the word parts such as syllables, rhymes, and phonemes will enable students to decode sounds in each word. Besides, students will learn how to associate those sounds with correct letter. This was supplemented with an in-depth analysis of good reading and language teaching practices from available articles of effective teaching phonemic awareness. Based on our experiences, the students who read more has the ability to write correct spellings in their writing. Reading and spelling are two important aspects of writing. In order to read, you need to decode (sound out) words. In order to spell, you need to encode words [11] (Terry, B. 2019) opines that decoding is pronouncing the written word correctly and encoding is using letter sound knowledge to write. Reading and spelling is interrelated. If the students are aware of encoding and decoding, they improve reading skills by working with sound/symbol relationship, and improve their spelling skills too. Thus, writing skills improves.

Johnson, M. 2013 [12] states that if students have a higher knowledge of spelling, they are able to make more sense of the words that they are reading; therefore, it is easier for them to remember what is being read. It is rightly quoted that if the student read as many books as possible; they come across lots of words which eventually enhance their spelling of the words. The more they read, the more they remember the word, later helps in writing the correct spelling of the words.

phonemic According to Cunningham [13] awareness is described as the ability to manipulate the word into independence sound in English language. Phonemic awareness helps to understand the units of sound which plays crucial role in students learning words, which ultimately helps in learning correct spelling. Phonemic awareness provides students with clear concept of word manipulation. If a child must spell the words correctly the word must be pronounced in the correct way. Therefore, pronunciation plays an important role in writing the spellings of words correctly. Graziano, R. [14] confirms that to get

correct spelling, clear pronunciation plays greater role. Therefore, the students and teachers should not be influenced by the native speaker as native speaker greatly influences pronunciation, which ultimately leads to poor spelling. Rhyming is important to spelling because it can help students understand that words share common sounds and common letter sequence. For instance, if a child can spell, they can spell strings of rhyming words such as rat, bat, mat and etc. [15]. Our experience as a teacher and teaching English for grade three students for 5 vears have observed that students learn more words which rhyme and it enables them to retain for a longer period of time. In addition, it also helps to write correct spelling in their writing.

In English writing pattern, we come across lot of spelling errors among Bhutanese students. Most students tend to delete and substitute the letter in words. For instance, the word cannot, a child writes canot. And for substitution, when a child writes hurt, they write hard. Most researchers found out that the common spelling errors made by students are mostly phonetic errors. The phonetic errors are vowels omission, consonant omission, doubling and non-doubling are the few common spelling errors found in student's writing. The findings made by Hee-Lee explains that most of the students make errors by omitting the vowels from the words. Example, the word beside as **bside**. The similar findings on spelling errors are consonant omission. The students omit the consonant letter while writing the words.

Wolff [16]. Shows that doubling and non-doubling is the most spelling errors made by the students. This error is widely observed in student's writing. For example, following as **following**, running as **runing**, coming as **comming** and etc.

"Good spelling plays a crucial part in writing activity. Spelling is an aspect of written language, so the teaching learning of spelling mush take place vigorously within the context of writing". Based on the Oxford dictionary, spelling is an act of forming words correctly from single letters. Similarly, Torgerson et al. [17] stated that "spelling is a study ofphonics as related to the grouping of words for spelling such as an, man, can and others". According to Dedina and Nusbaum [18], "spelling is a code that uses letter sequences to represent specific words that have an associated pronunciation and meaning within the mental dictionary".

It is such an essential skill which renders speech sound into writing that has to be mastered by all learners and users of English language for the purpose of effective communication in the written language. A good writer must be aware of his/her spelling particularly to avoid communication breakdown in written language. Therefore, to be a good writer the students must put enormous effort to avoid spelling errors especially for those students English as the second language learners. Also, to correct students written activity one important criteria is set spelling errors. If the students happen to make lots of spelling errors in their writing piece, they will get less marks in their written piece.

Accurate spelling in writing is important to avoid misunderstanding. In writing activity, we need to be aware of our spelling, so that the information can be delivered well. According to Croft (1983), the only possible justification for learning to spell is that accurate spelling is necessary for effective writing. So, zero spelling error in student's writing cannot happen in the course of normal classroom instruction. Children who make lots of spelling errors, they need more practice by employing different strategies demonstrated by the teachers. Thus, students will be able to write without spelling errors.

As children head into upper elementary grades, to write with correct spelling becomes increasingly important. Students whose writing shows several spelling errors will have trouble meeting the writing demands of their grade level. If there is no need to communicate by writing, there is no need to learn to spell (p. 9). Moreover, according to Greenberg et al. [19],

An issue that makes spelling difficult for several students is the fact that not all varieties of English spell the same words in the same way. Which is correct: *color* or *colour*, and theater or theatre? How do we decide between the use of s and *z* in words like *apologise* and *customize*. (p.256).

According to Fender [6], even many advanced learners have difficulty remembering specific English spelling patterns. Spelling, in particular in the English language, is a complex language skill important at all levels of education. Some words with completely different meanings, for instance, are pronounced the same, but their spelling is quite different, such as "plane" and "plain".

Researcher believes "poor spellers tend to continue to use a limited number of strategies

which affects their fluency in writing, underlining the need for further linguistic knowledge. They are not, therefore, able to shift to a higher level of spelling strategies which depend on basic levels of linguistic knowledge. Unlike better spellers, they are not able to identify the morphemic and syntactic constraints as well".

Bhutanese children start learning all subjects in English the moment they enrolled in from the right age of 6 in school except Dzongkha. The standard of English has been always a concern for the education stakeholders. Although it is vital for the second language users to write with spelling accuracy, there is still a limited number of researchers on this matter. I believe that it is the high time for the teachers and the administration in general to take a serious attention on how to overcome the spelling errors in students writing. It is a concerning topic which must be looked into. It would be effective if the spelling errors could be looked into by all the subject teachers and not only left to the Language teachers.

"Spelling involves the use of strategies, which may vary according to the words being attempted and the knowledge that the writer has acquired through experiences with words". (Faye Bolton & Diane Snowball).

However, the authentic and wide range of teaching spelling strategies and skills must be implementation by the teachers. The purpose of using spelling teaching strategies would definitely boost their spelling and carryout vigorous practice required.

Otherwise, when attempting to write, some students may experience frustration because of the difficulties they may have with spelling. Some they lose interest in writing any form of write up. According to Fender [6], even many advanced learners have difficulty remembering specific English spelling patterns. Spelling, in particular in the English language, is a complex language skill important at all levels of education. Some words with completely different meanings, for instance, are pronounced the same, but their spelling is guite different, such as "plane" and "plain".

According to research, the test-study-test strategy is the single most effective strategy in spelling instruction. This entails having the student, under the supervision of the teacher, correct his or her own errors immediately after taking a spelling pre-test. Furthermore, it is critical to recognize that knowing and analysing spelling errors is one of the most important techniques for improving spelling proficiency, which will contribute to writing proficiency.

Though all the spelling rules have been taught and in place, teacher efficacy and enthusiast matter. I feel that guided and different strategies would help spelling proficiency. It provides ample opportunity for teacher and the students find the mistakes instantly and correct it accordingly.

The area of focus of this research is to improve spelling errors through the use of different spelling strategies. The teacher researcher believes that writing without a correct spelling breakdown the meaning of the sentence, and conveys wrong information. The researcher hopes to provide several spelling strategies so that the students make minimum spelling errors in their writing assignment. The purpose of this study was to analyze the improvement of the students' spelling after teaching them several spelling strategies to improve their spelling errors.

I have been teaching English in lower grades for seventeen years, and found out that every grade I taught makes similar or common spelling errors: error of omission, error of substitution, error of insertion and error of transposition. In fact, a teacher has to employ the spelling strategies vigorously before and after every writing activity so that students will be able to write with correct spelling. The occasional teaching of spelling does not bring much impact on student's writing efficiency without spelling errors. Therefore, the teachers often fail to employ spelling strategies to write correct spellings, and students end up making same or similar spelling errors on every writing activity. The same spelling errors has been carried on even in higher grades and even may show as lifelong impact. Spelling error usually occurs because the students cannot distinguish between letters and sound of the word when they write. According to Dedina and Nusbaum [18], "Sounds, letters, word parts, word meaning, and word history are those elements which play the important role in learning to spell the words of English but in reality/practicality in classroom situation it is hardly done by the teachers as they need to worry about the syllable coverages. Moreover, teachers themselves are not competent in teaching sounds correctly.

Those students who make spelling errors keeps making same spelling errors in every piece of writing. Accordingly, various intervention strategies have been developed in an attempt to improve spelling in grade three students.

An action research is the most appropriate research method in which it helps the teachers to plan accordingly to overcome the problem identified then changes are made as needed. Therefore, appropriate and accurate intervention actions were provided to give correct solution, and this could be possible only by action research method.

It is critical in determining a viable solution to any situation. It is common for one person's solution to work against others, especially if the solution comes from outside.

3. METHODOLOGY

The study adopted the description research design of the survey type. One section grade three students of Gedu higher Secondary School are involved. The simple sampling technique was used in selecting the sample. The sample consisted of 18 students from one grade three selected class and 5 teachers including who taught and currently teaching grade three English students. Three tools were used for data collection.

- The first tool was used Analyzing and classifying spelling errors found in the writing samples. For that all the focused 18 students were given to write simple descriptive essay on the topic 'School' for about 150 words which served to identify the pattern of error among the students.
- The second tool is establishing a frequency count of such errors and the sources of the errors.
- The third tool were designed questionnaire to administer the responses of the teachers identified on the causes of error and influence of error.
- Moreover, the precise strategies were used to correct spelling errors among the students. Finally, the data collected were analyzed using descriptive statistics of frequency counts and percentages.

3.1 Participants

A total of 18 students of grade three and 5 teachers who taught English and currently teaching grade three English of Gedu Higher

Sceondary School, Chhukha: Bhutan participated in the study, (10) male, and (8) female, and teachers(2) male and (3) female. The ages of the students ranged from 8 to 9 years, the whole one section of grade three to participate in the study. All of the participants in this study had English language learning experience of minimum four years from pre-primary till grade three.

3.2 Written Samples

The participants were asked to write a wellorganized essay on one of five familiar topics. They were asked to write approximately 150 words. Each error category was assessed for 100 points. The suggested topics were the following:

- 1) My school
- 2) My favourite fruit
- 3) My favourite book
- 4) My hobby
- 5) My mother

3.3 Data Collection

Two instruments were used for collecting data: Students 'short essay and teacher questionnaires. Students' short essays were used to collect spelling errors. The teachers' questionnaires were mainly focused for finding out the implementation of spelling strategies. In order to collect a sample of students' spelling errors, 18 students of class three were asked to write one short essay from five given topics of 150 words in length. They wrote it for about 45 minutes. The topics were related to the curriculum that students had studied, practiced enough vocabulary and ideas about the topics. They were not allowed to use dictionaries.

3.4 Data Analysis

According to Cook (1999) spelling errors are classified into four main types of spelling errors; omission, substitution, insertion and transposition errors. So, the data were analyzed based on Cook's classification of spelling errors.

In addition, the frequency of each spelling error type was recorded and taken their total in the percentage form.

4. RESULTS

The findings offer the analysis of spelling errors made by 18 students (10 male and 8 female) of grade three students of Gedu Higher Secondary School, I looked into each major errors' types substitution, (omission. insertion and transposition) individually of the selected participant. The study draws based on Cook (1999), who studied the proportions of spelling errors made by L2 students. Thus, errors in spelling were categorized according to OSIT (omission, substitution, insertion and transposition).

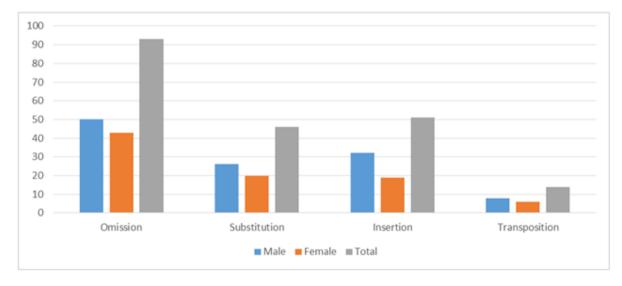


Fig. 1. Frequency of spelling errors made by students

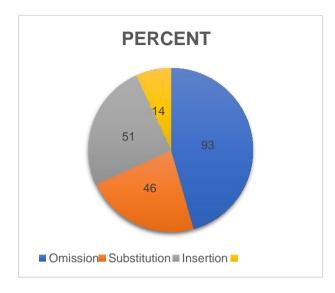


Fig. 2. Errors in percentage

Table 1. Frequency of spelling errors made b	y students according to OSIT (Pre-Data)
--	---

Gender	Omission	Substitution	Insertion	Transposition
Male	50/100	26/100	32/100	8/100
Female	43/100	20/100	19/100	6/100
Total	93/100	46/100	51/100	14/100
Percentage	93%	46%	51%	14%

5. DISCUSSION

Table 1 shows the analysis of spelling errors are in four categories. The errors of omission were with a percentage of 93, followed by errors of insertion with a percentage of 51. I found that omission errors were the most frequent. So, this study represents the errors of substitution and transposition, however, occurred less compared to the first two types of errors, with 46 and 14 respectively. This samples were examined who made spelling errors by L2 students after reviewing their writing samples.

The analysis of the errors in general also concluded that there is a strong correlation between the articulation and the spelling of words. In terms of gender, the male made more spelling errors in all four categories than female. The male shows a much higher number than their female counterparts. The variation in the figures was a result of more sample size of male (10) than female (8). The first identified analysis was that spelling errors were caused mainly due to the differences of articulation and spelling inherent in English words themselves. The other issues were that the participants own habit of manipulating standard pronunciation of words which resulted in writing wrong spelling. These two variables could have contributed to the omission, substitution, insertion and transposition errors.

5.1 Errors of Omission

Gedu HSS students of grade three, mainly beginner writers, might manipulate and associate a wide range of vowels and consonants combinations to form words. This was because a strong correlation was found between the articulations of English words and these words were determined by how it was spelled by the participants. When examined the causes of spelling errors in students' written work, the some common omission errors identified were omitting silent letters such as in representations of 'beautiful' by [a] in 'beutiful', and in 'country' by omitting [u] in 'contry'.It was obvious that they omit vowels [u] and [a] because they are pronounced exactly the way they were written.

"Moreover, while writing these words the students could have drawn on their orthographic knowledge by corresponding grapheme with phoneme. In the case of writing these words, the students could have drawn on their orthographic knowledge, which was marked by their effort to correspond grapheme with phoneme. Beginner writers, at an early stage of spelling and writing, depend heavily on their phonemic awareness and orthographic knowledge to spell" (Kelman & Apel, 2004, p. 57).

Besides, the study also identified that majority of the students omitted a letter [e] at the end of the words, such as 'because' for 'because', 'favourit' for 'favourite' and 'som' for 'some'. The analysis of spelling errors in this study was based on contextual writing in which the students were given the task of writing an essay of about 150 words on one of five topics provided. It offered more opportunity and a wider context to see spelling errors.

The study also observed that students omit plural marker[s] such as item for item.

5.2 Errors of Substitution

As shown in Table 1, the errors of substitution were the most frequent errors in the essay written by the students. These errors were the outcomes of substituting vowels than consonants which were mainly related to pronunciation. This finding aligns with Cook (1999), who found a vowel substitution more of errors and pronunciation errors. For instance, in writing 'beautiful', the students wrote [fol] instead of [ful], and for the word 'his' as 'hes', this is probably the close standard pronunciation of the word. In the similar manner, students also substituted [c] with [s] in 'prise' for 'price' and 'rise' for 'rice. These errors could be students' failure to identify the fact that the English words have multiple correspondences between the sounds of the language and the letters that represent those sounds. Sterling (1983) underscores such errors as 'not incorrect spellings of the correct sounds but rather correct spelling of incorrect sounds' (p. 359). The other common substitution errors were 'togather' for 'together', 'amazind' for 'amazing'. It is possible that these errors occurred when students struggle to correspond the articulation with the spelling.

5.3 Errors of Insertion

In the samples, the first category of spelling errors were the insertion of [s]. There is an insertion of in end of most of the words such as; childrens, eachs, classess, wills, somes, ares and many more. When it comes to 'childrens', the sources of such errors may be because of participants not aware of plural and singular. For the words such a;, eachs, classes, wills, somes, ares, the main contention is whether the participants made errors because they had insufficient knowledge to spell the words accurately, or probably errors are made due to a temporary lapse in attention or confusion. From the sample, one of the subjects repeated 'somes' four times throughout the essay writing but in one instance the subject wrote 'some' correctly. In this case, the source of error is, presumably, both competence and performance failure.

5.4 Errors of Transposition

Although transposition was the least errors encountered in the sample, these errors should not be ignored if the goal is to reduce the spelling errors of grade three students of Gedu HSS. Transposition errors included 'friend' for 'friend', 'their' for 'their', 'jucie' for 'juice','friut' for 'fruit'. In these errors, the mis-ordering of the vowels 'ie' was the most frequent error, which corresponds with Cook (1999).

The third tool were designed questionnaire to administer the responses of the teachers identified on the causes of error and influence of error.

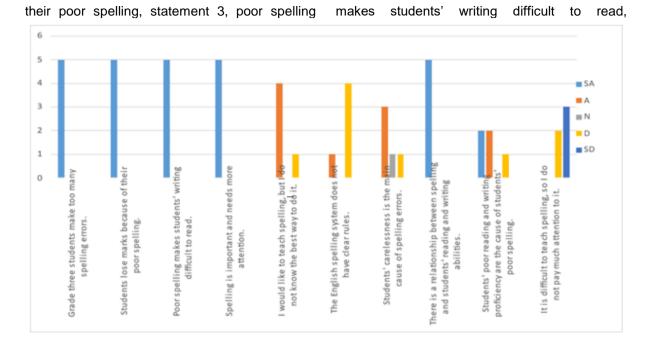
This part of discussion is emphasized to analyzing the data on what are teacher's perceptions of the spelling problems of their students? And what are teacher's current practices to English spelling instruction? The data were collected using two tools:

- A questionnaire items about attitudes.
- A questionnaire with items about spelling instructional practices.

The three female and two male English teachers were surveyed who had 10 to 15 years of teaching experience in teaching English in Grade three in schools. The teachers' participants responded 10 items on causes of spelling errors and influence of errors. And another 10 items on current practices in spelling instructions. The data collected from the surveys from the teachers were presented below.

5.5 Analysis on Surveys with Teachers

The Fig. 3 indicates that significantly, all five teachers agreed with statement 1, Grade three students make too many spelling errors, statement 2, students lose marks because of



Sharma et al.; Asian J. Educ. Soc. Stud., vol. 39, no. 2, pp. 1-24, 2023; Article no.AJESS.94627

Fig. 3. Attitudes of teachers on spelling errors

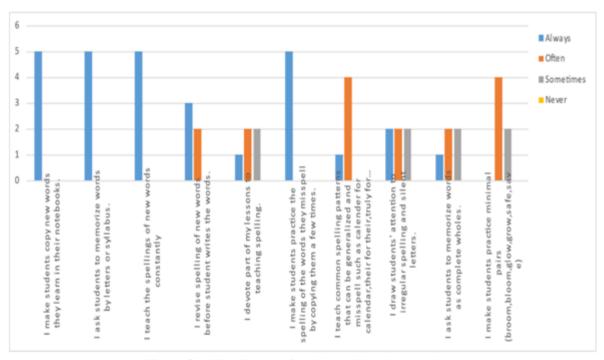


Fig. 4. Spelling instructional practices by teachers

and statement 3, spelling is important and needs more attention (see Fig. 1). These responses show the spelling problem is serious and pertaining issues. Besides, for students to perform better academically spelling errors could also put pressure on their ideas and some students might feel hesitant to express their ideas due to fearing of making spelling mistake. The spelling problem affects students' academic performance as well the language proficiency, all teachers agreed with statement 4," Spelling is important and needs more attention." Their responses show that spelling is as important as other aspects of the language. According to (Hildreth, 1962 and [3]), to help students become efficient users of a language, it is important to help students' mastered proficiency in all language skills and sub-skills.

Only one teacher disagreed with the statement 5, "I would like to teach spelling, but I don't know the best way to do it "while the rest of the teachers appeared to believe the opposite. Their responses indicate that they believe that spelling is as important as other aspects of the language. Another significant finding is that the surveyed teachers disagreed with statement 10. "It is difficult to teach spelling, so I do not pay attention to it." The teachers' participant refusal of this statement indicates the importance of spelling from the teachers' perspective. Considering the unanimous agreement with statement 8," There is a relationship between spelling and students' reading and writing abilities." It indicates that developing students spelling can improves students both writing and reading abilities.

5.6 A Questionnaire with Items about Spelling Instructional Practices

Fig. 4 explains that the teachers' responses in this section on current spelling instruction practices were surveyed including 10 statement, described a strategy for each teaching spelling.(see Fig. 2). The most common spelling instruction used by the teachers were responses 1," I make students copy new words they learn in their notebooks," response 2," I ask students to memorize words by letters or syllabus." response 3," I teach the spellings of new words constantly, and response 6, "I make students practice the spelling of the words they misspell by copying them a few times. " respectively. It is identified that teachers are adopting a few same strategies for teaching spelling instruction. The inadequacy of time devoted for spelling instruction appears from teachers" responses to statement 5 states "I devote part of my lessons to teaching spelling" (see Fig. 2). Despite the fact that spelling errors is a serious problem that affects the writing and reading abilities of their students, it is noticed that spelling instruction does not often take place in their classroom.

Statement 8,"I draw students' attention to irregular spelling and silent letters" and statement 9,"I ask students to memorize words as complete wholes. "The responses to statement 8 suggest that teachers agree with the literature reviewed (Hildreth,1927; Bahloul, 2007; [6] Fender, 2008) that indicated clearly that irregularity of English is a major cause of students' spelling difficulties. However, teachers recognize that the irregularity of English is the major problem in their students' spelling problems, it looks that the teachers are not addressing to this problem. As we can see the statement 10," I make students practice minimal pairs" (broom, bloom, glow, grow, safe, save) is often used by the teachers.

5.7 Intervention

Teaching young spellers, the strategies, rules and concepts to grow their spelling enhances their spelling capacity which ultimately benefits their meaningful writing too. According to Henry (1988), the appropriate spelling instruction strategies must be taught to address the different aspects of English spelling. It also explains that spelling instruction should be organized from letter-sound correspondences, syllable patterns, morpheme patterns, and strategies for long unfamiliar words. Sarantako (2012) states that "teaching how to correct spelling errors not only help s students reduce their spelling errors but also improves their performance both in reading and writing. Even though the spelling is important in producing meaningful written text, the language activities mostly emphasize on four strands; listening, speaking, reading, writing, vocabulary building and grammar and often neglect spelling instruction".

Therefore, it is essential to identify and teach effective spelling instruction strategies to reduce spelling errors for grade three students in their writing.

After analyzing all three base line data, it was shown that spelling errors is a serious problem faced by grade three students of Gedu. Kareema (2013) opines that "English spelling is unquestionably a difficult matter in which many interrelated skills such as reading and writing are involved. After examining the pre-data collection, I too observed that there is a serious problem of spelling errors".

Considering the findings from analysis and interpretations of the baseline data, I have adopted four vital spelling strategies which could address the problem of spelling errors:

5.8 Homophones

Bloodgood (1991), explains that homophone technique of teaching spelling is a good way to overcome some spelling difficulties. Homophones are words that sound the same but have different spellings and different meanings, for example new and knew, be and bee, flour and flower.....etc. Many studies have found out that students commonly make spelling errors because of homophones (Ringbom, 1977; Ramadan, 1986; Al-Karaki, 2005). According to Greenberg et al. [19],

"Learning of English need to be aware about how we use different spellings to distinguish between **homophones** (words that sound the same but are spelt differently) such as *threw* and *through*" (p.53). For this, first I address them frequently as they come up in natural exchanges with a student. We talk about these words as part of vocabulary discussions about word lists and when students bring up other meaning or spelling. I explain the differences and show them the different spellings.

5.9 Phonemic Approach

It is important to understand that the relationship between letters and their corresponding sounds helps in developing an essential skill for successful reading and spelling performance. Treiman, Cassar, and Zukowski (1994) found out that the letter-sounds of the words plays an important role in children's spelling skills for the children as young as kindergarten. Further, Waters, Bruck, and Malus-Abramowitz (1988) found that "in general, children have less difficulty spelling words that are based on predictable letter-sound relationships. Phonemics allows students to identify the sounds that correspond to the written symbols in printed. Equally for spelling, students identify the written letters that correspond to the spoken sounds. Many words in the English language have regular Phonemic patterns. The regular words allow students to spell the words purely based on the letter- sound relationship". Accordingly, I have incorporated 'phonemic approach 'during the session meaningfully. It was done whenever we introduced high frequency words and new vocabulary of the given text to the students.

Getting the vowels "e" and "i" in the right order.

While I went through students' essay mostly, they made spelling errors of using vowels "i" and "e" in right order. According to many researchers one of the most common spelling errors in English involves getting the vowels "i" and "e" in right order. Therefore, it is crucial to teach spelling rule to overcome the spelling errors. I incorporated this strategy whenever I encountered students' using "i" and "e" wrongly in their writing activities and clarified accordingly. **5.10 Systematic Error Correction**

According to Kinder & Carnine (1991) states that "error correction procedures offer immediate feedback that students can use to improve their performance. Error correction procedures include a variety of different strategies. One example is circling incorrect spelling in their writing work and explain how to correct the spelling with error correction procedure. This is allowing students to discover and learn from mistakes (discovery learning)". "Although discovery learning seems unrealistic, research has proved that students receiving teacher-directed lesson that incorporate systematic error correction strategies consistently perform better than students learning by the themselves" (Becker, 1978; Becker & Gersten, 1982).

Besides, error correction of students' mistakes can serve an instructive function as well. For example, by providing information about correct response. Next, error correction strategy is through morphographs. This strategy addresses error correction through a series of structured teacher -directed responses to spelling errors. For example, if a student misspelled the word flower, the teacher instantly models the correct spelling by letting him or her to listen the word when teacher spell, "f-l-o-w-e-r." Next teacher will see whether he/she is telling the correct spelling or not. If the student spell the spelling of flower correctly in first go he/she is no need for further guidance. If not spelling in first go teacher go for second model of spelling and then would lead the student through guided practice with teacher spell flower. "f-l-o-w-e-r." This structured practice allows students prevent from making repeated mistakes and provides instructional feedback that helps students become more accurate spellers.

What kind of data will I gather to show the situation as it unfolds?

and post-data The pre-data intervention result analysis will tell the comparative impacts. The pre-data and post-data result do not show any progressive impact, then researchers will provide concrete justification of not finding progressive result. If the result of pre- data and post date is positive, then the researcher will recommend to use my research as reference those to teach spelling strategies for

students who make lots of spelling errors while writing.

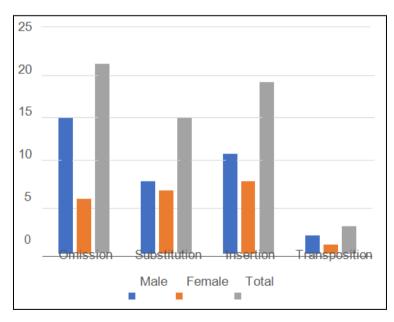
5.11 Post-intervention Data Collection and Analysis

In this section we began by describing the postintervention followed by analysis. Next followed by comparative analysis of the baseline data and post- intervention data. For the post data collection, the same methods were used so that any improvement could be identified. After three months of intervention, the researcher let the same students' participants to write the same essay which they have written in pre-data. This well-organized essay on one of five familiar topics. They were asked to write approximately 150 words. Each error category was assessed for 100 points The suggested topics were the following:

- 1) My school
- 2) My favourite fruit
- 3) My favourite book
- 4) My hobby
- 5) My mother

When I went through their essay writing it was found that spelling errors were reduced a lot in all four categorized spelling errors. This improvement was clearly shown in Table 2 and in Figs. 5 and 6 below. Thus, errors in spelling were categorized according to OSIT (omission, substitution, insertion and transposition).

Gender	Omission	Substitution	Insertion	Transposition
Male	15/100	8/100	11/100	2/100
Female	6/100	7/100	8/100	1/100
Total	21/100	15/100	19/100	3/100
Percentage	21%	15%	19%	3%



Frequencies of spelling errors made by students

Fig. 5. Frequency of spelling errors made by students after intervention Percentage of spelling errors

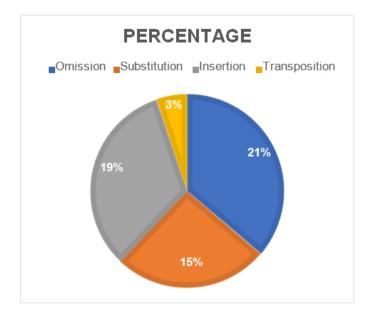


Fig. 6. Percentage of spelling errors after intervention

According to the post data presented in Table 2 and Figs. 5 and 6, there is a decrease in all four category of spelling errors such as omission, substitution, insertion and transpositions in students' written work. At the beginning of the study, omission, substitution, insertion and transpositions were the common spelling errors in their written work. This study also proves that until students are not aware of phonemic awareness, it is common for them to make substitution, repetition, insertion, omission and try to invent the new spelling of their own. phonological Readers with processing weaknesses also tend to be the poorest spellers (Cassar, Treiman, Moats, Pollo, & Kessler, 2005). The students who are not aware of phonemic awareness are the one who tend to make lots of spelling errors. It is evident that after the intervention the spelling errors of omission reduced to 21% from 93% by taking the highest success, followed by insertion errors from 51% from 19%. With regard to substitution and transposition there is a noticeable reduction in spelling errors, substitution 15% from 46% and transposition dropped to 3% from 14% are significantly reduced and noticeable compared to pre-data. From the data analysis shown above in the form of graph and pie chart, the frequency of spelling errors made by students according to OSIT is reduced a lot. It can be seen that the students made an improvement after the intervention. The number of spelling errors made by students as given in the Table 2 and the percentage of spelling errors in Figs. 5 and 6 indicated that the students' improvement got

better after three months intervention in each category. It was found phonemic approach plays important role in learning spelling. Besides, that the letter-sounds of the words plays an important role in children's spelling skills. Through this approach students 'ability in word spelling also increased and number of spelling errors were reduced drastically as shown in the graph and pie chart above. However, repetition in writing the spelling of words is important enough for students that can be used as one of the solutions which can be applied in the classroom instruction.

6. COMPARING PRE-BASELINE DATA AND POST-INTERVENTION DATA

The Table 3 shows the comparison of frequency of spelling errors before and after intervention. The number of errors were high in all four category of spelling errors before the intervention with the total of 93 omission, 51 insertion, 46 substitution and 14 transpositions respectively. After three months of intervention using four appropriate spelling strategies (homophones, phonemic, "i" and "e" getting right and systematic error correction, there is a significant improvement in students' spelling. The students have drastically reduced spelling errors in the given categories viz omission with 21 errors, insertion 19, substitution 15 and transposition reduced to 3 correspondingly.

According to (Foorman & Francis,1994) states that by knowing the knowledge of a word's

spelling always helps in reading of the word. To get the correct spelling, it is essential for the teachers to employ appropriate spelling strategies to learn the word knowledge. Increase spelling knowledge allows students to make more complete connections between spelling and pronunciations of words. This correlational data is supported by experimental studies

Before Intervention			n After Intervention					
Gender	Omission	Substitution	Insertion	Transposition	Omission	Substitution	Insertion	Transposition
Male	50/100	26/100	32/100	8/100	15/100	8/100	11/100	2/100
Female	43/100	20/100	19/100	6/100	6/100	7/100	8/100	1/100
Total	93/100	46/100	51/100	14/100	21/100	15/100	19/100	3/100
Percentage	93	46	51	14	21	15	19	3
U			Omissio	on Sul	bstitution	Insertio	n Trans	position
Differences in Intervention	n percenta	ige after	72 %	31	%	32 %	11 %	1



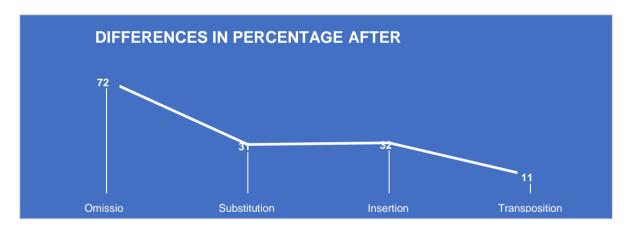


Fig. 7. Differences in percentage after intervention

showing that spelling instruction improves reading performance (e.g., Berninger et al., 1998; Ehri & Wilce, 1987; Uhry & Shepherd, 1993). In general, spelling is an instructional tool that can assist pupils in comprehending the alphabetic writing system and its connection to spoken language.

Similarly, the Fig. 7 shows that the overall differences of frequency of spelling errors in four categories in percentage after intervention. The omission was improved by 72%, followed by insertion with 31 %, substitution with 31% and transposition with 11% respectively comparing to before intervention of strategies.

It is critical to allow students to use the unit's word list to carefully study the words in order to

reduce spelling errors. They should also practise writing the difficult words many times at home in order to remember them correctly. Allow students to carefully listen to words and try to distinguish between letter sounds. Other recommendations for educators are that spelling instruction can be integrated into other subject areas. It would be of great help if other subject teachers too could follow the systematic rule to teach spelling so that spelling errors of the students will be reduced. Some teachers feel that spelling is not an essential component in the curriculum. Spelling is a crucial element not only in fluency and reading comprehension, but also in theentire curriculum in all subjects. This is because when teaching spelling, teachers tend to look for the best and effective approaches for their students.

7. BENEFIT OF THE RESEARCH

An action research is an approach that allows the educators to improve professionally and has a potential to bring progress in the practice they put in for the development of students' learning.

Through this action research, the researcher gained lots of experiences and professional insight on how to carry out action research henceforth. Moreover, employing effective spelling strategies reduces spelling errors in students' written task.

8. CONCLUSION

Grade three students of Gedu HSS has high spelling errors in their short essay writing which is considered a critical issue that needs to be looked at. Accordingly, the research presented employing effective teaching spelling such as homophones, phonemic, getting the vowels" e" and "i" in the right order and systematic error correction approaches have adopted to reduce spelling errors. Moreover, Primary English teachers of Gedu HSS must be more equipped and trained to develop student's English language skills equally in order to bridge the poor writing skills in students that leads to many spelling errors in their writings. Further, more attention must be paid in vowel using and multisyllabic words. Additionally, the hope of the researchers to continue to investigate the spelling instructional needs of not only with grade three students but can be explored with different sample groups to improve spelling errors of the students. Instruction in speech-sound awareness reduces and alleviates reading and spelling difficulties (Adams, Foorman, Lundberg, & Beeler, 1998; Gillon, 2004; NICHD, 2000; Rath, 2001). Teaching speech sounds explicitly and directly also accelerates learning of the alphabetic code. Therefore, classroom instruction for beginning readers should include phoneme awareness activities.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Bloodgood J. A new approach to spelling instruction in language arts programs. The Elementary School Journal. 1991;92(2): 203-211.

Retrieved June 25, 2009, from JSTOR database.

- Koda K. Insights into second language reading: A cross-linguistic approach. Cambridge: Cambridge University Press; 2005.
- Randal M. Memory, psychology and second language learning. Philadelphia: Benjamins Publishing Company; 2007.
- Santa CM. Spelling patterns and the development of flexible word recognition strategies. Reading Research Quarterly. 1976 - 1977;12(2):125-144.
- 4. Smedley D. Teaching the basic skills: spelling, punctuation, and grammar in secondary English. New Fetter Lane London: Methuen and co. Ltd; 1983.
- 5. Cook VJ. *Teaching spelling*; 1999. Retrieved March 17, 2015 from Available:www.essex.ac.uk/~vcook
- Hameed PF. A study of the spelling errors committed by students of English in Saudi Arabia: Exploration and Remedial Measures. Advances in Language and Literacy Studies. 2016;7(1).
- Botley S, Dillah D. Investigating spelling errors in Malaysian learners corpus. Malaysian Journal of English Language Teaching(ELT). 2007;3:74-93.
- 8. Shemesh R, Waller S. Teaching English spelling: A practical guide. Cambridge: Cambridge University Press; 2000.
- Corder P. Error Analysis and interlanguage. England: Oxford University Press. 1981;125.
- 10. Kareema MI. English Spelling and its Difficult Nature; 2013.
- 11. Kinder DK. What it is and what it is becoming. Journal of Behavioral Education. 1991;1 and 2: 193-213.
- 12. Cook. Categorizing Spelling Errors to asess L2 Writing. Continuing Engineering Education and Life -Long Learning; 2011, May.
- Foorman B, Francis D. Exploring connections among reading, spelling, and phonemic segmentation during first grade. Reading and Writing: An Inter Discisciplinary Journal. 1994;6: 65-91. DOI:10.1007/BF01027278
- 14. Ehri L. The development of spelling knowledge and its role in reading acquisition and reading disabilities. Journal of Learning Disabilities. 1989;22:356-365. DOI:10.1177/002221948902200606.
- 15. Ehri LC. Learning to read and learning to spell are one and the same, almost. In C.

A. Perfetti, L. Reiben & M. Fayol (Eds.), Learning to spell: Research, theory and practice across languages. Mahwah, NJ: Erlbaum. 1997; 237-270.

- Wolff MR. A study of spelling errors with implications concerning pertinent teaching methods. The Elementary School Journal. 1952 Apr 1;52(8):458-66.
- 17. Torgerson C, Brooks G, Hall J. A systematic review of the research literature on the use of phonics in the teaching of

reading and spelling. Nottingham: DfES Publications; 2006 Jan.

- Dedina MJ, Nusbaum HC. PRONOUNCE: a program for pronunciation by analogy. Computer speech & language. 1991 Jan 1;5(1):55-64.
- Greenberg D, Ehri LC, Perin D. Are wordreading processes the same or different in adult literacy students and third–fifth graders matched for reading level?. Journal of Educational Psychology. 1997 Jun;89(2):262.

APPENDICES

Appendix A

Questionnaire on attitude

For each statement below please tick the option that most accurately reflects your personal opinion. SA = Strongly Agree, A = Agree, Neutral, D = Disagree, SD = Strongly Disagree.

	Statement	SA	Α	Ν	D	SD
1	Grade three students make too many spelling errors.					
2	Students lose marks because of their poor spelling.					
3	Poor spelling makes students' writing difficult to read.					
4	Spelling is important and needs more attention.					
5	I would like to teach spelling, but I do not know the best way to do it.					
6	The English spelling system does not have clear rules.					
7	Students' carelessness is the main cause of spelling errors.					
8	There is a relationship between spelling and students' reading and writing abilities.					
9	Students' poor reading and writing proficiency are the cause of students' poor spelling.					
10	It is difficult to teach spelling, so I do not pay much attention to it.					

APPENDIX B

Item Questionnaire on practices

Please choose from the items below the option that most accurately reflects your current practice in spelling instruction. If you use other strategies, please explain them on the lines below.

	Statement	Always	Often	Sometimes	Never
1	I make students copy new words they learn in their notebooks.				
2	I ask students to memorize words by letters or syllabus.				
3	I teach the spellings of new words constantly				
4	I revise spelling of new words before student writes the words.				
5	I devote part of my lessons to teaching spelling.				
6	I make students practice the spelling of the words				
	they misspell by copying them a few times.				
7	I teach common spelling patterns that can be				
	generalized and misspell such as calender for				
	calendar, their for their, truly for truly.				
8	I draw students' attention to irregular spelling and				
	silent letters.				
9	I ask students to memorize words as complete				
	wholes.				
10	I make students practice minimal pairs				
	(broom, bloom, glow, grow, safe, save)				

APPENDIX C

.....?

	Statement	SA	Α	Ν	D	SD
1	Grade three students make too many spelling errors.	5				
2	Students lose marks because of their poor spelling.	5				
3	Poor spelling makes students' writing difficult to read.	5				
4	Spelling is important and needs more attention.	5				
5	I would like to teach spelling, but I do not know the best way		4		1	
	to do it.					
6	The English spelling system does not have clear rules.		1		4	
7	Students' carelessness is the main cause of spelling errors.		3	1	1	
8	There is a relationship between spelling and students' reading	5				
	and writing abilities.					
9	Students' poor reading and writing proficiency are the cause	2	2		1	
	of students' poor spelling.					
	It is difficult to teach spelling, so I do not pay much attention				2	3
10	to it.					

Results for attitudes questionnaire

For each statement below please tick the option that most accurately reflects your personal opinion. SA = Strongly Agree, A = Agree, Neutral, D = Disagree, SD = Strongly Disagree.

APPENDIX D

Results for practices questionnaire

Please choose from the items below the option that most accurately reflects your current practice in spelling instruction. If you use other strategies, please explain them on the lines below.

	Statement	Always	Often	Sometimes	Never
1	I make students copy new words they learn in their notebooks.	5			
2	I ask students to memorize words by letters or syllabus.	5			
3	I teach the spellings of new words constantly	5			
4	I revise spelling of new words before student writes the words.	3	2		
5	I devote part of my lessons to teaching spelling.	1	2	2	
6	I make students practice the spelling of the words they misspell by copying them a few times.	5			
7	I teach common spelling patterns that can be generalized and misspell such as calender for calendar,their for their,truly for truly.	1	4		
8	I draw students' attention to irregular spelling and silent letters.	2	2	1	
9	I ask students to memorize words as complete wholes.	1	2	2	
10	I make students practice minimal pairs (broom, bloom, glow, grow, safe, save)		4	2	

APPENDIX E

Sample Students'' essays

Choose one topic given below and write an essay about 150 words.

- 1. My school
- 2. My favourite fruit
- 3. My favourite book
- 4. My hobby
- 5. My mother

wounte book is the baby bird. I like baby bird white much is the body bird. I like body bird body wals for vourite book is going to the zoe and the prince. He like this two book. I like this body br baby bird bird like to play with his rriends. He like, his them He love, he mother, eather sisterations and er He love everyone. He like to eat more, rice and's. favourite character is baby bird, mother bird, fathe sister bird and brother bird. His cavaurite character The baby bird's sister like to play with her I bird like to fly in the sky. Becaise when 9 bird fly in the sky baby birk look down he thing I like baby bird Baby bird's colour is blu Illow. s-y T-D My hebbyes

6 5 how there own hoppy. And I also my hobby is listening to BTS songs there members in BTS. Bts, is one of the poppeter bond in the vorlid, the and here is my Best member. He by walks ing sonds, Jk was should not hat to comp songs. We should leston to comp will learn inder things. S to 0 - 1 I-0

I rewriting must zeel My favourite fruit _____ 150 words. with front is Mango I like other fault but mang with fruit mango is so tasky fruits other fruit at tasky but mango is tasky fruit. T 55+ yellow in colour Mengo is green and brange Many are colour is green and yellow orange mango is time. a grow a mange but my village was not grow up a ymange rime we grow up a mongo we where green in go is julie fruit other fruit are not julie but 19 is julie fruit Mango was Make a jule apple, IY. re, orange are make a juce I like only Mange juce. have by Substitution - 2 1 Transposition - 84 3. Durission - 5 Jusertion. -1 where thoegang that mother care us and is us 10 on 10 Sector Because mother will fortch us other games she house to ak some botts thing she like to care me and brother. Nke to eat good a not the bat s not the bat s not like junkped. like to eat food mother looks like big from and soft hear is so cute big mother's getting so cute mother forvourite tood is carront out is vitamin 2. My mother like road because there are nany ritamin Substitution - 6 0 - 0 Tran - D

- Company y hobby As hobby is sorthing like a talente, specifi abblities like sports, flexabilities and other specific abblities. I also have My hobby is to grow things with my motion reading-backs but my most enjoyed hobby is reading karma Tshiring my favourite Author the two most wonderput books Agiptiand kado goes to the Tshey. books are important because It teaches us important life lessons Last year my bordum vanished because I had many amazing advatures with backs Substitution - 9 3 Sutstitution - 5 21 Ourission - 5 21 Insertion - 0 Transposition - 0 Unilter by - Katsho Jenzh Pend 218/2011

© 2023 Sharma et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history: The peer review history for this paper can be accessed here: https://www.sdiarticle5.com/review-history/94627