



Research Papers in Language Teaching and Learning

Vol. 7, No. 1, February 2016, 169-180

ISSN: 1792-1244

Available online at <http://rpltl.eap.gr>

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## Spelling Strategies of EFL Students

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*The aim of this study was to investigate the spelling strategies used by EFL students in Oman. Although the amount of research on spelling is increasing in Oman, the area of spelling learning strategies still needs further investigation. There is insufficient information in understanding the kind of spelling strategies that are being used in Omani classrooms, therefore, to adopt and use at any time. However, the current study focuses on finding out the frequency of the use of the strategies by grades four and ten, and the differences between both grades in the use of these strategies. The study sample consisted of 757 students from grades four and ten as they represent the exit level of school cycles in Oman. This survey study design is comprised of a questionnaire that was divided into different categories representing different spelling strategies. Results revealed statistically significant differences in the use of the strategies with respect to grades. Based on the findings, practical implications and recommendations are provided.*

**Key words:** overlapping waves theory, spelling strategies, EFL students, Oman

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### 1. Introduction

#### 1.1. The Overlapping Waves Theory

The overlapping waves theory is operationally defined as a concept that refers to the use of different types of strategies for a particular time and gradually the use of one particular strategy is reduced or increased as decided by a user, (also called repertoire theory) was developed by Robert Siegler in 1996 (See also Rittle-Johnson & Siegler, 1999; Grabner-Hagen, 2004; Baleghizadeh & Dargahi, 2011). Primarily, Robert Siegler investigated the strategies used by children in the non-algorithmic domain; that is spelling. As Siegler pointed out, his investigation was particularly based on investigating algorithmic domains such as subtraction, multiplication, time telling and physics (Rittle Johnson & Siegler, 1999). Shrager and Siegler (1998) state that the overlapping waves model explains the characterization of development. The model was represented by a diagram that consisted of two axes (Y and X).

The axes sketched consisted of many wavy lines that represented the strategies. For more explanation, the overlapping waves refer to strategies in timeline waves in which each strategy represents a wavy line and there are also crossed lines. The overlapped or crossed lines show that students use several strategies at the same time while spelling a word. However, this theory is more reliable and describes the development more accurately than the traditional stage models such as the connectionist. Traditionally, the connectionist theory emphasizes the use of a combination of cognitive processes such as: semantic, orthographic and phonological processors simultaneously. The connectionist theory holds that there should be an interaction between lexical and phonological systems. However, any limitations linked to the phonological system will affect the other system (Sawyer & Joyce, 2005). This theory depends upon an individual's amount of word use and exposure at different ages (Grabner- Hagen, 2004). Compared to the stage theories, the overlapping waves theory postulates that children use different strategies to learn spelling at any given time (Cuidon, 2009). As noted by Grabner-Hagen (2004), in relation to the overlapping waves theory, initially, the strategy is invented, then applied to problems and accordingly used once accurate responses reveal. In other words when one strategy is more reliable than another, the child will use it alongside other strategies.

## **1.2. Three basic assumptions of the overlapping waves theory**

Rittle-Johnson & Siegler (1999) presented the three basic assumptions of the overlapping waves model. The first is variability of strategy use. The perspective of variability represents the use of a range of strategies at a particular stage. For instance, children might use more than one type of strategy. They may use rule use and visual checking strategies in combination to spell a word. The second assumption is adaptive choice, which indicates that children use strategies from their own strategy repertoire depending on the level of word difficulty to spell words correctly. After becoming more competent, children may use the most effective strategies and become less dependent on certain strategies. Basically, children may use sounding out to spell a word and if the word is difficult to remember another strategy could be used to remember the difficult parts. Consequently, the child uses syllabification strategies to learn that particular word instead of merely using sounding out. To this end, the strategies children use in classrooms may differ and therefore investigating how do young learners use several strategies concurrently helps reduce teachers' effort to enhance students' abilities to learn spelling.

Even though learners try out different strategies to indicate which one works better for them, spellers examine which strategy to adapt while spelling. In their research report, Shrager & Siegler (1998) indicated that the discovery of new strategies and adaptive choices are linked processes, and that choices are attained when prior strategy discovery is present. The third assumption in the overlapping waves theory is the gradual change. According to Rittle-Johnson & Siegler (1999) the changes can be produced in four ways. Changes occur when a new strategy and a more advanced strategy are introduced. They also occur when the use of more advanced strategies is increased, or when effective implementation of strategies and more adaptive choices are available. This can be illustrated by indicating how a child uses syllabification, meanwhile a teacher introduces a new strategy in the classroom, for instance, visual checking. The student utilizes syllabification and visual checking when learning to spell a word. Consequently, the most effective strategy will replace the ineffective one, therefore, change occurs.

Although children use several strategies to spell a word, select the most effective one and change a strategy used, similarly, adults use various strategies and pursue the same process

of change as young learners. Kwong & Varnhagen (2005) investigated the generalizability of the overlapping waves in spelling from children to adults. They investigated the children's progression from early attempts to spell new words to the point at which they could retrieve the spelling from memory. This was a short-term longitudinal study, which aimed at frequently observing the participants over a short period. The researchers used this study to gain further understanding of the strategies used by learners. The results of the study revealed that both children and adults showed variability, adaptive choice and gradual change in the use of strategies. This study provides support for the generalizability of the overlapping waves theory.

There are various strategies that learners use to spell words. One of the strategies is retrieval. It is the automatic recall of answer and it is considered as one of the most successful and useful approaches to spelling. Beginning spellers use different strategies and start replacing older ones with the more efficient strategies such as retrieval (Steffler, Varnhagen, Friesen & Treiman, 1998). Other strategies excluding retrieval are called backup strategies.

According to Rittle-Johnson & Siegler (1999), the most common backup strategies are:

- Sounding out
- Analogy
- Rule use
- Syllabification

The least common used strategies are:

- Visual memory
- Visual checking
- Writing synonyms

### 1.3. Related studies

#### 1.3.1. Spelling Learning Strategies in the Overlapping Waves Theory

Different studies investigated various methods in learning strategies such as using e-games (Al Farsi, 2009), the effectiveness of syllable training (Bhattacharya & Ehri, 2004), the effectiveness of a kinesthetic approach (Grant, 1985), the use of dictionaries (Huang, 2003), and the use of mobile phones (Bushnell, Kemp & Martin, 2011). There are some studies (Baleghizadeh and Dargahi, 2011; Rittle-Johnson and Siegler, 1999) which have investigated spelling learning strategies, particularly in the overlapping waves zone which will be focused on in this section.

In the EFL context, Baleghizadeh and Dargahi (2011) investigated the spelling learning strategies used by 32 EFL Iranian learners. However, frequencies and differences in the use of spelling strategies among good, average and poor spellers were found. The students were given a dictation on spelling. The students had to spell 20 words selected from course books which were read out loud by the researchers. Then, students explained how they spelled the words. They had to indicate whether they recalled the words (retrieval), used sounds to spell the words (sounding out), referred to a rule (rule use) and used a visual strategy to check the spelling (visual checking). However, they were asked to determine what strategies they used to spell words correctly. The researchers used a spelling development model. This means that children developmentally progress and use spelling strategies as they move to upper levels. In addition, researchers indicated that children used six different strategies to spell:

retrieval, sounding out, analogies, rules, visual memory, checking and syllabification. The results revealed that the most frequently used strategy was retrieval (46.7%) and the second used strategy was sounding out (34%). In reference to students' levels, good spellers used analogy and syllabification more often than poor spellers did. Other strategies such as sounding out and visual strategies were used most frequently by poor spellers. The results revealed that 78% of good spellers used the most common strategies such as sounding out, rule use, syllabification and analogy. Only 26% of the poor spellers used the most common strategies. However, different students use altered amount of several strategies and differences can occur within one particular grade level.

A study by Rittle-Johnson and Siegler (1999), the advocates of the overlapping waves theory, investigated spelling learning strategies used by children through observations of ongoing behavior while spelling words and verbal reports. In this longitudinal study, the researchers examined the number of strategies that children used in their first grade level and then followed up the students to examine the strategies they used in the next grade level. They explored how effectively the strategies were used and which strategies were more effective with which words. They examined three basic phenomena: variability, adaptive choice and gradual change in spelling learning strategies. 30 students participated in the study for two years, but 7 children did not participate in the next year for specific reasons. For instance, some parents refused that their children continue in the study and others moved to other schools. The students worked under two different conditions, either allowed or prohibited. In other words, allowed condition refers to the condition in which students are given time to use backup strategies to remember the spelling of words, whereas, the prohibited condition represents the situation in which no explicit or direct use of a backup strategy is allowed. Three components of the overlapping waves theory (variability, adaptive choice and gradual change) as investigated in this study will be explained.

In terms of variability, results revealed that children used six strategies, which were retrieval, sounding out, analogy, rule use, visual checking and a combination of two strategies. The researchers discovered that rule use and visual checking were always used in combination with other strategies. Even in the next grade level, grade two students used the same strategies but not to the same degree (Rittle-Johnson and Siegler, 1999).

The next phenomenon, adaptive choice, was also tested in this study. The results revealed that incorrect answers were highly correlated with backup strategy use. This means that children used backup strategies more on the words that they misspelled during spelling more often. For more explanation, children tend to refer to backup strategies when they find it difficult to spell a word. However, the researchers indicated that the use of backup strategies is slower and that children may or may not choose to use them. It can be concluded that the use of backup strategies is more often associated with spelling difficult words.

The last element was the gradual change in strategy use. It was found that good spellers who made fewer mistakes used fewer backup strategies. The results indicated that speed and accuracy of strategy use increased because of the use of the fastest and most accurate strategy that yielded to the correct answer. Other reasons for the increased use of accurate strategies included the quick and accurate use of the best strategy at the right time.

Using different strategies at the same time was also tackled by Siegler (1996). He investigated the use of several strategies in spelling through direct spelling tasks. He asked 28 second graders to spell a set of words. Children used their own dictionary to look up

words. The findings of the study revealed that children used at least four spelling strategies: retrieval, sounding out, writing alternative spellings and looking up words in the dictionary. In addition, the findings revealed that students used sounding out because it took them less time than the others but it was, unfortunately, less accurate. Another interesting finding showed that looking up words in the dictionary did not produce perfect spelling. Miscopying and inability of identifying the target word were the most obvious problems for students in using dictionaries for looking up words for the spelling. Hence, the use of several strategies is part of students' abilities in order to learn particular words and produce correct spelling.

Literature on spelling brought up theories (e.g. overlapping waves and connectionist) that indeed represent two different facets of one idea that refers to the development of spelling. Spelling theories took different directions to explain the stages of spelling development, some of which explained learning spelling through stages (Cramer, 1998; Frith, 1985; Gentry, 1982) or interconnected waves that cross each other, particularly, the overlapping waves theory (Grabner- Hagen, 2004; Rittle-Johnson & Siegler, 1999; Kwong & Varnhagen, 2005). Moreover, researchers provided the answers to spelling learning through their observations and analysis. They investigated the ways students spell correct words by the use of different spelling strategies to a certain degree or the use of several strategies at the same time. In general, according to the overlapping waves theory, as children move to an upper grade level, the degree of strategy use changes and learners tend to use different strategies from the ones used previously.

Most research indicates that the spelling learning strategies are new to the context, since they were presented to overcome the problems related to stage model theories. Much more research is still needed in this area. This section provided an overview of the context in which spelling learning strategies exist. The present study attempts to be innovative in combining the elements, which other studies lacked. It combines more strategies to be involved in spelling learning in the light of the overlapping waves theory such as using different types of dictionaries, creating word lists and implementing kinesthetic strategies. Furthermore, the study has the advantage of involving a large number of subjects compared to previous studies, for instance, that were conducted by Rittle-Johnson & Siegler (1999) which was carried out engaging 23 participants and another study by Baleghizadeh and Dargahi (2011) in which the number of participants was 32. Hence, involving a larger number of participants might make the results more generalizable.

## **2. Purpose of the study**

The main aim of this study was to identify the common spelling learning strategies that grade four and grade ten learners use to learn English spelling. The research study seeks to answer the following research questions:

1. What spelling learning strategies are most frequently used by grade four Omani students?
2. What spelling learning strategies are most frequently used by grade ten Omani students?
3. Is there a statistically significant difference between grade four and grade ten in their use of spelling learning strategies?

### 3. Research method

#### 3.1. Subjects

The population of this study consisted of grade four and grade ten students from the Muscat Governorate in the Sultanate of Oman in the academic year 2013/2014. The two grades, grade four and grade ten, were selected because in the Omani educational system grade four represents the exit level from cycle one and grade ten represents the exit level from cycle two, therefore, the researcher selected the two grades so as to indicate the different strategies that both young and older students use in the two different cycles. The total number of the population was 14,921 students. Five percent of this number should represent the sample of the study, but for the reasons of having intact classes and the inability of separating students from their classes to administer the questionnaire to the exact number (i.e. 746), a number of 757 students responded to a spelling strategies questionnaire where they had to indicate whether they use the strategies mentioned or not.

#### 3.2. Spelling Strategies Questionnaire

The researcher developed a spelling strategies questionnaire of a three-point scale and of the closed type requiring one response for each item, called spelling learning strategies questionnaire. The participants had to select one of the following to indicate the extent to which they use a particular strategy for spelling (Always=1, sometimes=2 and never=3). It was based on coded observations from Rittle-Johnson and Seigler's spelling strategies model (1999). In addition, it consisted of (25) items that involved different strategies. A number of (14) jury members from Sultan Qaboos University and the Ministry of Education validated the questionnaire and its appropriateness concerning statements clarity and translation.

The reliability of the questionnaire was established by using a statistical procedure that is the test-retest method. It was administered on (50) students randomly selected and was not part of the sample of the study. The Pearson Correlation Coefficient which is the measure of reliability between total scores in the two administrations was found to be 0.71 which is considered an adequate level of reliability. Item 2 was found not to be adequately understood by students (I write words quickly). Item 2 needed a different rating scale, so the researcher decided to drop item 2 from the final questionnaire. The number of items was 26 and it became 25 after dropping item number 2 from the list. However, the researcher administered the questionnaire in the classrooms to ensure that students understand the items and eliminate any ambiguity regarding the questionnaire items.

### 4. Data analysis and discussion

Descriptive statistics were used to answer the research questions by identifying the most and least frequently used strategies by both grades four and ten. Regarding the results of questionnaire, low-use strategies are represented by the means between (1-1.4), medium-use strategies were represented by the means (1.5-2.4), and high-use means fall within (2.5-3).

Regarding research question one, the most frequently used strategy by grade four students are shown in Table 1.



Strategy	Mean	Std. Deviation
Rule use	1.59	.72
Retrieval	1.72	.47
Visual checking	1.74	.53
Sounding out	1.77	.48
Syllabification	1.99	.61
Analogy	2.15	.79
Visual memory	2.16	.44
Writing synonyms	2.18	.73
Kinesthetic	2.37	.47

\*Means represent the frequency of strategy use (a lower mean indicates higher usage)

*Table.1 Means and Standard Deviations of the Strategies Used by Grade Four Students*

Table (1) shows the means of spelling strategies arranged from the most frequently to least frequently used strategy by grade four students. It is evident that the mean values of all nine strategies fall within medium-use (1.5-2.4). As shown in Table 5, rule use is the most frequently used strategy by grade four learners (1.59). The second one is retrieval with a mean value of 1.72, followed by visual checking (1.74) and sounding out (1.77). The least frequently used strategy is the kinesthetic strategy with a mean value of 2.37.

The findings of this study are similar to the findings of the researchers Rittle-Johnson & Siegler (1999), and Grabner-Hagen (2004). According to the overlapping waves theory, they found that young children indicated the use of several strategies. The results of the present study show that the young children in grade four reported the use of several strategies in learning spelling but only to a certain degree. They tend to use some strategies more often than others do which might be due to the introduction of certain strategies in the classroom. Rule-use as the most frequently used strategy is implicitly introduced at the second semester in the curriculum. In other words, children start deducing rules for spelling from the rule patterns they see in the textbook. For example, recognizing the regular past tense of -ed pattern at the end of the verbs makes students recognize this pattern for spelling. This result is supported by O'Sullivan & Thomas (2007) who found that the children involved in their study made explicit generalizations and deduced rules as their spelling knowledge grew.

To answer research question two, the most frequently used strategies by grade ten students are clearly shown in Table 2. Table 2 depicts results similar to those found for grade four. The grand mean values for the strategies used by grade ten students indicate a medium-use of strategies except for the kinesthetic, which represents a very low-use strategy. The table shows that the most frequently used strategy is the visual checking strategy with the mean score of 1.57, followed by retrieval (1.88). The least frequently used strategy is the kinesthetic strategy with a mean score of 2.51. The finding regarding the kinesthetic strategy, the least frequently used strategy in grade four, is a surprising result. Since young learners have the power to play and use their physical strength in activities, they could produce better results if bodily activities were used in spelling. The reason for not using kinesthetic activities might be attributed to the role of teachers because no bodily activities are introduced to teach spelling in the classrooms. This could also be attributed to teachers' lack of knowledge to introduce the activities as strategies using the appropriate methods in order to learn the spellings of words. However, visual checking, the most frequently used

strategy is the preferred strategy that teachers ask the learners to use to learn spelling. This might be because it is the only one spelling strategy introduced explicitly by the curriculum in the teachers' guide from grade five upwards.

Strategy	Mean	Std. Deviation
Visual checking	1.57	.45
Retrieval	1.88	.46
Sounding out	1.93	.46
Rule use	2.07	.74
Analogy	2.08	.77
Syllabification	2.08	.60
Writing synonyms	2.23	.71
Visual memory	2.35	.41
Kinesthetic	2.51	.40

\* Means represent the frequency of strategy use (a lower mean indicates higher usage)

Table 2 Means and Standard Deviations of the Strategies Used by Grade Ten Students

#### 4.1. Ranking of Strategies

In the table below, the strategies are ranked according to their frequency of use.

Strategy	Rank in grade four	Rank in grade ten
Retrieval	2	2
Sounding out	4	3
Analogy	6	5
Rule use	1	4
Syllabification	5	6
Visual checking	3	1
Visual memory	7	8
Writing synonyms	8	7
Kinesthetic	9	9

Note\*strategies ordered from most to least frequently used

Table 3 Strategies Ranked according to Frequency of Use in Grades Four and Ten

As is evident in Table 3, grades four and ten students differ in the type of spelling strategies they use the most. It shows that grade four students reported the use of rule-use strategies more frequently. Grade ten students use visual checking more frequently. However, both grades share a similar degree of usage of certain strategies such as retrieval and kinesthetic. The findings are in line with the results of the study by Kwong & Varnhagen (2005), which investigated the shifts in strategy use between young students and older ones. Their findings showed that older students used different strategies than those used by younger ones. Similarly, grade ten students used different strategies compared to grade four. Grade ten students reported the use of visual checking strategies more often than other types of strategies, while grade four reported the use of rule-use strategies more often. One possible



explanation is that rule- use is introduced to grade four students for the first time and students may tend to adhere to rule use strategy more in their learning.

As for the significance level between the differences of strategy usage with respect to the grade level (Research question three states “ Is there a statistically significant difference between grades four and ten in their use of spelling learning strategies?”), a t-test was used and the following results were revealed.

Strategy	Grade	N	Mean	Std. Deviation	T	Df	p-value
Retrieval	Four	353	1.72	.47	4.70	755	<.001
	Ten	404	1.88	.45			
Sounding out	Four	353	1.76	.47	4.89	755	<.001
	Ten	404	1.93	.46			
Analogy	Four	353	2.15	.79	1.24	755	.212
	Ten	404	2.07	.76			
Rule use	Four	353	1.58	.72	9.17	755	<.001
	Ten	404	2.07	.74			
Syllabification	Four	353	1.98	.60	2.14	755	.032
	Ten	404	2.08	.60			
Visual memory	Four	353	2.15	.44	6.01	755	<.001
	Ten	404	2.34	.41			
Visual checking	Four	353	1.73	.53	4.75	755	<.001
	Ten	404	1.56	.45			
Writing synonym	Four	353	2.18	.73	.78	755	.435
	Ten	404	2.22	.71			
Kinesthetic	Four	353	2.36	.46	4.49	755	<.001
	Ten	404	2.51	.40			

Note. Std= Standard Deviation, *t*= t value and df= degrees of freedom

*Table 4. Means, Standard Deviations and the t-values of Strategies Used by Grades Four and Ten*

As shown in table 4, the two grades were significantly different at the 0.05 level in their use of all of the strategies except for three strategies; analogy, syllabification and writing synonyms. Commonly, students used analogy syllabification and synonyms less given that they are not introduced in the classrooms. The statistically significant differences were in favor of grade four. Visual checking, with a t-value of 4.70 and a p-value less than 0.001, was the only strategy, which was in favor of grade ten students who indicated the use of this strategy more often than did grade four students. The reason behind this result is probably related to the Omani curriculum since it introduces visual checking strategy from grade five upwards and students continue using this particular strategy for the next grade levels without being introduced to other strategies.

One of the functions of strategy use in learning to spell is to help to hold the spelling of words in the memory of the young students. It seems that since young learners are still trying to move the word into their long- term memory, they experiment with different strategies more than older students do. The results of the overall means of the strategies in Table 4 show that grade four students use more strategies than grade ten do. This finding is also supported by Grabner- Hagen’s (2004) study, which showed that children in early stages

used up to six different types of strategies and as they moved to the next grade levels, the number of strategies used became less than the previous grade level, once they had acquired the spelling of words.

## **5. Summary and conclusion**

This study revealed noteworthy conclusions under the context of spelling strategies that should be mentioned, for instance, spelling instruction should not only be centered on one type of strategy ignoring the others. Additionally, systematic and effective teaching methods should be adopted in order to improve the use of different spelling strategies in classrooms. Results are clear that students use more than one type of strategies to learn spelling, not only one single strategy. Moreover, the results support the underlying basic foundation regarding the overlapping waves theory in which students use multiple strategies at the same time when learning to spell. In general, students reported a moderate-use of spelling learning strategies by both grades four and ten. Both grades reported the use of all spelling learning strategies to a certain degree. There was a shift in the use of multiple strategies by students. According to the overlapping waves theory, children shift the use of a strategy to another strategy from time to time. In the current study, grade four students reported the use of the same strategies as grade ten but there was a difference in the degree of the usage from most frequently used to less frequently used ones.

### ***Recommendations***

Based on the results of the study a number of recommendations are made regarding the spelling learning strategies. These are targeted towards the Ministry of Education, EFL teachers and supervisors but there are also some recommendations for further research studies. Regarding recommendations related to the Ministry of Education, the ministry should conduct in-service training workshops for teachers and provide them with the skills for introducing new and more advanced spelling learning strategies to students that may help them retrieve spelling of words quickly and correctly. Furthermore, it could involve students in identifying their preferred ways to learn spelling and to contribute to establish focused spelling sessions.

The recommendations that are related to EFL teachers and supervisors involve several practical considerations, for instance, Omani teachers should create opportunities for students to practice and investigate the best way to learn spelling through the introduction of various and suitable strategies. In addition, teachers should raise students' consciousness by designing classroom instructions involving various spelling learning strategies. Supervisors should give the senior teachers and teachers time to plan spelling sessions in which they can introduce more advanced spelling strategies and train students to use them in and outside classes to become more self-directed students and independent learners. In the last part, recommendations related to further research suggest that more studies are required to actually measure and observe the most effective spelling strategies that help students learn the spelling of words and retrieve the words' spellings. Further studies could implement the questionnaire to other regions in the Sultanate of Oman and it is of great importance to see the reported strategies used to learn spelling among students from different places in Oman.

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