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The Effectiveness of Using Computerized Language Games on Developing Phonemic Awareness among Third Graders in Gaza UNRWA Schools

فاعلية استخدام الألعاب اللغوية المحوسبة على تنمية الوعي
الصوتي لدى تلامذة الصف الثالث في مدارس الوكالة بغزة

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of the requirements for the degree of
Master of Curriculum & Instruction

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Declaration

I understand the nature of plagiarism, and I am aware of the University's policy on this.

The Effectiveness of Using Computerized Language Games on Developing Phonemic Awareness among Third Graders in Gaza UNRWA Schools

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نتيجة الحكم على أطروحة ماجستير

بناءً على موافقة شئون البحث العلمي والدراسات العليا بالجامعة الإسلامية بغزة على تشكيل لجنة الحكم على أطروحة الباحثة/ نبوغ شعبان شعبان صيام لنيل درجة الماجستير في كلية التربية/ قسم مناهج وطرق تدريس وموضوعها:

فاعلية استخدام الألعاب اللغوية المحوسبة في تنمية الوعي الصوتي لدى طلبة الصف الثالث في مدارس الوكالة بغزة.

"The Effectiveness of Using Computerized Language Games on Developing Phonemic Awareness Among Third Graders in Gaza UNRWA Schools"

وبعد المناقشة العلنية التي تمت اليوم السبت 24 ذو القعدة 1437هـ، الموافق 2016/08/27م الواحدة ظهراً في قاعة المؤتمرات بمبنى اللحيان، اجتمعت لجنة الحكم على الأطروحة والمكونة من:

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وبعد المداولة أوصت اللجنة بمنح الباحثة درجة الماجستير في كلية التربية/قسم مناهج وطرق تدريس. واللجنة إذ تمنحها هذه الدرجة فإنها توصيها بتقوى الله ولزوم طاعته وأن تسخر علمها في خدمة دينها ووطنها.

والله ولي التوفيق ،،،

نائب الرئيس لشئون البحث العلمي والدراسات العليا

أ.د. عبدالرؤف علي المناعمة

Abstract

The Effectiveness of Using Computerized language Games on Developing Phonemic Awareness among Third Graders in Gaza UNRWA Schools

The study aimed at investigating the effectiveness of computerized language games on developing the third graders' phonemic awareness. The phonemic skills focused on were 1) Letter-sound identification, 2) rhyming, 3) phoneme identification, 4) blending, 5) segmentation, and 6) manipulation.

To achieve the aims of this study, the researcher selected (60) third graders from Jabalia Elem. Coed "A" school. The participants were divided into two equivalent groups, each of which had (30) students.

The researcher used two tools which are 1) a pre-posttest and 2) a checklist of the English phoneme to measure the students' phonemic awareness and a programme which is the computerized language games.

The data was collected and analyzed by using the following statistical techniques: T. Test to control the intervening variables and to measure the statistical differences in means between the two groups due to the study variables and Eta square to assess the effect size. The results of the study indicated that the computerized language games were effective in developing the phonemic awareness skills among third graders. In addition, the study findings revealed that there were statistically significant differences between both groups in the results of the posttest, in favor of the experimental one due to the use of games.

In the light of these results, the researcher recommends the necessity of using computerized games in teaching English phonemic awareness skills. Moreover, teachers of English should adopt technology in teaching English.

Key words: Computerized language games – Phonemic awareness

ملخص الدراسة

فاعلية استخدام الألعاب اللغوية المحوسبة على تنمية الوعي الصوتي عند تلامذة الصف الثالث الأساسي في مدارس الأونروا في محافظات غزة

هدفت الدراسة إلى تقصي أثر الألعاب اللغوية المحوسبة على تنمية مهارات الوعي الصوتي لدى تلامذة الصف الثالث. جاءت مهارات الوعي الصوتي التي تضمنتها الدراسة على النحو التالي و هي (1 تمييز الحروف و الأصوات، 2 السجع، 3 تحديد المقاطع، 4 مزج المقاطع، 5 تجزئة المقاطع، 6 التلاعب بالمقاطع).

لتحقيق أهداف هذه الدراسة ، اختارت الباحثة (60) طالبا و طالبة من مدرسة جباليا الابتدائية المشتركة (أ) و قسم المشاركون إلى مجموعتين متكافئتين واحدة تجريبية و الأخرى ضابطة، وكل مجموعة تكونت من (30) طالبا وطالبة.

استخدمت الباحثة أداتين لتحقيق أهداف الدراسة و هما اختبار قبلي- بعدي و قائمة رصد لقياس الوعي بالمقاطع الصوتية كما صممت الباحثة الألعاب اللغوية المحوسبة و التي كانت هي المتغير المستقل. جمعت البيانات و تم تحليلها باستخدام "اختبار ت " لضبط المتغيرات الدخيلة و لقياس الفروق الإحصائية بين المجموعتين تعزى للمتغير المستقل و تم حساب مربع إيتا لمعرفة حجم الأثر.

أكدت نتائج الدراسة أن الألعاب اللغوية المحوسبة لها فاعلية في تنمية مهارات الوعي الصوتي لدى تلامذة الصف الثالث، بالإضافة لذلك كشفت النتائج أن هنالك فروق ذات دلالة إحصائية في نتائج المجموعتين في الاختبار البعدي و قائمة الرصد لصالح المجموعة التجريبية التي درست بالألعاب المحوسبة. في ضوء هذه النتائج، أوصت الباحثة بأهمية استخدام الألعاب المحوسبة على تنمية مهارات الوعي الصوتي، بالإضافة لذلك يجدر بمعلمي اللغة الانجليزية تبني استخدام التكنولوجيا في تعليم اللغة الانجليزية.

كلمات مفتاحية: الألعاب اللغوية المحوسبة - الوعي الصوتي.

Dedication

I would like to dedicate my work to:

The soul of my brother "Baha"

My mother, whose love, support and prayers day and night made me able to get such success

My beloved husband, Rami, who is the source of my inspiration and without his love, protection, guidance and assistance, this work wouldn't have been accomplished

My adorable daughter Maryam

My darling sons, Moaz, Omar and Ahmed, who are the nearest in my life

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My colleagues, who stood with me till the end.

My friend "Magda"

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List of Abbreviations

PA	Phonemic awareness
2L	Second language learner
CAL	Computer Assisted Learning
CALL	Computer Assisted Language Learning
IPA	International Phonetic Alphabet
SPSS	Statistical Package for the Social Science
NRP	National Reading Panel
ELT	English Language Teacher
CMC	Computer Mediated Communication
ICT	Information and Communications Technology
SLA	Second Language Acquisition
MALL	Mobile-Assisted Language Learning
NEIRTEC	Northeast and the Islands Regional Technology Consortium

Chapter 1

Study Background

Chapter 1

Study Background

1.1 Introduction:

Language is a mean of communication among people regardless of their different tongues, races and colours. Every nation has its signs by which their thoughts and cultural heritages are transmitted. Language is one of the most important devices that we can give to our children to overcome obstacles facing them in a rapid developing life.

English is the most spoken language world- wide. It's the language of policy, economy, technology and almost all aspects of life. As a foreign language, English has been of interest in curriculum in most Arab countries and in Palestine as well. Keshta (2000,P.4) clarifies that" English language through the years has become increasingly important, not only in the west but also in the Middle East and in the rest of the world. The governments provide programs for English language in almost every school and university"

In order to learn a foreign language it is basic to develop the four skills: speaking, reading, writing, and listening, with the purpose of communicating different kinds of information. Reading can be one of the most complex skills to acquire in a second language, especially when the native and the second language have key linguistic differences that make the process more difficult. A native Arabic speaker who is learning English as a second language needs to make distinctions in order to produce the second language efficiently. Reading is the most influential skill as it plays the major role in transferring the language aspects widely. If you hear something, you may forget it and that will be easy if you have a weak memory. But if you read it and especially aloud, it would be difficult to forget it as you use two of your senses; seeing and hearing.

Reading is a language skill that needs a lot of time, effort and hard work to be mastered, but no one can claim that it's a time consuming as it's very clear important. The first verse in the Holy Quran was a command to the prophet Mohammed to read for it is the first step to clear the mind and to have a new start. Teaching reading is a hard task for the teachers as it consists of so many competences. It is not enough for a student to memorize the shape of the letters; he should be skilled with the phonological system of the language. When the reader lacks this skill, we find a hesitated and reluctant reader.

It is sensible that a child's ability to understand that words are composed of sounds should be important in learning to read. After all, letters and groups of letters correspond to sound, they don't signify meaning directly as stated by Lewkowicz "Children should be familiarized with speech sounds in isolation before they attempt to detect sounds within words" (1980,P.690). Because children are usually unaware that words are made up of individual speech sounds that can be produced in isolation, it is up to the teacher to provide children with a concept of speech sounds.

Li and Gleitman (2002,P.265) confirm that children come equipped at birth with the ability to learn language. Dowidi (2007,P. 5) comments that children acquire language through the interplay of biology and environmental factors. A challenge for linguists is to figure out how nature and nurture come together to influence language learning. The researcher thinks that it is too difficult to say how and when a child acquires language. This is because their language acquisition depends upon their auditory perception of speech. Mayberry (1993,P. 265) confirms that children who are at the beginning stages of language acquisition, auditory perception of words and phrases is dependent upon their knowledge of phonology, vocabulary and syntax.

"Children often hear words as one big sound. If they are not given the proper skills to identify phonemes they will lack an essential tool needed for reading. The ability to identify the sounds within a word (phonemes) is a difficult task, since sounds are abstract in nature (Fitzpatrick,1997). From this point, phonemic awareness arouses; Linklater, Connor, and Palardy state that phonemic awareness improves children's word reading as well as helping children learn to spell. The researchers prefer to use the definition of the phonemic awareness as it is the ability to hear and manipulate individual phonemes. (2009,P.370)

Phonemic awareness builds a foundation for students to understand the rules of the English language. This in turn allows each student to apply these skills and increase his or her understanding of the text. Ault (2011) assumes that there is a strong relationship between early phoneme awareness and later reading success, and there is a link between reading failure to insufficiently developed phoneme awareness skills. Intervention research such as that of Flynn and Govis (2000) clearly demonstrates the benefits of explicitly teaching phoneme awareness skills. Many children at risk of reading failure are in general education classrooms where phoneme awareness training is not part of their reading

program. This research presents a set of developmental phoneme awareness training games that the special educator can integrate collaboratively into existing reading programs. The researcher tried to use different ways to improve the phonemic awareness and to move from theory to practice.

Using technology is not a new strategy in teaching; on the contrast, it can be found that many researchers who focus on the importance of the technological instruments in the classroom. Juul (2003,P. 190) assumes that "students naturally prefer to attend the classroom full of colours, sounds and other effects that can easily get their attention and gain their interest. To meet all of the learners' styles in learning, we can imagine technology as the shelter to any ambitious teacher".

Much research has been carried out to emphasize the importance of bringing fun to the classrooms by using games. Many learning experiences are built around the idea of fun. Children, it often seems, are born with an innate sense of play as a way to explore the world around them. "Games are seen as the reward for finishing required work, never part of the actual work. In the current educational landscape, where teachers and students alike are overwhelmed by high stakes testing, how can a school be expected to find more time for play? The answer is not to make extra time for play, but rather to use the inherent learning potential of game play as a part of the regular instructional program" (Mayer and Harris, 2010,P.11).

The researcher designed a number of computerized games that would help the students to move gradually to full awareness of phonemes and also to practice the language reading fluently and accurately.

1.2 Need for the study:

Using different techniques in improving students' reading seems to be useless since the roots of the problem are still ignored by teachers and educators. Focusing on letters and their names only causes limitation in one of the important cognitive abilities that is phonemic awareness. Torgesen and Mathes (2000) refer to the teachers' responsibility to find alternatives to make students able to differentiate between letters and phonemes in order to reduce illiteracy among their students. But is it enough to instruct phonemic awareness in the traditional way? The innovative trends in English language teaching

encourage teachers to use technology in teaching all skills. Because there is a lack of studies concerned with phonemic awareness and because some teachers are not convinced with using technology, this study came to check the effectiveness of using computerized games upon the third graders' phonemic awareness.

1. 3 Statement of the problem:

The researcher believes that the problem of the present study springs from several reasons. The first reason is the teachers' misleading presentation of the letters from the first grade. The second reason is the students' little practice of the language inside the classroom whether because they feel shy, afraid or unmotivated and this weak participation in class is documented through the researcher's experience in teaching and exam results, data analysis and consultation with other teacher colleagues as well. The third reason for this weakness is the traditional methods of teaching the language that focus on the names of the letters and their shapes rather than on the sounds. The study problem is stated in the following main question:

- What is the effectiveness of using computerized language games on developing phonemic awareness among third graders in Gaza UNRWA schools?

The problem of the study can be more explained in the following sub questions:

- 1- What are the computerized language games that can improve the third graders' phonemic awareness?
- 2- Are there statistically significant differences at ($\alpha \leq 0.05$) in the mean scores in the phonemic awareness posttest between the control group and the experimental group?
- 3- Are there statistically significant differences at ($\alpha \leq 0.05$) in the mean scores between the experimental and the control groups in the post application of the checklist?
- 4- Are there statistically significant differences at ($\alpha \leq 0.05$) in the mean scores in the phonemic awareness pre-test and posttest on the experimental group?
- 5- Are there statistically significant differences at ($\alpha \leq 0.05$) in the mean scores in the pre and post application of the checklist on the experimental group?

1.4 Research Hypotheses:

- 1- There are no statistically significant differences at ($\alpha \leq 0.05$) in the mean scores in the phonemic awareness posttest between the experimental group and the control one.
- 2- There are no statistically significant differences at ($\alpha \leq 0.05$) in the in mean scores of the post application of the checklist between the experimental group and the control group.
- 3- There are no statistically significant differences at ($\alpha \leq 0.05$) in the in mean scores between the pre-test and the posttest on the experimental group.
- 4- There are no statistically significant differences at ($\alpha \leq 0.05$) in the mean scores in the pre and post application of the checklist on the experimental group.

1.5 Purpose of the study

The overall purpose of this study is to

1. Check the effectiveness of the computerized games to develop third graders' students' phonemic awareness.
2. Contribute to improve the process of teaching English in general and teaching phonemic awareness to 3rd grade in particular.
3. Identify the best approach in instructing English phonemic awareness to 3rd graders.
4. Identify the phonemic skills that are appropriate for 3rd grade and students have to master.
5. design a group of games that help in mastering phonemic awareness.

1.6 Significance of the study

The importance of this study comes through the creation of more effective ways in teaching one of the most significant skills in English language in order to make the students more interactive and responsive readers. Therefore, the study is of a high significance because it:

1. Introduces computerized language games that will be utilized in schools to promote the students' abilities to practice the language through fun.
2. Attracts the attention of English language teachers to the importance of implementing computerized language games in their classes.

3. Provides the planner, designer and writer of the phonemic awareness activities based on computerized games.
4. Benefits educational supervisors, who guide the performance of the teachers and monitor the process of curriculum implementation.

1.7 Limitations of the study :

The study was conducted within the following limitations :

- This study was confined to 3rd graders in the Gaza Strip aged between 9 and 10.
- This study focused on phonemic awareness by using computerized language games
- This study was limited to English language learning.
- This study was conducted within the academic year (2015-2016) / Second semester in Gaza district.

1.8 Empirical Definitions of study terms:

1.8.1 Effectiveness:

Effectiveness is the change in the learners' achievement level in English language that may result from implementing the suggested computerized games. It is the improvement of the students' awareness of the listed phonemes that can be checked by teachers.

1.8.2 Computerized language games:

“Computerized language games are educational means used in English language class that help students acquire language through co-operative or competitive practice within certain rules”(Harb, 2007). Based on her reading, the researcher designed a number of games to focus on the phonemic awareness based on her empirical definition that they are educational electronic games allow players to listen, segment, and blend phonemes to form words within certain rules.

1.8.3 Phonemic awareness:

Phonemic awareness is a subset of phonological awareness in which learners are able to hear, identify and manipulate phonemes which are the smallest units of sound that

can differentiate meaning. For example, separating the spoken word "cat" into three distinct phonemes, /k/, /æ/, and /t/, requires phonemic awareness.

1.8.4 Third graders:

Third graders are the boys and the girls who are enrolled in the 3rd grade at the basic schools in the Gaza Strip and West Bank. They are between eight and nine years of age.

1.8 Summary:

This chapter presented an introduction to the thesis which focused on English language importance in general and reading in particular. Then it discussed phonemic awareness as one of the reading skills. Next, the introduction discussed technology and language games as the solution for many problems including the phonemic awareness issue. The chapter also included the main and sub-questions, research hypotheses, purpose, need, and significance of the study. Operational definitions of the study terms also were presented in this chapter. The next chapter represents the study theoretical framework and includes a literature review and presents a number of previous studies related to the same domains of the study.

Chapter 2

Theoretical Framework

Chapter 2

Theoretical Framework

This chapter is presented in two parts: the literature review and the previous studies. The first part consists of two sections. The first section presents phonemic awareness, its definition, skills and its relation to reading, spelling and vocabulary and the students' need for the phonemic awareness skills. The second section deals with technology and CALL in language learning. And it discusses computerized games and their use in developing phonemic awareness.

The second part consists of two sections. The first section presents the studies that examined the effectiveness of using computer games on education, while the second section deals with the studies that examined the effectiveness of phonemic awareness instruction through various strategies.

Part (A): Literature Review

Section 1: Phonemic Awareness

2.1 Phonemic awareness

For those who already know how to read and write, realizing that the sounds that are paired with the letters are one seems very basic, but for children it seems to be illusionary. It is easy for children to get confused by the written form of words. For example, the word 'cat' is made up of three phonemes (or three sounds): /k/, /æ/ and /t/. The word 'fish' is also made up of three phonemes (or three sounds) /f/, /ɪ/ and /ʃ/ even though 'fish' has four letters: f-i-s-h. In cases where a student can read the letters separately, for example, he\she can name the letters (b- u- s), but if he\she is asked to read the word aloud, he\she might say "I cannot read." Gillon(2004) states that the problem is that a student during his/her pre-school learning used to memorize the letters by their names and there is a gap between theory and practice. Moving to school does not seem to be the solution of the problem as the teachers continue to instruct the letters focusing on their names not on their sounds. To be clearer, term "phoneme" needs to be defined.

2.1.1 A phoneme

"A phoneme is the term used for the smallest unit of sound in a language capable of making a difference in meaning" (Olofsson & Lundberg, 1983, P.35). According to Cohen (1971), a phoneme is "any of the abstract units of the phonetic system of a language that corresponds to a set of similar speech sounds (as the velar \k\ of 'cool' and the 'palatal' \k\ of keel) which are perceived to be a single distinctive sound in the language". Kelly (2001, P.1) defines phonemes to be the different sounds within a language and he uses Figure (2.1) to clarify the types of phonemes of English language:

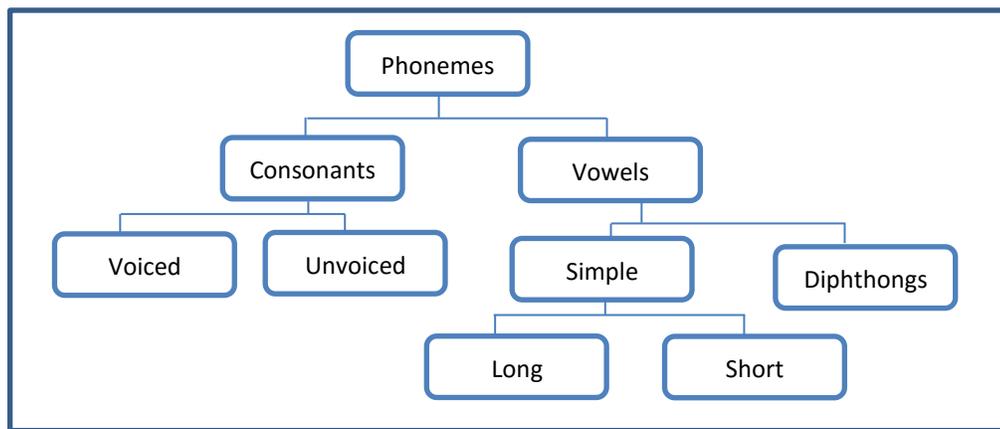


Figure (2.1): Types of phonemes of English Language

Underhill (2005, P.15) defines a phoneme as "the minimal units of sound within words that are significant for distinguishing one word from another". It can be noticed that all definitions agree that a phoneme of a language is an abstraction of a speech sound or of a group of different sounds which are all perceived to have the same function by speakers of that particular language. For example, the English word "thought" consists of three phonemes: the initial /θ/ sound, the /ɔ:/ vowel sound, and the /t/ sound. It can be noticed that the phonemes in this and many other English words do not always correspond directly to the letters used to spell them. McCully (2009, P. 2) argues that English orthography is not as strongly phonemic as that of certain other languages. For example, the word 'school' conventionally begins with three common alphabetic symbols, (s+c+h), but in terms of sounds, the word actually begins with two consonants.

Phonemes, the smallest distinguishable units of speech, are the basic building blocks of a language. Every spoken word is made up of one or more phonemes. "Although they

[phonemes] are small units of sound and the differences between them are frequently subtle, phonemes wield tremendous linguistic power. It is just a single phoneme that can change a 'fish' to a 'wish', a 'pet' to a 'pot', and a 'snip' to a 'sniff' (Foorman, et al., 2003, P.289). Another definition of a phoneme is "a unit of sound in a particular language which is capable of differentiating morphemes, the units of meaning of that language"(Kreidler 2004, P.28).

The number of English phonemes is 44 with slight differences because of dialects and they are divided into consonants and vowels. The number of consonant phonemes is generally 24 and there are 20 vowel phonemes. Each phoneme has its unique description that makes it easy to identify. Descriptions such as stop, voiced and bilabial tell the identity of this sound; it is /b/ sound. According to Kelly (2000, P.15), phonemics describes the sounds according to three conditions:

- a. The articulator.
- b. The place of articulation.
- c. The manner of articulation.

Adams, et al. (1998, P.59) assume that phonemes are the smallest functional units of speech, which may be one of the reasons that they are so hard to notice. But there are other reasons as well. First, unlike words, phonemes are meaningless; therefore, it is unnatural to lend them active attention in the course of typical speaking or listening. Second, unlike syllables, phonemes cannot be easily distinguished in running speech; therefore, it is difficult for children to understand what to listen for even when trying. Worse, "phonemes are so acoustically variable that every one of them sounds more or less different from one speaker to the next and from one word to the next"(Fletcher,1990, P.8). Again, the researcher thinks that phonemes are best distinguished less by how they sound than by how they are articulated. For this reason, children should be encouraged to explore how their voices and the positions of their mouths and tongues change with each sound.

2.1.1.1 Consonants:

Consonants are sounds that are not vowels, in phonetics; "a consonant is a speech sound that is articulated with complete or partial closure of the vocal tract" (Ladefoged, 2001, P.17). There are 21 consonant letters which are q, w, r, t, p, s, d, f, g, h, j, k, l, z, x ,c, v, b, n, m and 'y', which is sometimes consonant when it is pronounced as /j/ sound like the

initial sound in ‘yellow’ and other times it is an /i/ vowel like the last sound in ‘very’. But we can find a letter that has more than one sound like c; it is pronounced /s/ sound at the beginning of ‘ceiling’ and it is /k/ sound at the beginning of ‘cat’. Since the number of possible sounds in all of the world's languages is much greater than the number of letters in any one alphabet, linguists have devised systems such as the International Phonetic Alphabet (IPA) to assign a unique symbol to each consonant as shown in figure (2.2) below adopted from McCully (2009, P.2).

P	b	t	d	tʃ	dʒ	k	g
f	v	θ	ð	s	z	ʃ	ʒ
m	n	ŋ	h	l	r	w	j

Figure (2.2): Consonants IPA chart

In fact, the English alphabet has fewer consonant letters than English has consonant sounds, so digraphs like "ch", "sh", "th", and "gh" are used to extend the alphabet, and some letters and digraphs represent more than one consonant. For example, the sound spelled "th" in "this" is a different consonant than the "th" sound in "thin". (They are transcribed [ð] and [θ]) as Ladefoged (2001, P.18) clarifies. According to the three characteristics mentioned before, it is important to look for where and how consonants are produced. To answer these questions, Underhill (2005, P.4) mentions that the restrictions to the air flow that make the characteristic consonant sounds are made at one of the points of contact between the various speech organs such as the tongue, teeth, lips, roof of mouth, etc. All consonants involve some sort of restriction to the air flow except /w/ and /j/ and restrictions to the air flow can be made in various ways, each giving a different characteristic sound. Restrictions can be produced by friction applied to the air flow, or by a momentary blocking of the air flow followed by a sudden release or by diverting the air flow through the nose. Cohen (1971) and Fletcher (1990) affirm that the use of voicing and unvoicing also characterizes consonant sounds.

2.1.1.2 Vowels:

Contrasted with consonants, vowels can be easily described depending on where and how they are pronounced. "The distinguishing quality of each vowel is produced by the shape and size of the resonant space in the mouth. This is controlled by the position and shape of the tongue, lips and jaw. There is no obstruction to the escape of air through the mouth, and they are all voiced, i.e. the vocal cords vibrate in the air flow."(Cohen, 1971, P.23). In the written system, there are five letters that are presented to the students in our school as vowels which are (e-o-i-a-u). However, confusion occurs when the students pronounce 'foot' and 'fool' with the same vowel depending on the visual realization of the letters (oo), while the right transcription of the first word as mentioned in Longman Dictionary /fʊt/ and the second word is /fu:l/. This difference in reading causes difference in meaning and affects the process of interpreting the message.

Second language learners face a real problem in realizing and producing vowels "Native speakers do accept without too much difficulty some variety in vowel sounds and certainly the trained ear of a teacher can cope with a wide range of variations. Yet, vowels present to learners particular difficulties"(Kelly, 2000, P.34). For instance, Neutral Arabic has three short and three long vowels. The researcher thinks that vowel awareness is a remarkable step for learners to begin with in order to gain the ability to speak and read. There are three types of vowels, simple, diphthongs and triphthongs and Figure (2.3), adopted for McCully (2009, P.2), includes the main two types: simple vowels and diphthongs because of their importance to every English language learner.

ɪ	I	ʊ	u:	ɪə	eɪ	ɪə
e	ə	ɜ:	ɔ:	ʊə	ɔɪ	əʊ
æ	ʌ	ɑ:	ɒ	eə	aɪ	aʊ

Figure (2.3): IPA vowels Chart

One way to raise learners' awareness of vowels is to use the symbols chart as being suggested by Kelly (2000, P.45): "this is certainly to be encouraged, especially if the chart is laid out so as to explain the relationships between sounds in a 'student friendly' way". While presenting the chart and the symbols, the researcher sees that it is beneficial to use

the chart not as a list to learn, but as a map representing pronunciation to explore. It can help in two ways: it can help learners to become more familiar with sounds they have already practiced, and it can help them to be clear about which sounds they have yet to practice.

Introducing the symbols to the students may be considered as a statement of argument as teachers will complain about the extra job they will have to perform inside the classroom, but if they deal with the chart as a means of enhancing learning, it will be one of the important visual devices a teacher uses. It is sounds that are being studied, not symbols.

2.1.2 Phonemic awareness definition

Phonemic awareness is "the ability to examine language independent of meaning, to attend to sounds in the context of a word, and to manipulate component sounds" (Fitzpatrick, 1997, P.5).

Research into how to teach English reading has emphasized the importance of five essential components as summarized by the National Reading Panel: phonemic awareness, phonics, fluency, vocabulary and text comprehension. "Phonemic awareness measured at the beginning of kindergarten is one of the two best predictors of how well children will learn to read" (NRP, 2000, P.1).

Phonemic awareness is the more specific term for awareness of sounds only. "It refers to the ability to identify phonemes in words and to manipulate them (e.g., take the 's' off of seat and what word remains 'eat'). Importantly, this is an oral understanding of parts of words like syllables and phonemes" (Barone, 2008, P.105). The definition is adopted by the researcher is that phonemic awareness is the ability to hear, identify, and manipulate the individual sounds (phonemes) in words; it is the understanding that the sounds of the spoken language work together to make words. Thus, phonemic awareness tasks demand that children attend to spoken language, not tasks that simply ask students to name letters. Children who are phonemically aware would be able to hear the word 'cat', for example, and identify three phonemes (sounds) /k/ /æ/ /t/; hear each individual phoneme /m/ /a/ /n/, for example, and blend these together to form the word 'man'; hear the word 'cart', for example, and be able to delete the final sound /t/ and tell you the word is 'car'.

Phonemic awareness is particularly important in early reading instruction. It is a primary indicator of early reading and spelling success. Chabot (2010, P.3) defines phonemic awareness as a prerequisite to learning to read in an alphabetic sound system, such as English. Teaching phonemic awareness helps children understand this alphabetic principle that the written word is composed of letters that correspond to phonemes (sounds). Thus, before children learn to read print, they must first have an understanding of phonemic awareness rather than their conceiving of each word as a single indivisible sound stream.

Barchers (1999) claims that phonemic awareness is not an innate ability, but it develops over time. The path is a sequence of development beginning with awareness of spoken words, then syllables, followed by onsets and rimes, and finally to individual sounds within words. Types of phonemic awareness tasks include: rhyme recognition and production, blending, isolation, segmentation, deletion, substitution, and adding. According to Adams (1990, P.412)"regaining conscious awareness of the phonemic structure of speech is among the most difficult and critical steps toward becoming a reader".

2.1.3 The difficulty of phonemic awareness:

Johnson (2003, P.23) clarifies the cause behind the difficultness of the phonemic awareness is that people do not attend to the sounds of phonemes as they produce or listen to speech. Instead, they process the phonemes automatically, directing their active attention to the meaning and force of the utterance as a whole. The challenge, therefore, is to find ways to get children to notice the phonemes, to discover their existence and separability. It is widely known that most of our children in schools never receive direct instruction in the phonological skills that will have the most direct and positive effect on their reading and spelling abilities.

Edwards and Taub (2016, P.78) justify part of the difficulty in acquiring phonemic awareness is that, from word to word and speaker to speaker, the sound of any given phoneme can vary considerably. These sorts of variations in spoken form that do not indicate a difference in meaning are referred to as allophones of a phoneme. It is also important to note that phonemes are not spoken as separate units. Rather, they are co-articulated; that is, when we speak, we fuse the phonemes together into a syllabic unit. For

example, when we say 'bark' aloud, we do not produce four distinct phonemes: /b/, /a/, /r/, /k/. Instead, our pronunciation of the initial consonant is influenced by the medial vowel, and the medial vowel is influenced by the consonants before and after it. Thus, we talk about r-controlled vowels like the "ar" in 'bark'. Similarly, we speak of nasalized vowels before nasal consonants, such as in the words 'and', 'went', and 'gym'. Because these vowels are assimilated into the following consonant in speech, most children have special difficulty representing them as distinct phonemes in reading and spelling.

Consonants as well as vowels are affected by co-articulation. Consider /t/ and /d/. Say the words 'write' and 'ride'. The /t/ and /d/ sounds are distinct in these two words. However, now say 'writer' and 'rider'. Now the medial /t/ and /d/ phonemes are reduced to a common phoneme (called a tongue flap). Not surprisingly, children are likely to spell 'writer' as R~I-D-R. Furthermore, /t/ and /d/ are affected by /r/ in consonant blends. Pronounce the following pairs of words: 'tuck-truck'; 'task-trash'; 'dunk-drunk'; 'dagger-dragon'.

The researcher believes that the phonemic awareness difficulty is either because factors related to the language nature or to the wrong practices of teachers. They ignore phonemic awareness' skills inside the class so the misleading presentation of English letters cause the weakness in differentiating letters from sounds that learners show. Some phonological awareness activities have been suggested by Rachmani (2011) to ask children to listen to the sameness, difference, number, and order of speech sounds. As the previous examples illustrate, such activities can become difficult when the phonetic level of speech does not relate cleanly or directly to phonemic level. Yet, it is ultimately the phonemic level we are after because it is awareness of phonemes that allows children to understand the alphabet works-an understanding that is essential to learning to read and spell.

2.1.4 Difference between phonological awareness and phonemic awareness

A language is a number of things together. Giegerich (1992, P.78) clarifies that the components of a language are a collection of meaningful elements called morphemes; the technical name for this collection is the lexicon. And a language is a collection of rules for putting morphemes together to form words and for putting words together to form sentences. The rules for forming words are the morphology of the language, and the rules

for forming sentences make up the syntax. Lexicon, morphology, and syntax are not abstractions; they are knowledge which speakers of the language possess, a knowledge which is largely unconscious for native speakers who acquired the language in the earliest years of life.

"Phonology may also be thought of as a collection of phonemes and a collection of rules for putting these units together to express the meanings of morphemes, words, and sentences"(Canepari, 2005, P.32). Phonology is no more an abstraction than lexicon, morphology, and syntax; it is knowledge, largely unconscious, which speakers have and which enables them to communicate, to express meanings which other speakers of the language will understand. The native speaker of the language is aware of phonemes; the trained phonetician recognizes the variation of these – that each phoneme is pronounced differently in different contexts – as allophones.

Often, the term phonemic awareness is confused with the term phonological awareness. To be precise, Wilson (1998, P.2) defines phonemic awareness as a subset of phonological awareness. Phonemic awareness refers to an understanding about the smallest units of sound that make up the speech stream: phonemes. The focus is narrow- identifying and manipulating the individual phonemes in word. Phonological awareness occurs before phonemic awareness. Children without phonological awareness must learn to hear the difference between "dice" and "rice" before they understand that the "d" in 'dice' and the "r" in 'rice' are the letters that change the word.

Like phonemic awareness, phonological awareness refer to the sounds in spoken language and has nothing to do with printed language. Yet, while phonemic awareness refers specifically to sensitivity to phonemes, "phonological awareness refers to a sensitivity to any size unit of sound" (Yopp & Yopp, 2000, P.131). Thus, the term phonological awareness is an umbrella term that encompasses a number of skills of varying degrees of difficulty (including phonemic awareness).

Phonological awareness is an awareness of the different levels in the sound system of speech. In order to learn to read or spell words, learners need to be aware that the words they hear in spoken language are made up of small segments of sound and that these sounds can be represented in print. Phonological awareness is the awareness that words can be separated in three ways and at three levels, by syllables, by onsets and rimes, and by

phonemes. Henry (2010) assumes that phonemic awareness is the most advanced level of phonological awareness.

Some researchers like Gunning (2000) and Smith (2003) derive the hypotheses that fortunately, because phonemes are the basic building blocks of spoken language, babies become attuned to the phonemes of their native language in the first few months of life. Thus, developing readers must learn to separate these sounds, one from another, and to categorize them in a way that permits understanding of how words are spelled. It is this sort of explicit, reflective knowledge that falls under the rubric of phonemic awareness. Conscious awareness of phonemes is distinct from the built-in sensitivity that supports speech production and reception. Unfortunately, phonemic awareness is not easy to establish.

The researcher thinks that phonological awareness is the umbrella term used to orally distinguish units of speech, like words and syllables. Phonemic awareness falls under this umbrella and it refers to the ability to identify phonemes in words and to manipulate them.

2.1.5 The nature of phonemic awareness:

Johnson (2010, P.825) assumes that phonemic awareness is a cognitive skill that consists of three pieces. The first piece concerns a linguistic unit, the phoneme; the second concerns the explicit, conscious awareness of that unit; and the third involves the ability to explicitly manipulate such units. Phonemic awareness is thus the ability to consciously manipulate language at the level of phonemes. The abstract nature of phonemes presents one of the obstacles a child must overcome in developing phonemic awareness.

Sinha affirms the importance of recognizing that phonemes are linguistic units and not units of writing systems. "Thus, while 'bit', 'bait', 'butte', and 'bought' all differ in the number of letters they possess; they each represent words containing only three phonemes, which differ only in their second phoneme." (2013, P.23). Beyond the phonemic unit, the second piece of the phonemic awareness concept entails the explicit, conscious awareness of these units. Any child who has learned a language knows the phonemes of that language; if he/she did not, he/she could not recognize the difference between spoken minimal pairs in that language, like 'bit' and 'pit'. But being able to use that linguistic difference in

speaking and listening to language is very different from knowing explicitly that the difference being used is in the initial part of the word. This explicit knowledge is the meta-linguistic nature of the skill, or the ability, to consciously reflect upon the linguistic units that underlie language.

More than just being conscious of the phoneme, the third piece of the phonemic-awareness concept requires some level of skill in manipulating phonemes. In learning to read alphabetic language, it is not enough just to be aware of the phonemic units; the child also must be able to manipulate those units. Such manipulation is important because the child learning to read must be able to hold and contrast in memory both the phonemes and the letter strings that represent them (Blachman, 2002, P.488). If a pupil cannot manipulate phonemes, she/he will not be able to master the relationship between the letter units and the phonemic units. In learning to read, the child must be able to isolate, compare, and contrast phonemes and letter sequences, for example, noting that the final phoneme in both 'bit' and 'bought' is the same, but that one is represented by a single letter and the other by three letters.

To sum up, the three pieces of phonemic awareness are knowledge of language at the level of individual phonemes, knowledge of these language units that is conscious, and skill at consciously manipulating language at this level.

2.1.6 Importance of phonemic awareness:

Major points from the report of the NRP (2000) emphasize the importance of phonemic awareness:

- Phonemic awareness instruction is effective in teaching children to attend to and manipulate speech sounds in words. PA can be taught and is effective under a variety of teaching conditions with a variety of learners.
- Findings show that teaching children to manipulate the sounds in language helps them learn to read.
- Phonemic awareness instruction produces positive effects on both word reading and pseudo word reading, indicating that it helps children decode novel words as well as remember how to read familiar words.

- Phonemic awareness instruction helps all types of children improve their reading, including normally developing readers, children at risk for future reading problems, disabled readers, preschoolers, kindergartners, 1st graders, children in 2nd through 6th grades (most of whom were disabled readers)
- Phonemic awareness helps most children learn to spell and its effect lasts well beyond the training. However, it is not effective for improving spelling in disabled readers. This is consistent with other research indicating that disabled readers have a difficult time learning to spell.
- Phonemic awareness instruction may be most effective when children are taught to manipulate with letters, when instruction is explicitly focused on one or two types of phoneme manipulations rather than multiple types, and when children are taught in small groups.
- Phonemic awareness instruction is more effective when it makes explicit how children are to apply its skills in reading and writing.
- Phonemic awareness instruction does not need to consume long periods of time. Acquiring its skills is a means rather than an end.

2.1.7 Phonemic awareness skills:

There are several expectations for children under the phonemic awareness umbrella (Armbruster, Lehr, & Osborn, 2001, P.104). They include:

- Identifying rhymes and producing rhymes (e.g., “What rhymes with ‘bear’?”).
- Identifying number of syllables in a word (e.g., “There are two syllables in ‘okay’.”).
- Identifying onsets and rimes (e.g., “The first part of ‘tin’ is /t/and the last part is ‘in’.”).
- Blending or splitting syllables (e.g., “Put ‘br’and ‘ead’ together. The word is. . . .” or “What words are in the word ‘inside’?”).
- Identifying the number of phonemes (e.g., “How many phonemes are in ‘dog’?”).
- Manipulating phonemes.
 - a. Phoneme isolation (“What is the first sound in ‘house’?”).
 - b. Phoneme identity (“What sound is the same in ‘fat’, ‘fun’, and ‘fig’?”).

- c. Phoneme categorization ("Which word does not belong to the list?")
- d. Phoneme blending ("Combine phonemes to create a word: *m-a-n*.").
- e. Phoneme segmentation ("Divide this word into its phonemes.").
- f. Phoneme deletion ("Take the /t/ off of 'train' and you have. . . .").
- g. Phoneme addition ("Add /s/ to 'peak' and what word do you have?")
- h. Phoneme substitution ("Change the /m/ in *man* to a /t/ and you have. . .").

The researcher presents the following list of phonemic awareness skills presented by Moats and Tolman(2008), Salone and Lepola (1998) and Olofsson and Lundberg (1985). These skills typically emerge following a developmentally appropriate hierarchy from letter/sound identification, which is less complex to manipulation, which is most complex:

2.1.7.1 Letter/Sound identification

Letter/sound identification is necessary to learn to read and write and to allow children to develop greater flexibility and automaticity in reading and writing. Hulme, et al. (2002, P.12) state that "once children can discriminate separate phonemes, letter-sound relationships can be introduced, as phonemic skills can be taught simultaneously from this point. When letters are first introduced, they should be referred to by the sound they represent, not by the letter name.

Teaching sounds along with the letters of the alphabet is important because it helps children to see how phonemic awareness relates to their reading and writing. The researcher thinks that learning to segment sounds with letters helps them spell words. If children do not know letter names and shapes, they need to be taught them along with phonemic awareness. To sum up, Children should be able to:

- Name letters, both upper and lower case
- Match letter to sound
- Match sound to letter
- Know that some letters have multiple sounds
- Respond automatically to letter symbols (Salone & Lepola, 1998: 160).

2.1.7.2 Rhyming

As rhyme play directs children's attention to the sound-structure of words, it seeds their awareness that language has not only meaning and message, but also form. Konza (2011, P.2) defines rhyming and presents its importance "Children usually become aware that certain words sound the same at the end – that they rhyme.

Understanding the concept of rhyming requires the student to know which part of the word is important for rhyming, so it is important for teachers to model recognition and production of rhyme. Rhyming is a particularly important component of early language experiences. Halme, et al. (2002, P.36) affirms that children who cannot recognize or generate rhyme are at risk of not developing the skills they need to be successful in using familiar word parts for reading and spelling." If children can recognize and produce rhyming patterns such as 'ring', 'sing', 'king' and 'wing', they are actually demonstrating early phonemic awareness because they are deleting the first phoneme (the onset) in the syllable and replacing it with another. While they are initially not aware that they are doing this, it opens the door to the realization that words are made up of a sequence of single sounds.

This highlights the importance of including word play and rhyming activities in programs for young children whose first languages may be rich in storytelling and other important aspects of oral language, but not in rhyming. These children will come to school at a disadvantage if this particular door has not been opened for them. To sum up, children should be able to:

- Recognize words that rhyme.
- Produce words rhymes with other words (Salone & Lepola,1998, P.161)

2.1.7.3 Phoneme identification (words and sentences)

Once children develop sensitivity to sound, then they learn that words are comprised of smaller units. Children should also understand that language consists of sentences of different lengths. They should:

- Clap each time the teacher says a word in the sentence.
- Develop sentences about a picture shown (Salone & Lepola, 1998, P.161).

2.1.7.4 Blending

Children should be aware that some words can be divided into smaller bits, namely phonemes. "Phoneme blending is one of the most important phonemic skills and requires careful attention. Blending requires children to listen to a sequence of spoken phonemes and then combine them into a word" (Carnine, Silbert, Kame'enue, Tarver, & Jagjohann, 2006, P.45). Phonemic blending simply requires children to listen to a sequence of spoken phonemes and then combine them into a word. Children should:

- Blend syllables or onset and rime to form words.
- Blend separated phonemes (Salone & Lepola, 1998, P.161).

2.1.7.5 Segmentation

Children should be able to divide words to onsets and rimes and dividing words into single sounds. Onsets and rimes are divisions within a syllable. Children appear naturally to use the onset-rime division in their early attempts at segmenting syllables (Gunning, 2001). While many children do not need practice of this intermediate step before phonemic awareness, it is very important for some.

The onset is made up of the parts of the syllable that come before the vowel; the rime is the vowel and all subsequent consonants. All syllables have a rime, but not all have an onset. The word 'at' for example, has no letters before the vowel, therefore has no onset.

"Onset and rime is simply saying the first sound of a word and then finishing with the remaining word for example /b/ /oy/, /h/ /ouse/" (Bryant, MacLean, and Bradley 1999, P.238). Children should:

- Break a word apart.
- Count the syllables of a word.
- Count the words of the sentences (Salone & Lepola, 1998: 161).

2.1.7.6 Manipulation

Manipulation is the most sophisticated phonemic skill. "The ability to manipulate sounds to form different words in order to support the flexible use of sound knowledge as one component of the reading and writing process. Phoneme deletion, addition and a combination of both are included in this very refined skill"(Moats & Tolman, 2008: 26).

Knozo defines phoneme manipulation as "the ability to manipulate sounds to form different words in order to support the flexible use of sound knowledge as one component of the reading and writing process" (2011: 5). Phonemic manipulation simply is the ability to manipulate these phonemes. Children should:

- Substitute first and last phonemes in a word.
- Add phonemes to words (Salone & Lepola, 1998: 161).

2.1.8 Effects of underdeveloped phonemic awareness

Phonemic awareness is a mental process crucial to the development of word recognition and spelling. This term is used to describe one's ability to perceive the identities and order of sounds within spoken words. For example, most persons can learn sound/symbol associations in isolation: d=/d/ as in dog, f=/f/ as in fan and i=/i/ as in it. However, many persons cannot perceive those same sounds when they occur in a word or syllable. Therefore, though they are taught phonics, they may look at the word "fat" and say "fan" or look at the word "stream" and say "steam". They cannot auditorily perceive their errors .

Stuart (2005: 42) refers to the possibility that a pupil can point to each letter in "stream" and verbalize its name and sound, but they are unable to notice that when they read it as "steam", a sound was omitted. These persons may also spell "girl" as "gril" or "equipment" as "eqetment" or make speech errors such as saying "estatic" for "ecstatic" or "irrevelant" for "irrelevant". "In the absence of adequate phonemic awareness, the reader must rely heavily on context cues (guessing at words) and on visual memory for the correct letters in the correct sequence in order to recognize words and interact with print". The use of these strategies alone generally results in independent reading levels significantly below intellectual potential.

Estimates of the number of individuals who have difficulty perceiving the sounds in words (phonemic awareness) range from 10-33 percent of the population. Underdeveloped phonemic awareness occurs randomly in the population without apparent linkage to race, sex, education or intelligence (Konza, 2011: 81).

Measures of phonemic awareness are predictive of reading and spelling success for early school-age readers and are highly correlated with reading ability in adults.

2.1.9 Development of phonemic awareness

Regardless of the fact that those babies are born with an innate phonemic awareness, it is a limited ability and can be developed, resulting in significant improvement for dyslexics and for those with less severe reading and spelling problems. The games we use to train the learner to consciously apply information from a sensory modality that focuses on the source of speech sounds—the mouth. When the teacher presents the game, the learner is taught to notice the action of the tongue, lips and mouth when it produces a word (motor-kinesthetic information). This motor information provides the reader with a means of verifying the sounds and their order in a syllable or word.

The integration of auditory (sounds), visual (letters), and motor information makes it possible for children or adults to independently “figure out” words and correct them when reading and spelling. "Persons from developmentally delayed to gifted have been able to dramatically improve their abilities to read and spell independently after trained professionals led them to notice and apply the motor-kinesthetic information available to them" (Edwards & Taub, 2016:81).

2.1.10 Phonemic awareness assessment:

Robbins and Kenny (2007) advise teachers to assess pupils' phonemic awareness at the beginning, middle, and end of the year. The teacher measures several levels of students' phonological awareness through various tasks; these include the rhyming subtest and the beginning sound picture sort. The concept of word task assesses a child's level of word awareness using print, and the spelling task requires children to segment words orally and match the sounds to their written symbols. Both of these tasks, therefore, measure sound awareness as well as print awareness.

Getting older, activities also include a spelling inventory that provides specific information about students' phonemic awareness and phonics skills. There are also two additional phonemic awareness tasks - blending and sound-to-letter matching--for first graders, and for second or third graders who read fewer than 15 preprimary words. The blending task requires students to orally blend two, three, and four phoneme words. The

sound-to-letter subtest requires students to isolate the beginning, ending, or middle sound of a word while providing the corresponding letter, sound, or another word with the same sound.

In addition to beginning, middle, and end of year testing, Jurenka (2005: 23) confirms that it is important to monitor students' progress by assessing phonemic awareness on a regular but informal basis. Such assessments are especially crucial for students who are having difficulty learning to read. Which areas of phonemic awareness are the most important to assess? The answer depends on the child's stage of literacy development.

Table (2.1), adopted from Barone and Xu (2008: 78) provides an overview of the three basic stages of reading development and lists the areas of phonemic awareness that are most pertinent for assessment and instruction in each stage. Barone and Xu (2008) explain that the informal assessments in these focus areas will help the teacher determine if his/her students are making progress and will allow him/her to plan effective, assessment-based instruction at an appropriate level of difficulty.

Table (2.1): Stages of phonemic awareness

Stage of Literacy Development	Characteristics of this Stage	Phonological Focus Areas
Emergent Reader	<ul style="list-style-type: none"> • Has incomplete alphabet knowledge • Lacks voice to print match (concept of word) • Spellings bear no sound-symbol correspondence (late in this stage, may represent salient or beginning sounds) 	<ul style="list-style-type: none"> • Rhyme • Beginning Sounds • Word awareness • Syllable awareness
Beginning Reader	<ul style="list-style-type: none"> • Accurately tracks print • Uses letter-sound knowledge to decode words • Is developing a sight vocabulary • Consistently uses beginning and ending sounds when spelling words; learning medial vowels, digraphs, and/or digraphs. 	<ul style="list-style-type: none"> • Blending, segmenting and manipulating: • Onset-rimes • Individual phonemes
Early Instructional Reader	<ul style="list-style-type: none"> • Has large sight vocabulary. • Is learning to read more fluently and expressively. • Focus of instruction shifts from decoding to comprehension. <p>Spells words with short vowels, blends, and digraphs correctly; learning long vowel and - r control vowel patterns.</p>	<ul style="list-style-type: none"> • No need to assess

2.1.11 Results of stimulating phonemic awareness

Walter (2010) assumes that stimulation of phonemic awareness is not a reading curriculum or program. It is a sensory cognitive process that underlies individual success with any method of teaching reading. "When phonemic awareness stimulation is made part of introducing primary students to the reading process, it accelerates decoding performance and often prevents associated learning disabilities" (Walter, 2010: 24). Children with adequately developed phonemic awareness are able to respond more readily to the reading philosophy in use, so that the ability to think with the written form of the language can emerge as surely as spoken language emerged .

(Chabot, 2010: 15) affirms that:

Intensive phonemic awareness stimulation for older children and for adults with reading and writing difficulties is also consistently effective. These individuals can become independent in reading and writing at age-appropriate levels within a few weeks or months, depending on the degree of deficiency in phonemic awareness and the amount of daily instruction received.

Stimulating phonemic awareness resolves an underlying cause of a wide range of difficulties with reading and spelling. It is not a compensatory or coping skill. It is the development of a mental process which changes the way the brain thinks about sounds and results in an answer for problems with reading and spelling accuracy.

2.1.12 Indications of underdeveloped phonemic awareness

Diagnostic evaluation that analyzes spoken language performance can be used to determine the appropriateness of treatment for developing phonemic awareness. Gromko (2005) and Valbuena (2014) count these symptoms to be noted:

- Difficulty learning letter names and remembering sounds for letters in kindergarten and first grade.
- Mispronouncing common words: Saying "susess" for success, "flustrated" for frustrated, "excape" for escape.
- Reading errors where sounds or syllables are omitted, added, reversed or repeated: Reading "bench" for beach, "slice" for silence, "conversation" for conservation.

- Misspellings that are not reasonable: action spelled "akshun" is reasonable— action spelled "anshul" is not.
- Misspellings with the right letters in the wrong sequence: Writing "left" for felt, "mojairty" for majority, "derss" for dress, or "saw" for was.
- Misspellings with syllables missing or in the wrong sequence: "phycian" for physician, "agate" for agitate or "cacipaty" for capacity.
- Appearing to be an underachiever who just needs to try harder.
- Poor understanding of written material, but understanding of material presented orally is generally adequate.

2.1.13 Phonemic awareness and reading:

Some authors refer to reading in terms of decoding. But this is not to suggest that we consider the two words (reading and decoding) to be the same. "Decoding refers to the process by which students are able to look at the visual symbols that we call letters and translate them into spoken words". McGuinness (2004: 35). Reading, on the other hand, is more complex cognitive process that carries implications far beyond the recitation of words on a page.

According to Li and Gleitman (2002: 281):

The process of reading is very complex- it involves elements ranging from visual perception and the control of eye movements to judgment about meaning, relevance and significance which involve long term memory and relating new information with existing mental schemas.

A strong connection has been clearly established between phonemic awareness and reading. The relationship between phonemic awareness and reading acquisition is interactive and complex. Some aspects of phonemic awareness precede reading and other aspects are the result of reading. This reciprocal relationship is exhibited throughout the studies that were reviewed. The apparent importance of early rhyming skills was demonstrated by Bryant et al., (1990). They concluded that there is a direct connection between ability to recognize or supply rhyme and the ability to read. Sensitivity to rhyme and alliteration are precursors to phoneme deletion skills, which in turn underpin the ability to isolate and recognize phoneme sounds in words.

Lieberman (1997) found that at the end of first grade, when children were aged 7, nearly 30 per cent of them had no concept that words could be segmented into phonemes. When Yopp and Yopp (1999) correlated several phoneme awareness subtests with nonsense word reading, she found the highest predictive correlation between the phoneme subtests and the nonsense word reading test involved two tasks that required children to segment words phonemically. In both tasks, the predictive correlation exceeded 70. The ability to rhyme had the lowest predictive correlation.

As well as correlational evidence indicating that phonemic awareness is strongly predictive of reading attainment, a number of more recent studies have shown that phonemic awareness has a causal influence on reading development. This finding is of great significance, for without it one could argue that phonemic awareness is purely a consequence of reading development, or alternatively merely related to a third causal variable such as language development, intelligence, or social class(Ault, 2011, P.23).

Another point discussed by Tierney and Readence (2005) about reading, or more precisely reading comprehension, is the ability to derive meaning, particularly which intended by the author, from the printed word in short, reading understands the meaning of written language. The major difference between the written and the spoken word is not what is being communicated, but how the communication is taking place, by the eye rather than the ear. In other words, reading is dependent on two major cognitive capacities. The first is comprehension, the ability to understand language. The second is decoding, the ability to derive a word phonological representation (one based in the domain of spoken words) from the sequences of letters that represent it. Skilled decoding allows the reader through print, to retrieve the meaning of words known and organized through the learning of spoken language. Together, decoding and comprehension skills combine to permit language comprehension to take place via the printed word (Murray et al., 1996).

A study conducted by Fletcher (1990) affirms that reading comprehension implies three elements. First, students must be able to decode text fluently. Second, they must have well-developed background knowledge to be able to connect with the text as well as sufficient knowledge of the vocabulary that they will encounter. Third, they must have well developed comprehension skills. And to examine the term fluency in decoding more closely, a question arouses "What are the knowledge and skills that students need to acquire in order to

decode text fluently? Again and while constructing their Sound Approach, Robbins and Kenny (2007) assure students need (a) a thorough knowledge of the alphabetic code and (b) well-developed phonemic awareness skills. By this logical analysis of the reading process, both Robbins and Kenny came up with the rule that if children lack phonemic awareness and alphabetic coding skills, they are necessarily unable to decode. If children are unable to decode, their comprehension skills are adversely affected; and, without the ability to comprehend what they read, students have no hope of becoming highly skilled readers.

Research has shown that developing phonemic awareness is a critical component in instructional programs for emergent readers (Yopp & Yopp 2000, P.137). "Phonemic awareness is one of several basic elements of language, along with syntax, semantics, and experiences that readers use during the reading process." Phonemic awareness consists of the ability to recognize the isolated sounds within a word, to be able to rhyme, and to be able to blend sounds into words.

Most children acquire skill with phonemic awareness in a natural manner as parents and teachers read to them and engage children in language play. "Eighty percent of first graders have acquired phonemic awareness by the middle of first grade" (Vacca, et al., 2003, P.121). While phonemic awareness is essential, it is also important to teach it within the context of enchanting picture books, language experience stories, and playing with language activities. It is critical not to lose a child's love for story with repeated use of songs and games. "About one out of four middle-class children will have difficulty with phonological awareness unless she or she is given a program of systematic instruction" (Gunning, 2000, P.3).

Research has shown that phonemic awareness element of reading "may be the single most powerful predictor of reading success at the end of the first and second grade" (Beck, et al., 2006, P. 45). Chabot (2010, P.39) assumes that there are approximately 30 discrete phonemic awareness skills that a child should master by the end of third grade. The researcher sees and understands the need and urgency for struggling students to be taught phonemic awareness strategies. To become literate, the child must grasp the alphabetic principle which means that the sounds that are heard in words in English can be represented by written symbols.

Decoding, which is required for reading, involves looking at a print symbol and associating it with a sound. Encoding, which is required for writing, involves hearing a sound and knowing what symbol, or letter(s), to write to represent that sound. Phonemic awareness is critical to both decoding and encoding. This ability to analyze words into sounds is exactly the skill that promotes successful reading in the first grade (Laucaster, 2008).

2.1.14 Phonemic awareness and spelling

Spelling is a fundamental skill that every child needs to learn in order to successfully write the English language. As teachers, it is our goal to instill these skills in our students so they will develop phonemic awareness, and be able to accurately represent the written language. Phonemic awareness is critical for learning to read any alphabetic writing system. And research shows that difficulty with phoneme awareness and other phonological skills is a predictor of poor reading and spelling development.

Griffith and Olsen (1992, P.516) state that phonemic awareness is critical in learning to read and write an alphabetic language since our system of writing maps to phonemes. Early on, teachers want students to understand that all twenty-six of those strange little symbols that comprise the alphabet are worth learning and discriminating, one from the other, because each stands for at least one of the sounds that occur in spoken words.

Johnston and Waston (1997, P.38) divide words in English Language into two categories, those which are familiar to the pupils and they can easily spell and the other words which are unfamiliar to the students and need a cognitive ability to be spelled. Learning to spell unfamiliar words, either by imitation or analogy with known words, is influenced by knowledge of letter-sound mappings, the amount and complexity of orthographic information they can process and their knowledge of word structures.

When asked to spell a previously unseen word from its sound form, they need to segment the word into phonological units and map these into orthographic units. They use similarities in sound properties to make analogies between the new and known words and use the spelling pattern of the known word to generate the unfamiliar word.

Children's existing knowledge of spelling patterns has been shown to develop gradually, in a sequence influenced in part by their ability to process letter-sound

information in words. Steere (2005) talked about five stages: at the earliest stage, the pre communicative stage children show an awareness that writing consists of written symbols that may or may not be like letters or numerals. At the second stage, the semi phonetic stage, they show a global awareness of the phonological structures of words, representing some of the sounds in them either by letters or letter-names. The third stage, the phonetic stage, shows an awareness that all sounds in words can be represented phonetically by letters. At the fourth stage, the transitional stage, spellers no longer rely on sounds alone to spell and begin to use devices such as silent marker to spell long vowels although the markers may sometimes be misplaced. This leads to fifth stage, at which the conventional orthographic representations of sounds in words are assimilated with irregular spelling patterns.

One might expect therefore that learning to spell both by imitation and by analogy requires a level of phonemic awareness. Successful use of analogy would seem to require the ability to recognize segment and delete and substitute phonemes when making comparisons between words. Earlier research, in part, supports this. Garcia (2005) has shown that phonemic awareness has a developmentally limited influence on spelling; while first grade children rely more on phonemic awareness skill to spell, third grade children rely more on memorized orthographic units to spell words that contained phonemes with more than one rule-governed spelling.

2.1.15 Phonemic awareness and vocabulary

In our use of language we express ourselves much of the time in sentences. Sentences consist of phrases, and phrases consist of words. Words belong to different classes; major classes are called nouns, verbs, adjectives, adverbs; minor classes are determiners, prepositions, conjunctions, and others.

Teaching vocabulary is a task which requires having so many competences. Planning is one of these requirements; it is to decide what vocabulary is needed to be introduced and how the teaching of the determined vocabulary will be. With vocabulary study, McGuinness (2004) mentions that it is important to ask, “What am I trying to teach here, anyway? What is my goal?” Sometimes, teachers focus on spelling the word and the way students read it. Other teachers focus on comprehension and the word meaning.

Very common, schools assess vocabulary and spelling together. On vocabulary tests, teachers require students to know the correct spelling, as well as the meaning, of the words. The problem is that learning to spell and learning the meaning of a word are two different processes. You can learn to spell something without knowing its meaning, just as you can learn a word meaning without having any idea how to spell it. That does not mean that knowing both is not a good idea. It just means that one is neither dependent on nor necessary for the other. Walter (2010, P.28) claims that " If your goal is to help your students expand their vocabularies as much as possible, then it is not a good idea to require them to know how to spell each vocabulary word they learn." But what is the point of having too many words without being able to spell them? For having a good quality of a learning process, we should have the data enter correctly in order to get excellent outcomes.

Although many people would consider meaning the most important aspect of learning a word, there has recently been an increasing awareness that (written-form) knowledge, traditionally considered a "less important" type of knowledge, is a key component to both vocabulary knowledge and language processing in general. This awareness stems from research that has shown both that the eye fixates on most words in a text rather than skipping over many of them, and from psychological research that has shown the complexity of orthographical decoding (Hoover, 2002).

Results from reading research have been particularly instrumental in showing the importance of orthographical word form. The most common cause of unsuccessful guessing from context in one study (Blachman, 2002, P.491) was mistaking unknown words (e.g., optimal) for known words that were similar orthographically (e.g., optional). Even if the context did not support such erroneous guesses, the subjects often persisted with them all the same, supporting Barcher's (1999, P.24) assertion that word-shape familiarity can often override contextual information.

2.1.16 Do students need phonemic awareness to be instructed?

The words contain different speech sounds, adding phonemes or substituting others makes the words different from the intended meaning of the speaker. That proves the truth that it is very important for English learner to go through the experience of learning and practicing the right utterance of phonemes. But this also arouses a very import question; do

all students need phonemic awareness to be instructed? And do they need in their first years to study the transcription of sounds? In other words, what is the appropriate amount of knowledge should be presented to the students in this stage?

Fukuda (2013) assumes that EFLs face some difficulties in the elementary cycle and teachers of English language use special devices when dealing with English textbook because pupils think it is hard to learn it by themselves. In terms of language instruction, phonemic awareness is not something that is implicitly understood by most children. Explicit instruction is often needed for children to acquire this foundational literacy knowledge. Phonemes are abstractions and are complicated. For example, in the word "dog" there are three phonemes, in "chip" there are three as well, and in "chain" there are three. So even if a person could spell the word, the number of letters does not match the number of phonemes necessarily. Moreover, phonemes are different in various languages. Ng (2006, P.21) thinks that "children's readiness for different levels of instruction will depend greatly on their preschool experiences"

Since the first form of literacy a child masters is the ability to speak, phonemic awareness can be viewed as the first component to reading literacy "Before children can identify a letter that stands for a sound, they must be able to hear that individual sound in a word... the path to phonemic awareness is sequential. This phonemic awareness is not innate, it must be acquired" (Fitzpatrick, 1997, P.85). Sniper has identified five levels of phonemic awareness: First is the appreciation of sounds in spoken language as evidenced by recitation of nursery rhymes. Second is the ability to compare and contrast sounds in words by grouping words with similar or dissimilar sounds at the beginning, middle, or end of a word. Third is the ability to blend and split syllables. Fourth is the phonemic segmentation or the ability to isolate individual sounds in syllables. Fifth is the ability to manipulate phonemes by omitting and deleting phonemes to make new words (Sniper, 1995, P.448).

"Phonemic awareness seems to be the "missing element" which will help a child move naturally into the reading phase of the overall language acquisition picture as he did into the speaking phase" (Martinez, 2011, P.3). Many researchers have found that phonics instruction is not beneficial without knowledge of phonemic awareness. "Children must be able to hear and manipulate oral sound patterns before they can relate them to print.

Phonics instruction builds on a child's ability to segment and blend together sounds he or she hears" (Fitzpatrick, 1997, P.6). Cameron (2001, P. 34) writes,"...teaching students letter-sound correspondence is meaningless if the students do not have a solid visual familiarity with the individual letters and if they do not understand that the sound (which can be complex, shifting, and notoriously rule breaking) paired with those letters are what make up words".

Phonemic awareness and discrimination among phonemes is imperative for success in reading. "For over 50 years discussions have continued regarding the relation between a child's awareness of the sounds of spoken words and his or her ability to read. Recent longitudinal studies of reading acquisition have demonstrated that the acquisition of phonemic awareness is highly predictive of success in learning to read - in particular in predicting success in learning to decode" (Yavas & Gogate 1999, P.248). Blachman found that children who begin school with little phonemic awareness will have trouble acquiring the alphabetic principle which will in turn limit their ability to decode words (Blachman et al., 2000, P.23).

Reading acquisition is a process that involves several stages. Each stage can and should be developed in both the classroom and home environment. Because phonemic awareness is an oral skill, instruction must be explicit. "There are many ways to incorporate it into the Language Arts curriculum. Rhyming, songs, riddles, alliterations, and segmentation of words are all examples of activities that enhance phonemic awareness. For a child who lacks phonemic awareness, phonics only or a Whole Language reading program will fail. Without phonemic awareness, children will not learn how to read". (Bernstein & Ellis, 2000, P.7).

English uses an alphabetic writing system in which the letters, singly and in combination, represent single speech sounds. People who can take apart words into sounds, recognize their identity, and put them together again have the foundation skill for using the alphabetic principle "Without phonemic awareness, students may be mystified by the print system and how it represents the spoken word"(Moats & Tolman, 2008, P.46).

Little sounds show that no need for special instruction to the young learner "teachers of young children do not need to spend a significant amount of time teaching phonological activities (about 20 hours in an academic year), but they do need to teach children about the

sounds of language. Teachers need to recognize that phonological awareness is critical to students' later reading development" (Scholes, 1998, P.177). Similarly, they need to understand that phonics and phonological awareness is not the same thing. Phonological awareness is about understanding the sounds of a language. Phonics is about understanding the connection between letters and sounds or the representation of sounds through writing.

Phonemic awareness activities should be child appropriate. Li and Gleitman (2002) submitted that songs, chants, and word-sound games are ideally suited toward developing young children's sensitivity to the sound structure of language. Phonemic awareness should be explicitly taught to kindergarten and first grade children, and is best delivered in small group settings. The research varies some, but most generally, it is agreed upon that instruction should be five to 18 hours, three to five sessions per week, 15 to 30 minutes in length (NRP, 2000).

Section (2) Computerized Language Games

2.2 Technology in language learning:

Technology has been used widely in the field of education for a long period of time. It is a useful tool which could be a mediation to help language learners to learn the target language. "Because of the accessibility and improvement of using technology nowadays, the educational landscape in the current era has been changed. Technology also provides an effective technique for students to think, research, and present in an enriched and more powerful way" (Chen, 2013, P.1).

Benson (2007: 32) divides the process of learning English as a foreign language into two parts; the first part deals with how the new language comes to the learner and the second part deals with the idea of how the learner comes to the language; the strategies the learner uses to learn the language. Is it appropriate in the twenty first century that we should witness enormous developments in policy, economy, education and other fields to teach English Language in a traditional way?

Bransford, Brown & Cocking (2012) talked about language as systems of representation with which people communicate ideas to listeners/readers. On the other hand, technology is defined as culturally deep ways of watching the world. According to this logic comes the idea of "technology as language" because access to a certain type of technology opens new possibilities for us to do things and these options function rather like words in a language. They assumed "we must use what tools and techniques are available in any attempt to carry out a particular action."(P.18)

Can we acquire a language using technology alone? While technology plays an important role in supporting and enhancing language learning, the effectiveness of any technological tool depends on the knowledge and expertise of the qualified language teacher who manages and facilitates the language learning environment. In some cases, however, school and university administrators have permitted technology to drive the language curriculum and have even used it to replace certified language teachers.

Language technology companies have made unsubstantiated claims about their products' abilities to help students learn languages, thus confusing administrators into thinking that these technologies can be an effective cost-cutting measure. Peterson (2010)

affirms that there is currently no definitive research to indicate that students will acquire a second language effectively through technology without interaction with and guidance from a qualified language teacher.

2.2.1 Importance of technology in classroom

Dealing with students of various types of learning is a complicated task to be accomplished by a teacher especially to those who deal with little students having short span of attention so to meet all those pupils need, technology seems to be the shelter. Dudeney and Hockly (2009, P.7) indicate that the use of technology in the classroom is becoming increasingly important, and it will become a normal part of ELT practice in the coming years for many reasons:

- Younger learners are growing up with technology, and it is a natural and integrated part of their lives. For these learners, the use of technology is a way to bring the outside world into the classroom. And some of these younger learners will in turn become teachers themselves.
- English, as an international language, is being used in technologically mediated contexts.
- Technology, especially the Internet, presents us with new opportunities for authentic tasks and materials, as well as access to a wealth of ready- made ELT materials.
- Technology is offered with published materials such as course books and resource books for teachers.
- Learners increasingly expect language schools to integrate technology into teaching.
- Technology offers new ways for practicing language and assessing performance.
- Technology is becoming increasingly mobile. It can be used not only in the classroom, lecture hall, computer room or self- access centre, but it can also be used at home, on the way to school and in Internet cafes.
- Using a range of Information and Communications Technology (ICT) tools can give learners exposure to and practice in all of the four main Language skills: speaking, listening, writing and reading.

Prince (2012, P.107) explains that technology can be used to advance learning by:

- bringing exciting curricula based on real-world problems into the classroom.
- providing scaffolds and tools to enhance learning, such as modeling programs and visualization tools.
- giving students and teachers more opportunities for feedback, reflection, and revision.
- building local and global communities that include teachers, administrators, students, parents, practicing scientists, and other interested people.
- expanding opportunities for teacher learning.

2.2.2 The Psychology of Using Technology

Sampath, Panneerselvam, & Santhanam (2002, P.32) refer to an old saying which reads:

"I hear, I forget;

I see, I remember;

I do, I understand."

Entering the classroom holding new material every day, the teacher of English language makes his students live a new experience with the language that they think it is difficult. With the arrival of computers, tablets, cell phones and smart phones, there is no necessity for traditional devices to be used. This way is the best to keep learners going on but if the teacher keeps lecturing all the time. This leads the students to hear and forget. On the other hand, if the students see, they remember. It is quite natural that the knowledge gained through the sense of sight is vivid, accurate and permanent. More effectively, if one is engaged in any practical activity, involving physical work. All the senses are used to perceive knowledge through all the senses. Hence, the flow of knowledge is through many channels and naturally is quick, complete and accurate. This is learning by direct experience. It is an ideal method of making pupils acquire complete knowledge.

From what preceded, one could deduce that a pupil profits most from instructions when he/she becomes involved through his/her own interests and purposes and such an involvement is possible when concepts and principles are introduced to him through well-

chosen. It has been suggested that students whose activity is engaged with the material are more likely to recall information (Chernoff, 2001, P.11).

Communication and technology have been part of our lives, especially in the area of education. In all educational systems, the use of communication and technology has a certain place; therefore, computers play a significant role in the learning process. Teaching English for a second-language learner can take benefit from using a computer. Indeed, "a computer is a tool and medium that facilitates people in learning a language, although the effectiveness of learning depends totally on the users" (Hartoyo, 2006, P.11).

Recently, the numbers of English teachers using technology has increased markedly. In addition, many articles have been written about its role in English learning. Although the potential of the Internet for the educational use has not been fully explored yet and the average school still makes limited use of computers for some reasons, it is obvious that we have entered a new information age in which the links between ICT and EFL have already been established. The next lines discuss what CALL is and what advantages and disadvantages CALL offers so as we know its strength and weaknesses in its usage for teaching English to ESL and EFL learners.

2.2.3 What is CALL?

CALL is a program derived from CAL (Computer-Assisted Learning) which is implemented to language, but the use of computer here is mainly aimed at providing a language learning tutorial program (Ravichandran, 2000, P.21). In addition, Egbert (2005, P.4) says that CALL means students learn language in any context with, through, and around computer technologies. From both definitions, the main focus of CALL is on the application of computers in language learning. Computer-assisted language learning (CALL) is succinctly defined in a seminal work by Levy (1997, P.1) as "the search for and study of applications of the computer in language teaching and learning".

CALL embraces a wide range of information and communications technology applications and approaches to teaching and learning foreign languages, "it is a huge move from the "traditional" drill-and-practice programs that characterized CALL in the 1960s and 1970s to more recent manifestations of CALL, e.g. as used in a virtual learning environment and Web-based distance learning. It also extends to the use of corpora and

concordances, interactive whiteboards, Computer-mediated communication, language learning in virtual worlds, and mobile-assisted language learning (MALL) (Shafaei, 2012).

2.2.4 History of CALL in language classrooms

Computer technology has been used in language assessment for a long time. Chapelle and Douglas (2006) affirm that large mainframe computers have been used since the 1960s for the analysis of test data and for the storage of items in data bases, or item banks, as well as for producing reports of test results for test users. And by following the development of technology in teaching language, it shows that the history of educational technology reveals the endeavors that educators made to introduce various types of technology into classrooms. Kern and Warschauer, (2000, P.6) provides some historical reviews of some pedagogical claims of Computer-Assisted Language Learning (CALL) in relation to Second Language Acquisition research.

These studies suggest that the perspectives on language teaching and learning have been shaped by the prevailing learning theories of the time. When there was a prevailing learning theory in a certain period of time, that theory became an interest of many SLA researchers of that time; the findings of studies by those researchers have subsequently informed the teaching practices of language teachers. Followed by the popularity of certain instruction methods, there has been a development of corresponding CALL applications, within the scope of available technology of the time.

Salaberry (2001) states that from the 1920s through 1950s, behavioristic approaches to teaching in general education informed people in the field of language education to view language as an autonomous structural system. This viewpoint subsequently gave birth to teaching methods drawing upon that theory of language learning to propose methods like Grammar-Translation Method or Audio-lingual Method by researchers in the field of SLA.

People in the field of CALL then adopted this trend in their designing practices to produce some of the earliest CALL programs (the computer-as-tutor model), which were designed to provide immediate positive or negative feedback to learners based upon the formal accuracy of their responses. In addition, these programs were designed to run on mainframe computers, the level of technology in the 1960s and 1970s.

Beginning in the late 1970s, the advent of micro computing, of hypermedia technology, and of telecommunications (Internet and World Wide Web) made the implementation of socio-cultural approaches to language learning possible through Computer Mediated Communication (CMC). Gips, DiMattia, and Gips (2004) point to an interesting note here that the length of time period between the emergence of SLA theories and the development of CALL application programs seems to be shortened by the rapid development of technology.

While the development of drill- and-practice type CALL programs in the 1960s emerged about 10 to 20 years after the advent of the structural perspective on language learning and teaching of the 1940s and 1950s, the discussion of the effects of CMC on language learning seems to be happening about the same time as the socio-cultural perspectives on language learning and teaching are getting popular. Several studies that focused on the socio-cultural theory in reporting the effects of computer use include: Warschauer and Healy (1998), Blin (1999), Warschauer (1996), Chun (2000), Leakey(2000) and Kilickaya (2007).

The researcher views this phenomenon to be very positive because the balanced development between SLA theories and CALL applications could provide helpful practical information for language teachers in a timely manner. In return, language teachers could provide valuable feedback for the researchers in the field of both SLA and CALL.

2.2.5 Advantages of CALL

The study of classroom environment is important to understand the learning atmosphere, perceptions, goals, and interaction for optimal language learning besides, classroom environment provide various opportunities for students to learn and interest in the learning context. There are some advantages that teachers and students get from computer assisted language learning as stated by Motterman (2013, P.12).

First, students have opportunities to interact and negotiate meaning. They can learn all subjects including grammar and vocabulary in the process of language learning by computer technology. They practice speaking with and listening to other classmates by using resources from the internet and completing group project. The teachers also can use computers to answer questions and complete dialogues because they support the student's

learning process with native speaker pronunciation and activities. With computer technology, students can see different situations where sentences or expressions could be used and guessed the situation without knowing the exact dialogue.

Second, students interact in the target language with an authentic audience. The technology computer supported the teachers and students to be authentic audiences. When students listened to a native speaker from the computer and practiced dialogues, the computer or the internet provide dynamic and realistic situations with native speakers speaking. Through the interaction with their classmates and teachers, they become communicative in English with proper body language and eye contacts.

Third, students are involved in authentic tasks. It helps students learn a target language in a realistic and practical situation. Teachers tried to make their tasks close to authentic with the aid or technology and other resources with the aid of software and experience foreign cultures in pictures and movies. The classroom environment made the learning enriched by overcoming the limitations of time, money, and resources.

Fourth, students are exposed and encouraged to provide varied and creative language. The students acquired English through various activities. During the activities, the teachers asked the students to keep using the expressions and vocabulary words in every lesson.

Fifth, students have enough time and feedback. Teachers and students can use the time effectively in the process of language learning by using computer technology.

Finally, students are guided to attend mindfully to the learning process.

Many educators indicate that the current computer technology has many advantages for second language learning. The following are the advantages as stated by Abu Oda (2010):

- Interest and motivation

Classical language teaching in the classroom can be monotonous, boring, and even frustrating, and students can lose interest and motivation in learning. CALL programmers can provide student with ways to learn English through computer games, animated graphics, and problem-solving techniques, which can make drills more interesting.

- Individualization

CALL allows learners to have non-sequential learning habits; they can decide on their own which skills to develop and which course to use, as well as the speed and level of their own needs.

- A compatible learning style

Students have different styles of learning and an incompatible style for students will cause serious conflicts to them. Computers can provide an exciting “fast” drill for one student and “slow” for another.

- Optimal use of learning time

The time flexibility of using computer enables students to choose appropriate timing for learning. Learners are given a chance to study and review the materials as many times they want without limited time.

- Immediate feedback

Students receive maximum benefit from feedback only if it is given immediately. A delayed positive feedback will reduce the encouragement and reinforcement, and a delayed negative feedback affect the crucial knowledge a student must master. Computers can give instant feedback and help the students ward off their misconception at the very first stage.

- Guided and repetitive practice

Students have freedom of expression within certain bounds that programmers create, such as grammar, vocabulary, etc. They can repeat the course they want to master as many times as they wish.

- Pre-determined to process syllabus

Computers enhance the learning process from a pre-determined syllabus to an emerging or process syllabus. For example, a monotonous paper exercise of ‘fill-in-the-blanks’ type can be made more exciting on the screen in the self-access mode, and students can select their own material. Therefore, CALL facilitates the synthesis of the pre-planned syllabus and learner syllabuses “through a decision-making process undertaken by teacher and learners together” (Lai, 2006, P.13).

2.2.6 Disadvantages of CALL

First, although there are many advantages of computers, the application of current computer technology still has its limitations and disadvantages. Davies and Hewer (2011)

indicate that the first disadvantage of computers and their assisted language learning programs is that they will increase educational costs and harm the equity of education. When computers become a new basic requirement for student to purchase, low budget schools and low-income students usually cannot afford a computer. It will cause unfair educational conditions for those poor schools and students. On the other hand, expensive hardware and software also become the big obligations for schools and parents.

Second, it is necessary that both teachers and learners should have basic technology knowledge before they apply computer technology to assist second language teaching and learning. No student can utilize computer if he or she lacks training in the uses of computer technology. Unfortunately, most teachers today do not have sufficient technological training to guide their students exploring computer and its assisted language learning programs. Therefore, the benefits of computer technology for those students who are not familiar with computer are inexistent (Davies, 2005).

Third, the software of computer assisted language learning programs is still imperfect. Current computer technology mainly deals with reading, listening, and writing skills. Even though some speaking programs have been developed recently, their functions are still limited. Dudeney (2007) points out that a program should ideally be able to understand a user's "spoken" input and evaluate it not just for correctness but also for "appropriateness". It should be able to diagnose a student's problems with pronunciation, syntax, or usage and then intelligently decide among a range of options.

Fourth, computers cannot handle unexpected situations. Second language learners' learning situations are various and ever changing. Due to the limitations of computer artificial intelligence, computer technology is unable to deal with learners' unexpected learning problems and respond to learners' questions immediately as teachers do. The reasons for the computer inability to interact effectively can be traced back to a fundamental difference in the way humans and computers utilize information (Roblyer, 2003).

Nguyen (2008) also says that computer technology with that degree of intelligence do not exist, and is not expected to exist for quite a long time. In a word, today's computer technology and its attached language learning programs are not yet intelligent enough to be

truly interactive. People still need to put effort in developing and improving computer technology in order to assist second language learners.

Even so, computer technology still has its limitations and weaknesses. Therefore, we must first realize the advantages and disadvantages of current CALL programs before applying them to improve our teaching or to help student learn. In the end, we can avoid the mistakes in employing CALL program and get the maximum benefit for our ESL teaching and learning.

2.2.7 Organizing English Teaching and Learning through CALL

Looked at from the point of view of the teaching models and of language as information processing, the computer has certain strengths of handling the English teaching and learning. Four distinct advantages of the computer can be recognized as provided by Davies and Hewer (2011):

- Its capacity to control presentation.

Unlike a book, the computer can present fragments which add up to a whole; it can do so with any built-in time delay chosen by the students or selected for them. It can combine visual or graphic information with text; it can highlight features of text using color and movement. Potentially this is a great advantage over the linear fixed presentation of a book.

- Its novelty and creativity

Oddly enough the computer is creative. Unlike any other classroom aid, it can vary the exercise each time. Its language can be adapted to what the students produce, within certain limits.

- Feedback

The computer is capable of analyzing what the student does and taking account of this in what it does next. One way of using this capability is through error correction; the student's mistakes can be characterized and the appropriate advice given to him; or the computer may base its next move on an analysis of what the student types, whether in terms of increasing difficulty of the exercise, or of an answer in an exercise, or of altering the screen display.

- Its adaptability

The first three advantages of the computer applied to the student, the last applies to the teacher. Unlike books or tapes, which are produced in a single uniform from publisher, computer programs can be adapted by the teachers to suit the needs of their students. A sophisticated way of doing this is for the teacher to master sufficient programming expertise to adapt the vocabulary, the level, the scoring scheme, or whatever program to his or her students.

2.2.8 Effective Assessment of CALL

The researcher stresses the need for the assessment of CALL to focus on pedagogy rather than on technology and especially on the need to move beyond the simple measurement of immediate learning outcomes .Burston argues that "the evaluation of instructional technology for foreign languages must take into account both its long-term contribution to the entire foreign-language curriculum and its salutary effects upon students in general" (2003, P.221).

Measuring the effects and effectiveness of CALL is a complex and challenging undertaking. No longer can proponents, or opponents, of instructional technology for language learning simply ask: "Does computer-assisted instruction work?" It makes no more sense to ask in absolute terms whether the "computer" is more effective than the "classroom" than it does to query whether "instruction" is better than "exposure".Such simplistic questions demonstrate a fundamental misunderstanding of the nature of the learning process and assume a dichotomy between instructional technology and the foreign-language classroom which is very much out-of-step with current practice.

Whether research focuses on the testing of practical applications or the exploration of theoretical constructs, to be meaningful—and useful—the evaluation of CALL must be undertaken with due regard for the many teacher and student variables which constitute the educational context within which learning takes place. It must include not just direct measures of learning effectiveness but also quantitative and qualitative assessments of the full range of effects of instructional technology upon the curriculum.

Moreover, as CALL becomes fully integrated into the foreign-language curriculum, its evaluation must ultimately be linked to the contributions, both short-term and long-term, which it makes to that curriculum as well as to the broader academic environment of which

it is a part as Warschauer and Healey explain:"...integrative CALL ...seeks both to integrate various skills (e.g., listening, speaking, reading, and writing) and also integrate technology more fully into the language learning process. In integrative approaches, students learn to use a variety of technological tools as an ongoing process of language learning and use, rather than visiting the computer lab on a once a week basis for isolated exercises..."(1998, P.58).

Burston assumes that engagement with CALL is the very first step of selecting off-the-shelf software, adopting computer-based activities, developing applications, conducting applied or theoretical research, or charting the institutional effects of CALL—the evaluation of instructional technology for language teaching makes considerable demands upon faculty members charged with the task(2003, P.221). Those involved in the assessment of CALL must be well-versed in current language-teaching methodologies and have a solid understanding of their theoretical underpinnings.

Likewise, Norris and Ortega (2000, P.420)clarify that people who assess must know the basics of instructional design, testing, and quantitative as well as qualitative measurements. Similarly, whether preparing a departmental report or publishing for a wider academic audience, those who would assess CALL must have a firm grasp of the principles of research design. Above all, those involved in assessment need to work collaboratively; the demands of the task are often larger than there sources of any one individual.

Appropriately, taking the full measure of CALL requires far more expertise in SLA than in technology. But it must be said, too, that both the use and the assessment of CALL presuppose knowledge and skill sets which have not been part of traditional academic expectations or training and which many language teachers will have to acquire as they proceed. In so doing, the ultimate benefit to be gained from CALL is very likely to be that which Papert (1987, P.23) predicted many years ago for CALL: "One could even argue that the principal contribution to education thus far made by the computer presence has been to force us to think though issues that in them has nothing to do with computers".

2.2.9 Playing as a means of learning

The researcher sees that playing games is an effective technique in class because they provide students with an opportunity to experiment, explore and to improve their language through scaffolding, internalized from social interacting and linking the content with the purposes. Playing is an instructional medium that helps the child acquire different social skills and aspects; mental, physical, emotional, affective and linguistic (Bisson & Luchner, 1996).

"Playing is considered a vital activity conducted by the child that has a major role in stimulating children towards learning and motivating their active interaction with the acquired facts, concepts and skills; educators are to invest such a medium in teaching and learning process" (Kearney & Pivec, 2007, P.43). It has been acknowledged that there is a strong link between play and learning for young children, especially in the areas of problem solving, language acquisition, literacy, numeracy and social, physical, and emotional skills. Young children actively explore their environment and the world around them through learning-based play.

"Play is a vital part of a child's optimal social, cognitive, physical and emotional development" (Dietze & Kashin, 2011, P. 23). Researchers agree that play provides a strong foundation for intellectual growth, creativity, problem-solving and basic academic knowledge. According to Shafaei (2012, P.2):

Through make-believe games children can be anyone they wish and go anywhere they want. When they engage in socio-dramatic play, they learn how to cope with feelings, how to bring the large, confusing world into a small, manageable size; and how to become socially adept as they share, take turns and cooperate with each other. When children play, they are learning new words, how to problem solve, and how to be flexible.

As children learn through purposeful, quality play experience, they build critical basic skills for cognitive development and academic achievement. These include verbalization, language comprehension, vocabulary, imagination, questioning, problem-solving, observation, empathy, co-operation skills and the perspectives of others.

2.2.10 Definitions of Educational Games

Educational games are games designed with educational purposes, or which have incidental or secondary educational value. Educational games are games that are designed to help people to learn about certain subjects, expand concepts, reinforce development, understand an historical event or culture, or assist them in learning a skill as they play.

Allery (2004, P.504) defines educational game as a competitive activity with a prescribed setting, constrained by rules and procedures in which the learning results from playing the game (for example, interactions and behaviors exhibited) and not from the academic content. Schrier (2006, P.87) refers to educational game as a general term used to cover a variety of language activities. Language games are used for practicing grammar, sentence structures, vocabulary and spelling, for developing language skills, such as listening, speaking, writing and reading.

Hadfield (1999, P.34) defines educational games as activities with rules, goals and elements of fun. Games should be regarded as an integral part of the language syllabus, not as an amusing activity for Friday or for the term end. Greenal (1990, P.6) sees that the term of educational games is used whenever there is an element of competition between individual students or teams in a language activity. Sanchez, et al. (2007, P.65) define an educational game as a way in which learners get repeated exposure to an aspect of language without being bored. As a result, games make learning English fun.

As mentioned above, the researcher considers that any educational game is an activity which needs to be prepared well by the teacher and it depends on certain objectives, rules and competition to make learning more fun and effective. Game types include board, card, and video games. An educational game is a game designed to teach humans about a specific subject and to teach them a skill.

As educators, governments, and parents realize the psychological need and benefits of gaming on learning, this educational tool has become mainstream. Games are interactive play that teaches us goals, rules, adaptation, problem solving, interaction, all represented as a story. They satisfy our fundamental need to learn by providing enjoyment, passionate involvement, structure, motivation, ego gratification, adrenaline, creativity, social interaction and emotion in the game itself while the learning takes place.

Considering the teaching/learning process and how games can be employed in this process, there is a difference between supplying information to the students and delivering learning. To give information simply is not enough for an efficient learning. Intuition, imagination, interactivity are considered as key parts in the learning process. The possibility to individually construct, manipulate, modify and control an experiment is a strong aspect for students.

The paradigm ‘to learn by doing’ in a friendly and animated way is essential to form good professionals, in special in the different areas of engineering. Here, the use of games for pedagogical and educational purposes can play an important role. In this way, students acquire and develop their knowledge by challenging. Each student has his own way of learning: some learn by reading, others by listening and others by experiencing, by doing. With games, learning environments must include the elements to satisfy each student, no matter it is focused on high school learning outcomes or if it is dedicated to promote and develop social competences in disabled persons.

2.2.11 Features of Educational Games

There are many different definitions of games. However the main characteristics that all these definitions have in common are: presence of rules, and clear and predefined objective that has to be reached within the game. Most of the games have also competitive elements.

Within the games there is a close link between action and immediate feedback; learners are able to assess their own activities and see how they are doing. One of the game characteristics is challenge, keeping in mind that challenge should match the skill level of the student and permanently adapt through the different levels of the game. Introduction of unexpected or novel events learners is additionally motivating to play the game and acquire new skills and knowledge.

Successful learning opportunities by means of games can be created when following the constructivist learning theory, where ‘constructivist’ means an exploratory approach to learning as Motteranm (2013) states that major characteristics of the constructivist approach are, among others, interaction, coping with problems, understanding of the whole, etc. From the constructivist point of view learners are active participants in knowledge

acquisition, and engaged in restructuring, manipulating, re-inventing, and experimenting with knowledge to make it meaningful, organized, and permanent.

Shaffer (2006) assumes that educational games have become more popular given the interests of the gamer generation in engaging games. Games have been found to enable a certain kind of immersive learning that allows people to live in a game world for a certain amount of time (through their imaginations and disembodied experiences) and to absorb certain learning contents experientially.

Many educators and experienced language teachers admit that playing games is a means to learn English language through an effective way. For example, Yu (2005, P.31) suggests that teachers should select and develop their own games since not all games are suitable everywhere. Harvey and Bright (1985, P.5) determine the characteristics of educational games by the following:

- A game involves a challenge against either a task or an opponent.
- A game is governed by a definite set of rules.
- A game is freely engaged in.
- Psychologically, a game is an arbitrary situation which does not separate from the real life situations.
- Socially, the events of game situation are considered, in and of themselves to be of minimal importance.
- A game has a definite number of possible solutions, that is, only a finite number of things can happen during play.
- A game must always end although the end may come simply.

Sorensen (2002: 12) and Tuan and Doan (2010: 33) suggest a set of concepts which seem central in the development of educational games, which are as follows:

- **Challenges:** to be confronted with a problem students have to solve
- **Reification:** to create, produce and make experiments
- **Socialites:** to communicate
- **Achievement:** to get acknowledgement and enjoy respect
- **Pleasure:** to interact in sensitive and pleasurable situations
- **Exploration:** to explore and act on basis of curiosity

- **Fun:** the activity is chosen for its light-hearted character.
- **Nonproductive:** participation is not productive.

McCarthy (2002, P.90) and Pham (2007, P.65) present the characteristics of the educational games in English language class as follows:

- Focusing student's attention on specific structures, grammatical patterns, vocabulary items, spelling, and pronunciation.
- Having functions as reinforcement, revision and enrichment of the learned material.
- Involving equal participation of both slow and fast learners.
- Adjusting to suit the individual age and language levels of students.
- Contributing to an atmosphere of healthy competition, providing an outlet the creative use of natural language in a non-stressful situation.
- Being used in any language teaching situation and with all skill areas (reading, writing, speaking and listening).
- Providing immediate feedback for the teacher.
- Ensuring maximum participation of students for minimum of teacher participation.

Summing up the previous characteristics, the researcher believes that the most effective educational games should:

- Help learners achieve the learning objectives.
- Focus on the learning.
- Provide sufficient feedback to learners.
- Be engaging and fun (they provide hard challenges).
- Maintain some sort of memory of player actions and deliver customized contents based on learner level of play.
- Be persistent spaces that are accessible over time.
- Play on a variety of platforms and operating systems.
- Be rule governed.
- Have rules that describe the pattern of activity meant to take place.
- Encourage activities of participation and generate fun.
- Have specific linguistic outcomes and have a closure.
- Seem to be task oriented.

- Be goal defined.
- Be competitive and engaging.
- Be suitable for the students' age and achievement level.
- Have immediate feedback.

2.2.12 Benefits of Computerized Language Games

Prensky (2001, P.1) states that "Computer- and video-games are potentially the most engaging pastime in the history of mankind. This is due, in the researcher's viewpoint, to a combination of twelve elements:

- Games are a form of fun. That gives us enjoyment and pleasure.
- Games are form of play. That gives us intense and passionate involvement.
- Games have rules. That gives us structure.
- Games have goals. That gives us motivation.
- Games are interactive. That gives us doing.
- Games are adaptive. That gives us flow.
- Games have outcomes and feedback. That gives us learning.
- Games have win states. That gives us ego gratification.
- Games have conflict/competition/challenge/opposition. That gives us adrenaline.
- Games have problem solving. That sparks our creativity.
- Games have interaction. That gives us social groups.

Aldrich (2005) states that computerized language games create a hands-on, minds-on opportunity that allows players to actively focus on, create and change a scenario while simultaneously learning about consequences of choice in the situation. As students become more engaged and committed to succeeding in the game, they become more willing to learn about the scenario the situation is taking place in. They begin to care about learning more about the topic and how to solve the problem. Rather than just memorizing new material like you would watch a documentary, serious games allow students to become active participants in discovering new ideas, information and solutions to problems while also allowing them to feel the tension and suspense of the crisis. This development of real interest through games can already be already seen in several businesses.

Moreover, Hadfeild (1999) states that playing educational games also help us and children with focus, self-esteem, and memory. Educational games can help a child focus because they are being patient while waiting to achieve getting to the next level. "Playing these games upgrades their self-esteem because sometimes they get a quicker reaction from the game system and they can really see how they have accomplished something" (P.13). In the games there are milestones that the children will have to reach and at the end of each stage they receive something that they will have to have in the next stage. This is also where their focus comes into play because they will take their time to make sure they do things correctly so that they may go on longer in the game.

It is quite obvious that computerized language games are a unique blend of fun and learning computerized educational games based on learning through playing games. Therefore, they become to be a favorite technique for students. These games are not an ordinary pastime; they are built by experts that aim at helping kids grow sharper and develop their own cognitive skills that regular classroom cannot provide. The following are the advantages of using these techniques in learning:

- Helping boost memory and cognitive skills as games that focus on problem solving can enhance the brain function. That is why it is important to find the right game that provides excellent drills to develop children's memory and attentiveness.
- Developing kid's self-confidence and self-achievement. Aside from the benefits of increasing the kid's knowledge, children who play computerized educational games foster achievement each time they pass and excel in each category. This helps them develop their self-confidence which will aid them perform better and become better persons (Abu Shagga, 2012, P.35).

2.2.13 Characteristics of Computerized Language Games

Educational games have been around for some time, but there are still many areas that need to be explored. One of the main challenges when using educational games is that the highest educational value is gained from games developed for one specific subject. In fact, not all the computer games are appropriate for the learning objectives, so teachers should choose games very carefully. Dempsey (1997, P.76) have studied forty computer

games in order to find out which characteristics are the most important for good computer games and they found the following characteristics:

- Clear instructions and objectives should be available for the students.
- The game should be challenging which leads to the real learning.
- The students should have control over gaming options such as speed, difficulty, timing, sound effects and feedback.

Aesthetics like screen design, graphics, animation and sound should be of appropriate quality. Ersoz (2000, P.84) determines the common characteristics of computer games which have the same concepts into familiar classroom activities, to the goals that are perceived as clear and achievable, related challenges which gradually become more difficult, meaning choices for participants and an uncertain outcome.

Both of Dempsey (1997) and Ersoz (2000) point out that goals, feedback and challenges are basic characteristics of games. Cuhna, Crvlho, & Tavaresm (2011) add other characteristics like speed, time, participants choices, outcomes and motivation. Furthermore, they show that the immediate feedback through playing digital games helps students know when they get the right or wrong answer. If the students get the answer wrong, they can immediately correct it.

The researcher discussed with a group of expert teachers about the suitable characteristics which should be available in the designed computer games and most of them mentioned that computer games should depend on the visual input, challenging, introduce immediately feedback and make learning more motivating. They also predicted that using computer games as a new technique will play an effective role in teaching the learners.

2.2.14 The framework of the computerized language game.

The researcher and the programmer of the games chose the Educational Games Design Model Framework proposed by Omar and Jaafar (2009), which includes three major factors that should be taken into consideration when designing educational games. The factors are game design, pedagogy and learning content modeling.

An educational game is considered usable when:

- It provides satisfaction to its players.
- It is effective in achieving the goals.

- It is efficient in allowing consistent and responsive functionalities (Malliarakis, et al., 2014, P.128).

Moreover, it is considered important to allow multimodal content in educational games (e.g. text, audio, video, animation, graphics, etc.) as well as the ability for players to directly interact with this content and receive appropriate feedback. Finally, game design should also support the entertaining element of a computer game, which is essential (Prensky, 2001) because games should be fun to interact with even in educational settings. To this end, designers are expected to include functionalities that will allow teachers to set clear educational goals and activities that will challenge students during playing, will engage them in navigating through the game features by increasing their curiosity even though they will not know the outcome (Malone, 1980) and will boost their self-esteem.

Furthermore, the pedagogical factor is included in the design model, which suggests that the computer games should be designed according to the educational domain and incorporate proper learning strategies to ensure that the game will indeed result in the desired learning outcomes. More specifically, the model is drafted so as to support learning outcomes that belong to the three first levels of the Bloom Taxonomy, namely knowledge, comprehension and application (Omar & Jaafar, 2009). These three levels of knowledge should be accommodated through appropriate theory availability and modules that motivate learners to reach the 3rd level of knowledge.

Additionally, educational games designed according to this model should support self-learning and thus reflection mechanisms; these games allow students to teach themselves by playing, reading the learning materials and assessing their own performance. Thus, the authors indicate that such games could be developed as web-based environments so that they can be accessed by learners at any time. The active role of learners in the educational games will increase their competences since traditional learning where knowledge is simply delivered will be replaced by a series of problem solving activities that will stimulate learners' minds and allow them to learn how to solve problems by interacting with materials and tasks within the game. This calls for specific types of learning materials that allow self-learning and problem solving.

Therefore, it is important to also consider the last factor included in the design model, namely the learning content modeling. The content incorporated within the game should be

available at specific parts of the game in order to ensure the proper solving of the given problem and thus result in the set learning outcomes. Moreover, Mitchell and Smith (2004) add that features such as a syllabus, term matching tools and scaffolding mechanisms would increase learners' sense of security since they will mostly be learning on their own, with the teachers available only during lectures time to provide guidance.

2.2.15 Using computerized games to develop phonemic awareness

Although little scientific research exists on how computer technology can enhance the development of PA, several current reports and articles suggest that there is an interest in this area. Educators are among those looking at technology and early literacy skills. The researcher cites some of the literature reviews that talk about a strong connection between PA and technology:

In 1997, Gaphardt looked at the potential in using computer technology to support and enhance PA instruction in an Orton-Gill Ingham Curriculum (a multisensory approach to teaching phonics to dyslexic individuals). She argues that computer technology can support PA. Gaphardt examined research on the success of five programs in providing diverse practice in reading skills, including PA. She discussed some of the problems (variable quality of synthetic speech) and some of the advantages (students can select a word and the computer will pronounce it). Also, Gaphardt noted many of lessons are in a game form, motivating the learner. Gaphardt concluded that these programs can probably increase phonological knowledge in many regular emergent readers but should be used to support explicit teacher instruction. Gaphardt also reports on the effectiveness of some of the features available in current existing programs. The researcher thinks that Gaphardt's suggestion that computer programs be used to support PA development through practice is particularly useful to the classroom teacher.

People in the technology industry have also written articles. Lori Dahlquist works for Adaptation, Inc. located in South Dakota. This company designs, manufactures and distributes technology to assist people of disabilities. Dahlquist's article outlined examples of technology-based PA leveled activities. These activities are designed to practice PA skills: rhythm, rhyme, and alliteration; phoneme segmentation, sequence of sound, and manipulation of sounds. Dahlquist suggested that technology should:

- Feature clear digitized (real voice) speech that can be easily reprogrammed.
- Be able to accommodate various forms of visual cueing.
- Provide auditory scanning of phoneme choices.
- Be multileveled to enable students to achieve mastery on each level (Adams et al., 1998).

This article helped the researcher see specific combined features now available in current technology: programmable digitalized (real voice recording) speech, visual cueing (photos), and auditory scanning (listen and choose). In addition, the practice activities support essential skills in developing PA (Adams, et al., 1998).

In 2002, Debra Grogan, a professional development specialist, wrote an article arguing that there are at least six features teachers should look for in programs used to support PA. These features include adaptability (meet individual needs), training (skilled teachers), conformity (support curriculum learning outcomes), confidentiality (assess progress), multilingual capability, and references of proven effective program. Grogan concluded by stating that multimedia technology can help develop PA but explicit instruction must accompany its use. Grogan brings her professional experience to provide a realistic reminder that even though technology has the capability to help students develop PA, the programs are not equal in meeting the needs of our particular students. Grogan adds to the general list of features to look for when adding technology to our teaching PA. Unfortunately, Grogan neither describes how she came to these insights nor does she provide any references.

National studies have also explored the connection between reading and PA and tentatively recognized the potential role of technology. The purpose of a National Reading Panel (2000) was to assess the effectiveness of various approaches to teaching children to read. The study included a focus on alphabetic (i.e. phonemic awareness instruction) and asked “does instruction in phonemic awareness improve reading? If so, how is this instruction best provided?” (p. 3). The panel reviewed fifty-two studies (meeting strict and specific research methodology criteria) published in refereed journals and concluded that training both improved PA (these findings were replicated in multiple studies) and that this improvement lasted well beyond instruction. The authors also found that explicit instruction and motivation are essential components. Although the focus looked at various

teaching approaches, the panel did review seven studies examining the use of multimedia programs using speech and text for instruction in vocabulary or PA. All the studies showed positive results and the Panel concluded that computer technology has the potential to support reading instruction such as PA.

In 2001, MacArthur, Ferretti, Okolo, and Cavalier published a literature review on literacy and technology for students with disabilities. The authors analyzed fourteen research studies, between 1987 and 1998, specifically related to phonology. These studies focused on computer-assisted instruction in decoding and phonology awareness and the use of speech feedback to help students decode difficult words. MacArthur, et al. noted that Olson and Wise (1992) found that it is unlikely that speech feedback helps counter a deficient PA. Therefore, MacArthur, et al. concluded that although the studies supported the use of computer-assisted instruction to enhance the development of PA, intensive training in PA must occur when practicing reading speech feedback.

This review is very useful in providing the researcher with an understanding of earlier research in the area of technology and PA among children with mild disabilities. It provides a clear description of the literature selection, detailed synopsis and critiques, as well as several mini syntheses providing new insights throughout the review. The authors are well qualified in the areas of technology, cognitive development, special education, and reading. The review supports the potential of computers to enhance many PA skills (excluding segmentation). It also reinforces the idea that explicit instruction must accompany computer practice. However, this literature review is now incomplete due to its dated research.

A more recent review was published earlier this year (2004). A consortium project (NEIRTEC), funded by the U.S. Department of Education, reports specifically on technology and developing PA. This report looked at four ways that computer technology can support student learning by providing activities, assessment, interaction, and scaffolding. The report argued that an effective approach to reading instruction must include PA. The literature review concluded that the potential use of computers in supporting phonemic awareness must include practice in matching sounds with pictures, blending, rhyming, manipulating initial sounds, and segmentation. Programs must also

provide immediate feedback, individualization, repeated practice, game contexts, multi-player games, and assessment reports.

The report cautioned that the choice of technology must fit the needs of the individual students and fit into the overall instructional program. This report is a good source of information. The criteria for selecting literature is clearly described (i.e. studies using experimental or quasi-experimental methods). It also includes an extensive reference list of reading research journals and reports for further related information as well as online resources. The report outlines specific computer program requirements supporting PA skills while reinforcing the need for careful selection of programs and the need for further research. However, although the report provides a very good synthesis of the literature, it does not provide individual literature critiques.

Part 2: Previous Studies

This part of Chapter Two is divided into two domains; the first domain tackles studies that investigated the effect of using educational computer games on learning and developing English language skills such as reading, writing, listening, speaking, vocabulary and grammar. The second domain tackles studies that investigated phonemic awareness and its relation to English skills.

2.3.1 Studies concerning using educational games in developing English language learning skills:

Muthiah (2015)

The purpose of the study was to assess the effect of computer games on the proficiency of the B.Ed. teacher trainees in using the conventional expressions in conversations. The tool to test their proficiency had thirty items. The achievement test had ten dialogues with three blanks in each for the students to fill them up. This was an experimental study with a single group design. After a stratified sample of 70 female and 34 male trainee teachers were exposed to some computer games involving fun and conversations for a week, they were tested for their proficiency.

The tool was a standardized one. The levels of proficiency of the male and female trainee teachers were found to be average and above average. The t-test was applied. The proficiency of the female trainee teachers was found to be significantly higher than that of the male trainee teachers. The computer games had the potential to improve the cognitive, affective and psychomotor skills of the student-teachers.

Chen (2013)

In order to investigate how technology and social experience can be integrated into courses to promote language learners' desire to learn English, the researcher combined Gardner's socio-psychological system and students' social experience (social-construction, cooperative learning, and communicative competence) as guides to explore their motivation (desire to learn English).

Three hundred and fifteen students from two Taiwanese universities taking English courses were involved in this study. The data included 35 Likert-scaled questions, 11

demographic information questions and two open-ended questions. Regression analysis and correlation coefficient were conducted to analyze the data.

Based on the findings, learning with technology, technology experience and social experience had positive relationship with their desire to learn English, and learning with technology and social experience were also strong predictors of desire to learn English. Because integrating technology and social experience in language learning appeared to benefit desire to learn English, educators might consider including these elements throughout their language-learning curriculum to promote students' learning motivation.

Abu Shagga (2012)

This study aimed to investigate the effectiveness of using computerized educational games on developing aspects of English grammar for deaf ninth graders' in Gaza Governorates. To achieve this aim, the researcher adopted a quasi-experimental approach. The sample of the study consisted of (16) deaf students;(4) males and (12) females from Atfaluna Society for Deaf Children in Gaza Governorate.

The computerized educational games were used in teaching aspects of English grammar for the experimental group in the first term of the school year (2011-2012).A grammar test of six questions with (30) items was designed and validated to be used as a pre- and posttest to measure any possible differences between the mean scores of the students in the pre- and the posttest. The collected data were analyzed and treated statistically using T. test and the Modified Gain Ratio equation was used to measure the effectiveness of using computerized games on developing aspects of grammar among the deaf students.

The study results indicated that there were statistically significant differences at ($\alpha \leq 0.05$) between the deaf ninth graders mean scores in the pretest and the posttest due to the use of the computerized educational games. Also, there were no statistically significant differences at ($\alpha \leq 0.05$) between the deaf students of the experimental group in the mean scores in the pre-test and posttest due to the gender factor.

In the light of those results, the study recommended the necessity of implementing computerized games in teaching English grammar to make better outcomes in deaf students' achievement of English language. Also, the researcher suggested that further

studies should be conducted on the effectiveness of computerized games on other grammatical lessons and other school subjects as well.

Qteefan (2012)

The study aimed to investigate the effectiveness of educational computer games on the fifth graders' achievement in English language in Gaza Western Governorates. To answer the questions of the study, the researcher adopted the experimental approach. The sample of the study consisted of (70) male students from Beach Elementary Boys "A" School and (70) female students from Beach Preparatory Girls "G" School in Gaza. The educational computer game strategy was used in teaching the experimental group, while the traditional method was used with the control one in the first term of the school year (2011-2012). The data of the study were analyzed using T-test and One Way ANOVA . "Scheffe' Post Test" was used to identify the direction of the effect.

The study indicated that there were statistically significant differences in the fifth graders' achievement of English language due to the method in favor of educational computer game strategy. Based on those findings, the study recommended the necessity of implementing an educational computer game strategy in teaching English language to bring about better outcomes in students' achievement in English language.

Smith, et Al, (2011)

In this study, the researchers investigated how computer games and maps compare as preparation for readers to comprehend and retain spatial relations in text narratives. The researcher believed that studying maps before reading improves retention of general details from non-narrative readings. Eighty 11-year-olds participated in all three experimental conditions: 1) studying a map with sound and animations but no interaction, 2) playing an interactive computer game, and 3) completing a filler task. Each condition was followed by reading a narrative and then taking a spatial posttest.

In terms of multiple-choice posttests, map condition had the highest average number correct, closely followed by the computer game. Filler task condition was a distant third. No between-condition differences were found for the reading times on sentences with

changes in protagonist location. Results suggest that maps may be superior to computer games as preparation for spatial reading.

Doran (2010)

In this study, the researcher tried to engage and motivate the American students in the content and reading of the class while offering them interest in the material. So, the researcher aroused the question, "How can we motivate students to read?" The idea driving this study was based on a desire to create interest in reading by using video games to motivate students to read. In this research, the researcher reviewed current literature based around using videogames as a pedagogical tool. Topics looked at included the decline of interest in reading, the rise in student comfort with technology, the ability for video games to increase intrinsic motivation, the larger fields of reading, motivation, and video games.

Twenty students from Ohio Dominican University participated in a study where they played the videogame to see whether they would be motivated to read the book. Due to lack of subject feedback, quantitative results were limited, but qualitative results were found. None of the subjects were regular gamers, but two to of the five subjects to play the game and respond to a survey did read some of the book after playing the game.

Peterson (2010)

In this study, the researcher tried to investigate the effect of computerized games and simulation on acquiring English language or any another language. He examined the psycholinguistic and socio-cultural constructed proposed as basis for the use of games and simulation in computer assisted language learning.

The study results confirmed that computerized games and simulation presented valuable opportunities in learning language. Also, computerized games were beneficial methods for helping learners to acquire English language or any other language.

Liu &Chu (2010)

This study aimed to investigate how ubiquitous games influence English learning achievement of listening and speaking along with motivation through a context aware

ubiquitous learning environment. This context is called the Handheld English language learning organization (HELLO) which helps students to engage in learning activities, educational strategies& collaborative learning. The study sample was two groups of students including high school teachers and junior. During the experiment, tests, a survey, and interviews were conducted for the students.

The evaluation results of the learning outcomes and learning motivation demonstrated that incorporating such games into the English learning process could achieve better learning outcomes and motivation than using non-gaming method.

Hamzah & Dourad (2009)

The researchers carried out their study to examine the effects of using computer games on teaching grammar, particularly in the use of the present simple tense and past simple tense as well as to gain insights on students' and teachers' responses towards using computer games in teaching and learning grammar items in Malaysia. The sample consisted of (56) students who were distributed into two groups; experimental group used games to learn grammar, whereas no treatment was given to the control group. A pre-post achievement test was designed to collect the data which analyzed descriptively using classroom observations to observe students' reaction to the games and interviews to find out (ESL) teachers' perspectives on using computer games to teach grammar.

The results indicated that grammar games had a positive effect on learning the present and the past simple tenses. The students who learned grammar using computer games were motivated to learn more rules. The study suggested that using computer games in learning grammar can be an effective and successful way in acquiring grammatical competence.

Turgut & Yrgin (2009)

This study aimed to examine the effect of computer games on young learners' English language learning especially on their experiences of English language, vocabulary and pronunciation. The researchers conducted their study in internet cafes in Mersin. Ten primary and secondary school students studying at different schools in Mersin, Turkey, participated in the study. The participants were at the age of 10-14. The data was collected

through observations and semi structured interviews and analyzed through phenomenological data analysis steps. The results enhanced positively integrating computer games to ELT curriculum.

Owston, et al. (2009)

This study examined computer game development as a pedagogical activity to motivate and engage students in curriculum-related literacy activities. They hypothesized that students would improve their traditional reading and writing skills as well as developing new digital literacy skills. The study was conducted in the grade 4 classrooms of nine public elementary schools in south- central Ontario, Canada. Thus, eighteen classes of grade 4 students were assigned to either an experimental or control group. Both groups studied the same curriculum unit over a 10-week period.

The researchers along with great help from teachers administered to all students pre- and posttest which is called (GRADE) Group Reading Assessment and Diagnostic- to measure their achievements in reading skill. In addition, pre- and posttest were done to measure their achievement in writing skill. It was called (SWT) Student writing Test.

An analysis of pre and post unit scores on two standardized literacy tests revealed that the experimental students performed significantly better. The results also showed that field notes and teacher interview data indicated that game development helped improve students' content retention, ability to compare and contrast information presented and to develop an insight into questioning skills.

Kablan (2009)

This study aimed at examining whether using exercises based on computer games increase the performance of learning and enhance the academic achievement among 1st and 2nd graders. The sample was divided into two groups; experimental and control group. A pre-post achievement test was designed to collect the data. The researcher used T. test to measure the significant differences between the results of the pre and the post test. The study showed that the academic achievement enhanced as a result of using computer games which facilitate the learning process.

Colby& Colby (2008)

The researchers utilized a descriptive study in the United States that supported integrating computer games into the writing classroom. Then, the researchers offered an example of an enacted emergent pedagogy in which students play the massively multiplayer online role-playing game world of war craft "wow" throughout the term, composing self, determined, rhetorically focused writing projects informed by play and written for other game player.

The researchers displayed a vital role that such computer game has. It was represented in not only having collaborative guidance from the teacher throughout but in understanding the objectives as they write. The students will meet the course objectives through their writing and playing tasks.

Moberly (2008)

Another descriptive study was accomplished for incorporating composition and writing activities into their game play. The researcher introduced the importance of using computer games for not only requiring players to read and to make meaning of symbols presented on the screen but for writing and revising the students' actions in the game relationship to these symbols. Also, computer games thus have the potential to help students not only understand the fundamentals of the compositional process and the larger socio- political structures within which this process occurs but to recognize how these socio- political structures construct reading and writing and in doing so determine the way that the individuals subject to them construct (read and write)themselves.

Li (2007)

To examine the effect of using computerized educational games on ESL students' achievement in China, the researcher randomly selected a sample consisting of (90) students. The sample was divided into two equivalent groups; the experimental group consisted of (45) students who were taught by computerized games, while the control group consisted of (45) students who were taught by the traditional method. The instrument of the research was a pre- post achievement test.

The researcher used T. test to measure the significant differences between the results in the achievement test. The results indicated that the experimental group did better than the

control group in the posttest. Also, using computerized educational games in learning English as a second language had a great effect on the fourth students' achievement level in English language.

In the light of these results, the researcher recommended that teachers of English language should use computerized educational games to teach the four skills, especially listening and speaking skills. For the current study, the researcher noticed that computers and computerized games can be of a great help for learners to facilitate their interaction and thus improve their achievement.

Thomas and Austin (2005)

In their descriptive study, the researchers tried to describe a number of interactive games the authors had devised to foster enjoyment of grammar instruction. The researchers believed that providing resources and options, mixture of games and electronic activities would serve students' writing needs and enhance the basic writing skills of students, while maintaining their interest and enthusiasm. Also, the researcher utilized the advantages of using computer games and electronic activities, since games and electronic activities can replace or add onto the traditional skill-and-drill approaches to teaching grammar, allowing students to form other learning connections. Games and electronic activities give students opportunities to work alone or in groups where cooperative and collaborative learning makes them accountable for their own learning. Further, students using games and electronic activities experience a sense of control which helps improve their self-confidence.

Students using interactive Web sites and software programs experience instant feedback, with graphics and sound effects, making learning fun while developing understanding of specific concepts. Finally, games and electronic activities can be used as an assessment tool, giving instructors a simpler option for assessing learning and one that is less threatening to students. In addition to the grammar Web sites, grammar games add an interesting change of pace to the writing classroom.

Lim (2005)

The aim of this study was to examine the effect of English reading instruction with the application of computer games on fourth grade students' achievement and interest in reading compared with the traditional method in China. The chosen sample was two classes with similar proficiency levels. In the experimental group, the students learned the lesson of English reading with computer games, while in the control group the students learned through the traditional method which was based on the English textbook. The experimental group showed higher improvement of achievement in reading than the control group and the experimental group improved more significantly than the control group on interest in English reading. The study suggested that the teachers should make an effort to develop their teaching methods and materials in order to teach English more effectively.

Yu (2005)

In this thesis, the researcher explored the effect of computer game-based grammar instruction on students' motivation and classroom atmosphere. In addition, it explored that the use of games in practicing grammatical features may improve the students' rate of accuracy in Japan. The participants were (57) who were divided into two groups, the control and experimental groups. The teaching program was the same for both groups. The difference consisted in the use of game-based practice for the experimental group, while the control group performed traditional grammar-based practice only. Data were collected using the following instruments: grammar tests and examinations, a questionnaire on motivation, a questionnaire on classroom atmosphere, a questionnaire on the type of grammar practice, a questionnaire on the grammar and grammar instruction, focus group interviews with students, and the researcher's field notes.

The findings of this study showed that the class became entirely student-centered. The use of computer games improved students' rate of accuracy and developed practicing grammatical features.

2.3.2 Commentary on the First Domain of the Previous Studies

Having reviewed studies of this domain, the researcher's background has been enriched, to some extent, on using computerized educational games in teaching English

language. All studies mentioned above tried to facilitate English language acquisition and learning and teaching English language skills and eras. Like this thesis, all of the studies use computerized games or exercises based on computer games.

While Liu and Chu (2010) studied the effect of computerized games on listening and speaking, Colby and Colby (2008) and Moberly (2008) studied their effect upon writing. Teaching pronunciation and vocabulary was the concern of Turgut and Yrgin (2009) and grammar was the concern of Hamzah and Dourad (2009), Abu Shagga (2012) and Yu (2005). Other researchers studied the effect of computerized games on improving the general achievement like those of Qteefan (2012), Li (2007) and Kablan (2009). Research that studied the effect of computerized games on reading and literacy included those of Lim (2005) and Owston, et al. (2009).

Not all the objectives of previous studies were cognitive; some studies were concerned with affective domains like those of Smith, et al. (2011) and Doran (2010). The researcher thinks that the role of teachers in instructing Phonemic Awareness is significant as Muthiah (2015) affirmed that using computerized games affected not only the students' achievement but also it improved teachers' proficiency. After presenting previous studies, the researcher concluded that computerized educational games bring a positive effect on students' achievement and acquisition of English language.

The research tools of the previous studies differed according to their objectives. For example, Muthiah (2015) used a proficiency test, Chen (2013) used Likert-scaled questions, and Liu and Chu (2010) used a survey and interviews. Others used research tools similar with this research tools. All of Abu Shagga (2012) Hamzah and Dourad (2009), Owsten, et al. (2009) and Li (2007) used pre-posttests as research tools.

Using of computerized games is a modern trend that motivates much research around the world, so we find studies in the USA, China, Taiwan, Turkey, Palestine, etc. The studies in this domain confirmed the effectiveness of using computerized educational games on students' achievement in the different school subjects as they could increase their motivation. This also helped the researcher of the current study to focus on how to design computer games that combined both learning and fun. The plentiful studies investigating the effect of computerized games made it difficult for the researcher to avoid repeating others' work and to choose a unique variable to study.

2.3.3 Previous studies concerning phonemic awareness:

Edwards and Taub (2016)

The researchers indicated the primary difference between strong and weak readers is their phonemic awareness skills. However, there is no consensus regarding which specific components of phonemic awareness contribute most robustly to reading comprehension. In this study, the relationship among sound blending, sound segmentation, and reading comprehension was investigated.

A total of 84 African American and two multiethnic 1st- through 4th-grade students attending an inner-city charter school completed measures of sound blending, sound segmentation, and reading comprehension. Statistically significant relationships were found between blending and segmenting skills and blending and reading comprehension. Results from structural equation modeling revealed a moderate to large effect size between sound blending and reading comprehension and a relatively small effect size between sound segmenting and reading comprehension. The results indicate sound blending skills account for more variance in the prediction of reading comprehension than segmenting skills with this unique research population.

Valbuena(2014)

This thesis focused on promoting phonemic awareness in English as a second language through a program called Tucker Signing. Twenty-five first grade students in a public school participated in the study using the program as phonics instruction. In the process, students would see a word, do a movement with the left hand as a representation of the grapheme, and make the sound.

To analyze if the program was useful, students took a pre- and post-test, and results were compared. Findings showed that the program helped children to develop phonemic awareness through the identification and the relationship between each of the twenty-seven English graphemes (letters) and most of their corresponding phonemes (sounds). At the end, students developed phonemic awareness through the identification of English phonemes without the mix to translate from their L1 (Spanish) to the L2 (English);

although some phonemes like “th” /θ/ /ð/, “j” /dʒ/, and vowels would need more reinforcement.

Fukuda (2013)

This study examined the effects of a phonemic awareness intervention for at-risk kindergarten and first grade students. The intervention consisted of five phonemic awareness activities and one vocabulary activity and occurred three times per week for 30 minutes. The researcher evaluated the kindergarten students’ phonemic awareness screening data and first grade students’ phonics screening data using an ANCOVA design, using fall phonemic awareness scores as the covariate.

For kindergarten students, there was not a significant effect on phonemic awareness or alphabetic principle skills. For first grade students, there was not a significant effect on phonics skills, but there was a significant effect on oral reading fluency skills. The average rates of improvement between the kindergarten intervention and control groups were not significantly different for a measure of phonemic awareness. However, the average rates of improvement between the first grade intervention and control groups were significantly different for phonics. These results suggest that this intervention can be effective in increasing the reading fluency skills of first graders.

Sinha (2013)

This case study on Phonemic Awareness instruction, an intervention study with students with Autism, looked at the effect of Phonemic Awareness instruction on early reading success as measured by DIBEL scores and evaluative testing. Four students with Autism participated in this research study. Two students were in Grade Two, age seven years old and two students were in Grade Three, age eight years old. All of the four participants were English-only speakers. Two paraprofessionals and the researcher implemented their instructional programs within the general education classroom through a descriptive case study design.

This case study suggested that there is a link between children’s (students with Autism) early abilities in phonemic awareness and their later reading skills. Knowledge of how to orally say the sounds of alphabet and then blend these sounds orally into words helps students with Autism to be successful readers. All four participants with Autism

benefitted from this inclusive reading intervention which is evident from the results of this case study.

Rachmani (2011)

The study examined the variation of emergent literacy knowledge, assessed using PALS Pre-K, in a sample of 42 New Zealand four year old children attending kindergarten. The study also investigated the effects of a phonological awareness and alphabet knowledge intervention in a sample of 24 four year old children (taken from the original sample of 42). The results showed 1) a large range in the emergent literacy scores of the 42 four year olds and 2) that a phonological awareness and alphabet knowledge intervention was effective in significantly raising the levels of upper-case letter-naming, letter-sound awareness and beginning sound awareness in the intervention group.

The scores for name writing, lower-case letter-naming and rhyming although higher for the intervention group were not significantly so. The results suggest there is a relationship between letter-naming knowledge and letter-sound knowledge and that beginning sound knowledge was a difficult concept for many children to grasp without explicit teaching.

The findings showed an evidence based intervention that is designed appropriately with regard to focus, length of session and group size can be effective in raising the emergent literacy knowledge of a group of four year old children with low levels of emergent literacy knowledge.

Fambro (2011)

The purpose of this action research was to determine if phonemic awareness is an important part of reading instruction. The research specifically focused on basal readers and how effective they are in teaching phonic awareness. The research also focused on how the academic potential of improving reading fluency skills and spelling skill and achievement. The research also focused on the relationship between reading and spelling, through a case study, and if there was a connection between the two when having a good reader/bad speller.

The results indicated that there was a significant difference in spelling scores when teaching phonics from a basal reader. Reflective journal results showed that there was a relationship between being a poor reader and a poor speller.

Ault (2011)

The researcher analyzed whether phonics instruction increased the students' reading fluency. Ault believed that phonics instruction can help students in their future reading pursuits, and knowing phonemes, syllable types, prefixes, and suffixes are only some of the important skills that help students read multisyllabic words when they are in the higher grades and in everyday life. Ault administered a pre-test, implemented the phonics instruction for five weeks, and then administered a posttest.

The results of the analysis were not favorable; students read an average of 5.8 words per minute less in the post-test than in the pretest. Nevertheless, they did affirm the author's thoughts about an increase of accuracy of reading in the whole target population. This means that students developed a relationship between graphemes and each one of the phonemes.

Martínez (2011)

A study by Martínez (2011) used explicit phonics instruction to improve literacy skills in ESL students from Bogotá Colombia. The main objective of this study was the development of reading abilities in the second language, including reading comprehension, spelling, and proper use of verbs in written statements. The students showed proficiency in literacy in Spanish (L1), and during the kindergarten courses they developed the basic diagraph in English (L2) (the combination of two sounds as /θ/ /ð/ /f/ /tʃ/) and short and long vowels.

The author found that explicit phonics instruction does improve EFL children's reading comprehension. Phonics helps students to better decode and pronounce an English word, which translates into better understanding of what is being read, and hence improve the reading comprehension of EFL students. The author recognized that adequate phonics instruction helped children to develop phonemic awareness, which later would help to develop skills including reading comprehension and writing.

Chabot (2010)

The purpose of this action research was to investigate if implementing phonological awareness instruction to struggling first grade readers would improve their reading success as measured by letter sounds and phoneme segmentation fluency. The program Early Reading Intervention was implemented during the research in addition to the core reading program Houghton Mifflin. The research was conducted in the researcher's first grade classroom. Results of the case study showed that explicit phonemic awareness instruction increased phoneme segmentation fluency in the most at-risk students, but indicated that more phonics instruction would be needed post action research.

Walter (2010)

The researcher conducted a study with kindergarten students whose native language was Spanish. Most of them presented a deficiency in the second language because of little exposure to English at home or school. After the instruction was given to develop phonemic awareness through meaningful activities, a test was given to observe and analyze if students enhanced reading abilities in the second language. The study showed that for students whose language was related to English, as in the case of Spanish, the emphasis on English phonemes that do not exist in their native language was a key factor in the optimization of reading acquisition. Additionally, students presented an improvement not only in reading but also in writing skills, including a positive outcome in the acquisition of new vocabulary in the second language.

Gromko (2005)

The purpose of this study was to determine whether music instruction was related to significant gains in the development of young children's phonemic awareness, particularly in their phoneme-segmentation fluency. Beginning in January 2004 and continuing through the end of April 2004, each of four intact classrooms of kindergarten children ($n= 43$) from one elementary school were taught music by one of four advanced music-methods students from a nearby university. Kindergarten children ($n= 60$) at a second elementary school served as the control group. An analysis of the data revealed that kindergarten children who

received 4 months of music instruction showed significantly greater gains in development of their phoneme segmentation fluency when compared with children who did not receive music instruction. The results support a near-transfer hypothesis that active music-making and the association of sound with developmentally appropriate symbols may develop cognitive processes similar to those needed for segmentation of a spoken word into its phonemes.

Flynn & Govis (2000)

This study aimed at describing a program for improving phonemic awareness skills in kindergarten students. The targeted population consisted of kindergarten students in two elementary schools. The schools are located in the northern suburbs outside a large Midwestern city. The problem of poor phonemic awareness skills was documented with a parent survey, a phonemic awareness spelling test, and teacher checklists. Analysis of probable cause indicated that there were poor phonemic awareness skills among kindergarten students. This negatively affected student's ability to learn to read and spell. Review of the research indicated that students were not given specific skill instruction in phonemic awareness.

A review of the solution strategies suggested by other researchers, combined with an analysis of the problem setting, resulted in the development of a specific program for phonemic awareness skills instruction. The program included direct instruction in the five stages of phonemic awareness and its extension into the written language. Post intervention data indicated an increase in phonemic awareness skills.

Bernstein & Ellis (2000)

This study aimed to answer the question of how phonemic awareness works to facilitate reading acquisition; the paper explored the fundamental connection between phonemic awareness, the alphabetic principle, and phonics in learning to read. The paper undertook a literature review to prove that phonemic awareness is an essential element in the path to literacy.

It found that the evidence reveals that phonemic awareness can significantly bridge the critical gap between inadequate preparation for literacy and success in beginning

reading. It also found that without an understanding of spoken language, students will have difficulty with the alphabetic principle and the letter-sound correspondence (phonics), all of which are necessary for success in reading.

2.3.4 Commentary on the Second Domain of the Previous Studies

The previous studies above indicate a strong relationship between early phonemic awareness and later reading success, and they link some reading failure to insufficiently developed phoneme awareness skills. The studies are divided into two categories. One category was concerned with analyzing whether Phonemic Awareness instruction increased students' reading and writing. This category included studies such as those of Edwrds and Taub (2016), Fukuda (2013), Fambro (2011), Ault (2011) Bernstein and Ellis (2000) and Rachmani (2011). The other category comprised of studies focusing on promoting Phonemic awareness in English language using different techniques. Those category included studies such as those of Valbuena (2014), which used a program called Tucker signing and Martinez (2011) and Chabot (2010), which used explicit phonics instruction to improve Phonemic Awareness, Walter (2010), which used meaningful activities and Gromko (2005), which used music instruction as a new technique. However, the researcher of the current study thinks that none of the reviewed studies investigated the effectiveness of computerized games on developing Phonemic Awareness.

Each study had its own list of Phonemic Awareness skills, but the researcher found some common skills like blending, segmenting, and rhyming.

The point of agreement between the current research and the previous studies is the age of the sample since all the samples' age was between four and ten as most researchers think that early intervention can overcome difficulties the students face. Intervention research clearly demonstrates the benefits of explicitly teaching phonemic awareness skills. Many children at risk of reading failure are in general education classrooms where phonemic awareness training is not part of their reading program. The best intervention to learners should begin from an early age as has been agreed upon by specialists and the majority of research indicated the positivity of planned activities that have been presented to the learners.

With regard to the research instruments, the previous studies utilized different research tools such as pre-posttests, checklist and observation card. The tools are limited because Phonemic Awareness is concerned with sounds and no written material may be used. The researcher noticed that some studies used new tools. For example, Edwards and Taub (2016) used a structural equation modeling, Valbuena (2014), Ault (2011), and Walter (2010) used tests to measure the improvement occurring in the skills, but the closest study tool similar to the current one is that of Flynn and Govis (2000), which used Phonemic Awareness spelling test and a checklist. The researcher benefited from the the previous studies tools.

The results of the previous studies agreed with the current study results that intervention has positive effects on reading and writing. Edwrds and Taub (2016), Fukuda (2013), Fambro (2011), Ault (2011) Bernstein and Ellis (2000) and Rachmani (2011) revealed a strong relation between different phonemic awareness skills and reading and writing. On the other hand Valbuena (2014), Martinez (2011), Chabot (2010), Walter (2010), and Gromko (2005) revealed a large effect of the programmes they used to develop phonemic awareness skills.

Students with autism have a portion in the previous studies as Sinha (2013) worked with four students with autism who turned to be successful readers. Regardless of phonemic awareness rising importance, few studies were conducted to study the effect of technology upon the phonemic awareness, which encouraged the researcher to adopt the computer assisted learning in developing phonemic awareness.

Summary

In this chapter, the researcher provided a relevant review of related literature concerning the importance of instructing and developing Phonemic Awareness using computerized games. The researcher also presented previous studies which were applied to show the importance of using computer activities and games in developing Phonemic awareness skills in particular and reading in general. The following chapter will tackle the methodology of the study.

Chapter 3

Methodology

Chapter 3

Methodology

This chapter covers the procedures followed throughout the study. It introduces a complete description of the methodology of the study, the population, the sample, the instrumentation, the pilot study and the research design. Moreover, it introduces the statistical treatment of the study findings.

3.1. Research design:

The researcher adopts the experimental approach; two groups were assigned as the participants of the study; the experimental group, and the control group. Computerized language games was used in teaching the subjects of the experimental group, while the traditional methods was used with the control group subjects, the researcher used the design of two groups with a pre-posttest and a checklist.

3.2. Sample:

The sample of the study consisted of (60) students distributed into two groups: the experimental group consisting of (30) students and control group consisting of (30) boys and girls. The two groups were randomly chosen from five classes in a Jabalia Elem Coed "A" School in north Gaza, where the researcher works. Then they were appointed randomly. Table (3.1) shows the distribution of the sample.

Table (3.1): The distribution of the sample to the study two groups

Group	Experimental	Control	Total
No. of the sample	30	30	60

The students in both groups were equivalent in their general achievement as revealed in the statistical treatment of their results in the second term exams of the school year (2015-2016). This is because classes were originally distributed according to their results by the school administration beforehand. Age of the sample was also controlled before the experiment application. The pre-test and the checklist were applied to check the equivalence of the phonemic awareness of the two groups as shown in tables (3.4) and (3.5).

3.3. The variables:

The study included the following variables:

- The independent variable is computerized language games
- The dependent variable is phonemic awareness.

3.4 Controlling some variables

The researcher tried to control some variables that might affect the results of the research to ensure valid results and avoid any possible external interference. Mackey and Gass (2005:128) emphasize that "it would be important that each group of students be relatively homogeneous. Were they not homogeneous, one could not be sure about the source of the results".

3.4.1 Age variable

The researcher recorded the students' ages from their school files at the beginning of the school year (2015-2016). T-Test was used to measure any statistical differences. Table (3.2) indicates that there were no statistically significant differences at (0.05) level between the experimental and the control groups due to age variable.

Table (3.2): T-test results of controlling the age variable

scope	Group	N.	Mean	Std. Deviation	t.	Sig value	Sig Level
Age	Experimental	30	9.449	0.252	0.269	0.788	Not Sig.
	Control	30	9.460	0.230			

"t" table value at (58) d f. at (0.05) sig. level equal 2.00

"t" table value at (58) d f. at (0.01) sig. level equal 2.66

Table (3.2) shows that the T. computed value (0.269) is smaller than T. table value (2.00) in the age of the control and experimental groups' members. This means that there were no statistically significant differences at (0.05) between the experimental and the control participants due to the age variable. This indicates the equivalence of both the experimental and control groups.

3.4.2 General English achievement variable

T-test was used to measure the statistical differences between the groups due to their English and general achievement. The subjects' results in the first term test of the school year (2015-2016) were recorded and analyzed as shown in Table (3.3) below.

Table (3.3): T-test results of controlling English achievement variable

Domains	Group	N	Mean	Std. Deviation	T	Sig. value	sig. level
English achievement	experimental	30	11.967	3.068	0.716	0.477	not sig.
	Control	30	12.567	3.411			

“t” table value at (58) d f. at (0.05) sig. level equal 2.00

“t” table value at (58) d f. at (0.01) sig. level equal 2.66

Table (3.3) shows that the T. computed value (0.716) is smaller than T. table value (2.00) in the English Midterm Exam. This means that there were no statistically significant differences at (0.05) between the experimental and the control participants due to the English achievement variable. This indicates the equivalence of both the experimental and control groups.

3.4.3 Controlling the phonemic awareness test variable

To make sure that the sample subjects were equivalent in their previous English language achievement, the researcher applied a pre phonemic awareness test on both, the experimental and the control and then the results of the subjects were recorded and statistically analyzed using t-test. Table (3.4) shows the mean and the standard deviation of each group in the pre phonemic awareness test.

Table (3.4): t.test results of controlling phonemic awareness test variable

Domains	Group	N	Mean	Std. Deviation	T	Sig. value	sig. level
Letter-sound discrimination	experimental	30	4.467	1.852	0.462	0.646	not sig.
	Control	30	4.767	3.036			
Rhyming	experimental	30	3.533	1.279	0.177	0.860	not sig.
	Control	30	3.467	1.613			
Sound isolation	experimental	30	5.800	2.870	0.043	0.966	not sig.
	Control	30	5.767	3.191			
Blending	experimental	30	3.967	1.542	0.714	0.478	not sig.
	Control	30	3.667	1.709			
Segmentation	experimental	30	3.733	1.741	0.357	0.722	not sig.
	Control	30	3.567	1.870			
Sound manipulation	experimental	30	3.267	3.062	0.044	0.965	not sig.
	Control	30	3.233	2.812			
SUM	experimental	30	24.767	8.633	0.136	0.892	not sig.
	Control	30	24.433	10.311			

“t” table value at (58) d f. at (0.05) sig. level equal 2.00

“t” table value at (58) d f. at (0.01) sig. level equal 2.66

Table (3.4) indicates that there are no statistically significant differences between the experimental and the control groups at (0.05) level as the T. computed

value (0.136) is smaller than T. table value (2.00) in the Phonemic awareness pre-test. This indicates the equivalence of both the experimental and control groups.

3.4.4 Controlling checklist variable

To make sure that the sample subjects were equivalent in phonemic awareness, the researcher applied the checklist on both the experimental and the control. The results of the checklist were recorded and statistically analyzed using T-test. Table (3.5) shows the comparison between the two groups of the sample on the phonemic awareness pretest.

Table (3.5): t.test results of controlling checklist variable

Domains	Group	N	Mean	Std. Deviation	T	Sig. value	sig. level
Consonants	Experimental	30	17.167	5.259	0.685	0.496	not sig.
	Control	30	16.133	6.372			
Vowels	Experimental	30	6.467	2.583	0.776	0.441	not sig.
	Control	30	5.900	3.055			
SUM	Experimental	30	23.633	7.486	0.742	0.461	not sig.
	Control	30	22.033	9.129			

“t” table value at (58) d f. at (0.05) sig. level equal 2.00

“t” table value at (58) d f. at (0.01) sig. level equal 2.66

Table (3.5) indicates that the T. computed value (0.742) is smaller than T. table value (2.00) in the phonemes checklist, which means that there were no statistically significant differences between the experimental and the control groups in the pre-application of the checklist. This indicates the equivalence of both the experimental and control groups.

3.5 Instrumentation

The researcher used a programe which was the computerized language games in teaching the experimental group. And she used two different tools to achieve the aims of the study:

- A pre- posttest (phonemic awareness test)
- A checklist of the phonemes.

She also held three meetings with some specific objectives. The first was with an English language supervisor, the second was with three expert teachers of English language working at UNRWA schools, and the third was with two experts from Al-Quds Open University. The objectives of the meetings were as follows:

- Determining which phonemic awareness skills should be presented to the students.
- Determining the suitable games and the phonemes that should be included in the games.
- Determining the nature of the pre-posttest.
- Determining the nature of the checklist.

With the help of the researcher's readings and the expert, the researcher outlined the first draft of the skills which contained:

- Concept of spoken word.
- Rhyme recognition, completion and production.
- Syllable blending, segmentation and deletion.
- Phoneme isolation of initial and final sound.
- Phoneme blending of (onset and rime) and all phonemes.
- Phoneme segmentation.
- Phoneme deletion of initial and final sound.
- Phoneme substitution.

After conducting the meetings mentioned above, the recommendations from these meetings affected the building of the research instruments as the researcher made major changes in the pre-posttest, checklist and the games according to the modified skills which were as follows:

- Letter-sound discrimination
- Rhyming
- Sound isolation
- Blending
- Segmentation
- Sound manipulation

3.5.1 The computerized language games program

There are several definitions for computerized games like the one by Cambridge "a game that is played on a computer, in which the pictures that appear on the screen are controlled by pressing keys or moving a joystick" and Collins' dictionary defined them as "any of various electronic games that are played by

manipulating an input device in response to the graphics on the screen". But the researcher prefers to use the empirical definition" educational electronic games allow players to listen segment, and blend phonemes to form words within certain rules".

3.5.1.1 The construction of the computerized language games

The game package includes the vocabulary found in the dictionary of "English for Palestine 3" for the second semester. It starts with a screen showing five games, each of which has its instructions, skills and the ability to be replayed. The students receive the feedback as soon as answering the questions. When the answer is right they move to the next step, but when it is wrong they are given more instructions. More details about the games are found in the teacher guide prepared by the researcher, see Appendix (A).

3.5.1.2 Characteristics of the study computerized language games

- The games in the computerized program are individual games, in which the player should wear the headphones and listen carefully to the instructions.
- The player is exposed to the language and the phonemes in particular.
- The player moves from one stage to another according to his own speed and without being able to choose the right answer, he/she cannot move to the next stage.
- The teacher can use the games at different times, the beginning of the class as a warming up activity, after the presentation of the vocabulary as an evaluation or at the end of the class as a rounding up activity. Another suggestion for using games is to be used as a remedial program at the beginning of the year.

3.5.1.3 The aim of the computerized language games.

The aim of these games was to teach all graders because the words of the games are simple and easy to be mastered by any level. Another aim of the computerized games was to meet all students' learning styles.

The computerized games also took into consideration the individual differences in learning the foreign language in elementary schools. In addition, this program offers motivation, self-learning, concentration, and immediate feedback.

3.5.1.4 The sources of designing the computerized language games

Regarding the idea for the computerized, the researcher got great benefits and enriched her mind with various sources such as: supervisors, teachers, educators, program designers, researchers, and books. The researcher benefited a lot from the online website games that deal with phonemic awareness and related the idea of the five games with the cartoons they like. The games vary according to the skill they have been constructed to enhance.

3.5.1.5 The implementation of the computerized language games

The researcher applied the program on both male and female students. First, the researcher talked to the pupils about phonemic awareness and the experiment in order to warm them for learning through computer games in the school computer lab. Then the researcher asked the students to get a parental agreement. The pupils were excited and they were involved in the teaching/learning process.

Before the students were asked to use the computers in the computer lab, the teacher organized the students to work individually, in pairs and in groups. And she explained the skills one by one to make sure that the objective of the game was clear for the players. The same explanation was introduced to the control group without the intervention of the computer games. Since the number of computers does not exceed twenty four, this promoted the teacher to tell students to use the computers in turn just to give all students the opportunity to listen and play.

The teacher loaded the computer game program to all computers, and showed her students the way to open it through Local Control Network technique that the teacher used from the main computer in the lab. The researcher let students look, listen, and interact with the games.

Initially, the students were not able to play whatever game they wanted. They moved from one game to another after being explained to them by the researcher. Each game needed three sections to be mastered by the players. The teacher went around and observed students' performance. After fifteen meetings in the computer labs, the students were able to choose any game to play. Some of the activities the teacher used in explaining the skills are mentioned in details in the teacher guide see Appendix (A).

3.5.1.6 The validity of the computerized language games program

To test the games validity, the researcher submitted CD games of the computer first design to a group of English Language supervisors and teachers. The researcher did the required adjustments according to their recommendations.

3.5.2 The pre-posttest:

The test was applied on the two study groups before applying the intervention to measure their level at phonemic awareness and to compare the results of the pretest with those of the posttest after the intervention and to find the suitable time for applying the test.

The test was introduced to a jury of specialists in English language and methodology in Gaza and their recommendations were taken into consideration before applying the pilot study. The total number of the items was sixty and they were divided into six equal sub-skills. It is worth noting some points:

- The pre-posttest was an oral test where the teacher asked each student individually and marked his/her answers. If the student gave the correct answer, he/she would get the mark.
- The time of the exam was open to give the child the full opportunity to answer the items.
- The teacher explained the items clearly to the children as it was the first time for them to be exposed to these skills.
- The exam covered the phonemic, syllabic and onset-rime awareness.
- The skills of the exam were:

- Letter –sound discrimination:

This domain was divided into two sub-skills: identifying different letters and different sounds. Each sub-skill consisted of (10) items.

- Rhyming

This domain was divided into two sub-skills: identifying whether words rhyme, and producing words that rhyme; each sub-skill consisted of (10) items.

- Sound isolation

This domain was divided into three sub-skills: identifying the first sound in a word, identifying the medial sound in a word and identifying the last sound in a word. Because of the importance of the medial sound which is

almost a vowel, this skill had (4) items while the first and last sounds each had (3) items.

- Blending

This domain was divided into two sub-skills: blending onset and rime and blending separate phonemes. Each sub-skill had (10) items

- Segmentation

This domain was divided into two sub-skills: counting words in sentences and counting syllables in words. Each sub-skill had (10) items

- Sound manipulation

This domain was divided into two sub-skills: adding phonemes to words and substituting first and last phonemes in words. Each sub-skill had (10) items.

3.5.2.1 The pilot sample

The test was applied on a random sample of (30) students from the fourth graders from Jabalia Elem. Coed "A" School, who had the same characteristics of the sample of the study. The results were recorded and statistically analyzed to assess the validity and reliability of the test. The items of the test were modified in the light of the statistical results.

3.5.2.2 The validity of the test

Al Agha (1996, p.118) states that "a valid test is the test that measures what it is designed to measure". The study used the referee validity and the internal consistency validity.

3.5.2.3 The referee validity

The test was introduced to a jury of specialists in English language and methodology in Gaza universities, Ministry of Education and experienced supervisors. The test items were modified according to their recommendations.

3.5.2.4 The internal consistency validity

Al Agha (1996: 121) asserts that the internal consistency validity indicates the correlation of the degree of each item with the total average of the test. It also indicates the correlation coefficient of the average of each domain with the total average. This validity was calculated by using Pearson Formula. Table (3.6) shows the correlation coefficient of each item of the phonemic awareness test.

Table (3.6): Correlation coefficient of each item within its domain

Items	Domains	Pearson correlation	Domains	Pearson correlation	Domains	Pearson correlation
1	Letter-sound discrimination	0.671**	Sound isolation	0.505**	Segmentation	0.866**
2		0.808**		0.373*		0.425**
3		0.644**		0.756**		0.603**
4		0.666**		0.812**		0.557**
5		0.692**		0.447**		0.557**
6		0.434**		0.730**		0.441**
7		0.722**		0.579**		0.658**
8		0.601**		0.500**		0.638**
9		0.677**		0.439*		0.889**
10		0.476**		0.437*		0.810**
1	Rhyming	0.729**	Blending	0.552**	Sound manipulation	0.385*
2		0.672**		0.634**		0.498**
3		0.616**		0.454*		0.387*
4		0.583**		0.669**		0.603**
5		0.590**		0.813**		0.473**
6		0.561**		0.400*		0.403*
7		0.617**		0.701**		0.392*
8		0.744**		0.472**		0.768**
9		0.444**		0.506**		0.589**
10		0.654**		0.779**		0.448*

r table value at df (28) and sig. level (0.05) = 0.361

r table value at df (28) and sig. level (0.01) = 0.463

Table (3.6) shows that the correlation coefficients for the domains of the skills ranged between (0.373 - 0.889), so they were significant at (0.05, 0.01), which indicates that there was a consistency between the items and this means that the test was highly valid for the study.

The researcher also measured the correlation between the domains with the total score of the test as shown in table (3.7).

Table (3.7): Pearson Correlation coefficient for every domains of the test with the total score of the test

Domains	Pearson Correlation
Letter-sound discrimination	0.867**
Rhyming	0.865**
Sound isolation	0.774**
Blending	0.865**
Segmentation	0.877**
Sound manipulation	0.532**

r table value at df (28) and sig. level (0.05) = 0.361

r table value at df (28) and sig. level (0.01) = 0.463

As shown in the table (3.7), there is a correlation between the domains and the total degree of the test sig. level at (0.01)since the correlation coefficients for the domains of the test ranged between (0.532 - 0.877), which shows a high internal consistency of the phonemic awareness test, which reinforces the validity of the test.

3.5.2.5 Difficulty coefficient of the test

The coefficient of difficulty of each item was calculated according to the following formula for the pilot study which counted (30):

$$\text{Difficulty Coefficient} = \frac{\text{No. of students with wrong answers}}{\text{Total number of students}} \times 100$$

Table (3.9): Difficulty coefficient of each item of the phonemic awareness test

No.	Difficulty coefficient	No.	Difficulty coefficient
1	0.44	31	0.31
2	0.38	32	0.63
3	0.69	33	0.38
4	0.50	34	0.50
5	0.50	35	0.56
6	0.69	36	0.75
7	0.63	37	0.69
8	0.44	38	0.31
9	0.63	39	0.75
10	0.31	40	0.25
11	0.38	41	0.69
12	0.69	42	0.50
13	0.56	43	0.69
14	0.38	44	0.63
15	0.38	45	0.38
16	0.50	46	0.69
17	0.44	47	0.31
18	0.44	48	0.63
19	0.75	49	0.75
20	0.31	50	0.31
21	0.63	51	0.69
22	0.56	52	0.38
23	0.69	53	0.56
24	0.63	54	0.31
25	0.75	55	0.38
26	0.69	56	0.69
27	0.63	57	0.63
28	0.69	58	0.38
29	0.63	59	0.56
30	0.69	60	0.69
Total difficulty coefficient		0.54	

Table (3.9) shows that the difficulty coefficient fluctuated between (0.25 – 0.75) with total average (0.54), which means that each item is acceptable or in the normal limit of difficulty according to viewpoint of assessment and evaluation specialists.

3.5.2.6 Discrimination coefficient

That means that the test is able to differentiate between the high achievers and the low achievers. The discrimination coefficient was calculated according to the following formula:

$$\text{Discrimination Coefficient} = \frac{\text{No. of students with correct answers among high achievers}}{\text{No. of high achievers}} - \frac{\text{No. of the student with correct answers among low achievers}}{\text{No. of low achievers}}$$

Table (3.10) shows the discrimination coefficient for each item of the test

Table (3.10): Discrimination coefficient of each item of the phonemic awareness test

No.	Discrimination coefficient	No.	Discrimination coefficient
1	0.63	31	0.38
2	0.75	32	0.75
3	0.63	33	0.75
4	0.75	34	0.50
5	0.75	35	0.63
6	0.38	36	0.50
7	0.75	37	0.63
8	0.63	38	0.63
9	0.75	39	0.25
10	0.63	40	0.50
11	0.50	41	0.63
12	0.38	42	0.75
13	0.63	43	0.63
14	0.75	44	0.75
15	0.50	45	0.75
16	0.75	46	0.63
17	0.63	47	0.63
18	0.38	48	0.25
19	0.50	49	0.50
20	0.63	50	0.63
21	0.75	51	0.38
22	0.38	52	0.25
23	0.38	53	0.38
24	0.75	54	0.63
25	0.50	55	0.75
26	0.63	56	0.38
27	0.75	57	0.25
28	0.63	58	0.50
29	0.75	59	0.63
30	0.63	60	0.63
Total Discrimination coefficient			0.58

Table (3.10) shows that the discrimination coefficient wobbled between (0.25 – 0.75) with total average (0.58), which means that each item is acceptable or in the normal limit of discrimination according to the viewpoint of assessment and evaluation specialists.

3.5.2.7 Reliability of the test

The test is regarded reliable when it gives the same results in case of applying it again for the same purpose in the same conditions (Al-Agha, 1996:120). The reliability of the test was measured by the Spilt-half technique.

3.5.2.8 Split-Half Method and KR20

The reliability of the test was measured by KR20 and the Spilt-half techniques. Table (3.8) shows (KR20) and Split half coefficients of the phonemic awareness test.

Table (3.8): (KR20) and Split half coefficients of the phonemic awareness's test domains

Domains	No. of Items	KR20	Split half coefficients of the test domains
Letter-sound discrimination	10	0.825	0.924
Rhyming	10	0.741	0.897
Sound isolation	10	0.848	0.931
Blending	10	0.789	0.826
Segmentation	10	0.794	0.917
Sound manipulation	10	0.802	0.819
Total	60	0.906	0.857

O'dah, (2002: 176) assures that if the results show that the reliability coefficients are above 0.70, so they are acceptable. The results showed that the Spilt-half coefficient is (0.857) and KR20 is (0.906) and this indicates that the reliability of the test was high and strong.

3.5.3 Checklist card

The checklist card was used to determine students' awareness of the English phonemes (24 consonants and 12 vowels) mentioned in Cohen (1971), Kelly (2000) and Canepari (2005) and as was agreed upon in the meetings with specialists mentioned above. It was composed of two domains, involving thirty six items as shown in Table (3.11) below.

Table (3.11): Distribution of the items in the checklist

Domains	No. of items
Consonants	24
Vowels	12
Total	36

The check-list items were built by the researcher taking into account English supervisors' and experts' opinions. The checklist covers the consonants and simple vowels (short and long vowels) because they are suitable for the third graders.

The best way to observe the students' awareness of phonemes was to make the students read some vocabulary and the observer checked the phonemes. To avoid students' difference in their choices of words, the researcher wrote six sentences that conclude all target phonemes. The researcher asked the students to read the sentences aloud and recorded their reading by her mobile phone and then she analyzed the recordings to decide whether the student is aware of the phoneme or not.

Each phoneme was represented by one word or more. Judging the awareness of the phoneme was precise as the researcher determined one main word to decide the result.

3.5.3.1 The referee validity of the checklist card

In order to measure the validity of the checklist card, the researcher used the referee validity. The checklist card was introduced to experienced supervisors. There were no changes on the items of the checklist.

3.5.3.2 The validity of the checklist card

Pearson correlation is used to check the validity of the checklist. According to the Table (3.12), the coefficient correlation of each item within its domain ranged between (364-895) so they are significant at levels (0.01)and (0.05).

Table (3.12): Correlation coefficient of each item within its Domains

Domains	Items	Pearson correlation	Domains	Items	Pearson correlation
Consonants	1	0.658**	Vowels	1	0.492**
	2	0.568**		2	0.539**
	3	0.800**		3	0.597**
	4	0.768**		4	0.703**
	5	0.700**		5	0.700**
	6	0.676**		6	0.578**
	7	0.721**		7	0.840**
	8	0.785**		8	0.434*
	9	0.364*		9	0.390**
	10	0.450*		10	0.532**
	11	0.553**		11	0.737**
	12	0.696**		12	0.808**
	13	0.515**			
	14	0.376**			
	15	0.555**			
	16	0.776**			
	17	0.768**			
	18	0.749**			
	19	0.596**			
	20	0.641**			
	21	0.726**			
	22	0.895**			
	23	0.776**			
	24	0.576**			

r table value at df (28) and sig. level (0.05) = 0.361

r table value at df (28) and sig. level (0.01) = 0.463

Table (3.13) shows the correlation coefficient of each domain with the whole checklist card. Thus, it can be concluded that the checklist card is highly consistent and valid as a tool for the study. The coefficient correlations are (0.978, 0.920) and they are significant at (0.01).

Table (3.13): Correlation coefficient of each Domain with the whole checklist card

Domains	Pearson correlation	Sig. level
Consonants	0.978**	sig. at 0.01
Vowels	0.920**	sig. at 0.01

r table value at df (28) and sig. level (0.05) = 0.361

r table value at df (28) and sig. level (0.01) = 0.463

As shown in the tables (3.12) and (3.13) there is a correlation between the domains and the total degree and each domain with the other domains at sig. level (0.01), which shows a high internal consistency of the checklist card which reinforces the validity of the checklist card.

3.5.3.3 The reliability of the checklist card

To find the reliability of the checklist card, the researcher used the inter-observer agreement method (the researcher and another experienced English teacher) in the calculation of the reliability.

Each observer was working independently of the other and they used the same scale to record the performance of students that occurred during the observation period. In addition, the researcher and the experienced English teacher ended their observation at the same time, which was at the end of time period determined to the total observation. In the light of this, the reliability of the checklist card was measured by using the following Cooper's equation.

$$\text{Coefficient of agreement} = \frac{\text{points of agreement}}{\text{Points of agreement} + \text{points of disagreement}} \times 100$$

The researcher and the experienced English teacher observed five students' performance from the pilot sample and checked the appropriate boxes of the checklist depending on the students' performance. Then, the inter-observer reliability was calculated as shown in Table (3.14) below.

Table (3.14): Percentage of inter-observer agreement to assess the Checklist Reliability

Group	Items No.	First observer	Second observer	Percentage
students 1	36	39	37	94.87
students 2	36	49	46	93.88
students 3	36	62	57	91.94
students 4	36	71	68	95.77
students 5	36	77	72	93.51
Total Reliability of the Card				93.99

According to Table (3.14), the highest percentage of agreement between the observers was (95.77), and the lowest percentage of agreement was (91.94) and the total reliability was (93.99). Thus, these percentages indicate a high level of checklist card reliability.

3.8 Statistical analysis procedures

The data was collected and computed by using Statistical Package for Social Sciences (SPSS). The following statistical techniques were used:

1. T. Test Independent Samples: to control the intervening variables and to measure the statistical differences in means between the two groups due to the study variables.
2. Eta square to assess the effect size
3. Spearman correlation: to determine the internal consistency validity of the test.
4. Pearson correlation coefficient to identify the correlation of the items of the test and the scale.
5. Split-half and coefficient of agreement techniques were used to measure the reliability of the scale items.
- 6.

3.9 Summary:

In this chapter, the researcher presented the statistics she did to guarantee the validity and reliability of the tools and instruments .the tables above showed that the tools are valid and reliable and it also present a clear image about the performance of the students to compare with the results after the intervention. The chapter also presented a brief description about the independent variable which is the computerized language games and how they are constructed and implemented. In the next chapter, the results of the study will be discussed thoroughly.

Chapter 4

Data Analysis

Chapter 4

Data Analysis

This chapter puts forward the statistical analysis of the data collected throughout the study. The present study aims to investigate the effectiveness of using computerized language games on developing the phonemic awareness for the third graders in Gaza UNRWA schools. To answer the study questions and test its hypotheses, the researcher randomly assigned two groups (one experimental and one control). A pre-posttest and a checklist were the instruments used to collect data.

4.1 Data Analysis

The researcher used different statistical tests using the statistical program (SPSS) to analyze the collected data results. Tables were also used to present these data accompanied by analysis and interpretation.

4.2.1. Answer to the first question

The first question was formulated as follows: What is the nature of the computerized language games that can improve the third graders' phonemic awareness? It is no secret that different children learn differently. Some need visual experiences. Others respond to auditory cues. Still others need hands-on familiarity. Some need all three. The same is true when children learn to read. So the researcher tried to design games that can benefit all students with different styles of learning.

The researcher designed five cartoons games as she thinks that the connection between reality and imagination can enhance learning and motivate students to play and learn continuously. Following is a detailed description of these five computerized games.

- **The first game:**

The objective of this game is to introduce the concept of phonemes to the children and to demonstrate that there is a difference between letters and phonemes. Another skill the game serves is phonemic blending as the player joins the phonemes to form the word he/she hears. Players start from easy words containing three letters with three sounds as each letter has a phoneme. Then the player moves to more complicated words where a phoneme can be represented by two letters. With a colorful screen, the famous character of Bente asks the

player to form a word by choosing the right letters. The main question of the game is "What letter makes the ___ sound?" Each time the student listens to a phoneme, he/she should choose the right letter(s) that represent(s) it. See appendix (A).

Around the screen there are alternative letters to be chosen from and when the player moves the mouse over them, he/she can hear the right pronunciation. The games are designed according to mastery learning as the student cannot move forward in the game without mastering the phonemes of the words. The game has direct and clear instructions. After forming the word, its picture appears to enhance other learning objectives. The teacher can use this game at the beginning of the class as a warming-up activity or as summative evaluation to enhance vocabulary learning. The number of the vocabulary items in this game is 20 words from the dictionary of (English for Palestine 3).

- **The second game:**

The objectives of this game are to present the concept of onset and rime to the students and to let them practice syllabic blending and segmentation. Also this game introduces rhyming to students for the first time. The character of this game is the car McQueen who is very popular among students. We can find several cars, each car holds a rime with the question "Who will play against ___?" When the player chooses the rime he/she wants to practice, he/she should choose an onset from alternatives to practice. Repetition is key here since the student listens repeatedly to the onset and rime. No competitive elements are found in this game, but it offers an educational content in a joyful way. Pictures also accompany the vocabulary. The number of words in this game is 36 from the elementary cycle curriculum. This game can be used at the beginning and the end of the class or can be used as a remedial device to help at-risk students in reading. See appendix(A).

- **The third game:**

This game resolves the problem of sound and word discrimination and helps students to differentiate between consonants. Presenting consonants before applying this game makes it easy for the players identify the different word. The player listens to the vocabulary items. Three of them contain a common consonant and one is different; this one should be chosen by the player to save Nemo, the famous character from Disney World. Direct and repetitive

instruction helps students to move from one stage to another as the game depends on learning mastery too. The words students listen are represented on the screen by pictures.

This game is suitable for all stages because it has an acceptable degree of difficulty such as differentiating between pairs of consonants like $\backslash w \backslash$ and $\backslash y \backslash$, which is a challenging task to some extent. This game includes 112 words which contain all the consonant sounds of English. See appendix (A).

- **The fourth game**

Back to the onset and rime training from one side and phonemic manipulation from the other side, this game is a practical training for manipulating phonemes and changing the first word to form a new word in a chain consisting of 8 words. Success in one step means moving SpongeBob one stair up to the beach; this character is love by kids. The total number of words in this game is 40. In each step, the player listens to three alternatives and then chooses the right part whether it is an onset or a rime. Only correct choice will allow the player to move to the next stage of the game. See appendix (A).

- **The fifth game**

The last game focuses on a serious issue, the vowel sounds. In this game, the player listens to a group of words and then he/she should choose the words that share the same vowel sound. The researcher thinks that the game objectives, besides teaching short and long vowels, are teaching rhyming as the teacher should explain that not all words with the same vowel have a similar rhyme. This game contains 12 vowels with 120 vocabulary items to be heard by the player. This game also depends on mastery learning.

The immediate feedback and reinforcement is a common characteristic among all games. For more details and a more thorough description of these games, see the teacher guide in Appendix (A).

4.2.2 Answer to the Second question

The second question was formulated as follows: Are there statistically significant differences at ($\alpha \leq 0.05$) in the mean scores in the phonemic awareness posttest between the control group and the experimental group? To answer this question, the researcher tested the following null hypothesis: There are no statistically significant differences at ($\alpha \leq 0.05$) in the

total mean scores in phonemic awareness posttest between the experimental group and the control group.

To examine the first hypothesis, means and standard deviations of both groups' results on the post-test were computed. Independent Samples T-test was used to measure the significance of the differences. Table (4.1) describes those results.

Table (4.1): T.test independent sample results of differences between the experimental and the control group in the posttest

Domains	group	N	Mean	Std. Deviation	t	Sig. value	sig. level
Letter-sound discrimination	experimental	30	8.867	1.456	4.672	0.000	sig. at 0.01
	control	30	6.567	2.269			
Rhyming	experimental	30	7.833	1.895	4.087	0.000	sig. at 0.01
	control	30	5.833	1.895			
Sound isolation	experimental	30	9.267	1.760	3.911	0.000	sig. at 0.01
	control	30	6.900	2.808			
Blending	experimental	30	7.533	2.097	4.087	0.000	sig. at 0.01
	control	30	5.333	2.073			
Segmentation	experimental	30	6.767	2.079	3.738	0.000	sig. at 0.01
	control	30	4.933	1.701			
Sound manipulation	experimental	30	6.700	2.336	4.416	0.000	sig. at 0.01
	control	30	4.033	2.341			
SUM	experimental	30	46.967	9.118	6.005	0.000	sig. at 0.01
	control	30	33.600	8.093			

“t” table value at (58) d f. at (0.05) sig. level equal 2.00

“t” table value at (58) d f. at (0.01) sig. level equal 2.66

As shown in table (4.1) the T. computed value (6.005) is larger than T. table value (2.66) in the test, which means that there are significant differences at (0.01) in the total average score of the post-test between the experimental and control group in favor of the experimental group. The mean of the posttest in the experimental group reached (46.967), whereas that of the control group was (33.600). This result indicates that using computerized language games is more effective than the traditional method in developing the students' phonemic awareness.

To show the extent of computerized language games effect on the experimental group achievement in the phonemic awareness test, the study applied the "Effect Size" technique (Affana, 2000, p. 42).

The researcher computed " η^2 " using the following formula:

$$\eta^2 = \frac{t^2}{t^2 + df}$$

And "d" value using the following formula:

$$D = \frac{2t}{\sqrt{df}}$$

The results of such computation are outlined in Table (4.2) below. The table shows the effect size of computerized language games of the phonemic awareness test.

Table (4.2): The Effect Size of Computerized language games on the Experimental group in the Post-Test

Skill	t value	η^2	D	Effect volume
Letter-sound discrimination	4.672	0.273	1.227	large
Rhyming	4.087	0.224	1.073	large
Sound isolation	3.911	0.209	1.027	large
Blending	4.087	0.224	1.073	large
Segmentation	3.738	0.194	0.982	large
Sound manipulation	4.416	0.252	1.160	large
Total	6.005	0.383	1.577	Large

Comparing the results from the table with the scale in Table (4.3)

Table (4.3): The Table References to Determine the Level of Size Effect (η^2) and (d)

Test	Effect volume		
	Small	Medium	Large
η^2	0.01	0.06	0.14
D	0.2	0.5	0.8

The results of η^2 value is (0.383) is more than (0.14) and D value is (1.577) is more than (0.8) so this indicated a large effect size of using computerized language games in the post test. This large effect may be due to the activities and techniques which are used in the computerized language games to develop students' phonemic awareness.

4.2.3. Answers to the third Question

The third question was formulated as follows: Are there statistically significant differences at ($\alpha \leq 0.05$) in the total mean scores in the checklist before applying the

intervention and after applying it for the experimental group? To answer this question, the researcher tested the following null hypothesis: There are no statistically significant differences at ($\alpha \leq 0.05$) in the total mean scores in the checklist before applying the intervention and after applying it for the experimental group? To investigate this hypothesis, the means and standard deviations of the experimental group results were computed. T. Test Paired Sample was used to measure the significance of differences.

Table (4.4): T.Test paired sample results of the differences between the checklist before and after the intervention for the experimental group

Domains	group	N	Mean	Std. Deviation	T	Sig. value	sig. level
Consonants	Pre-test	30	17.167	5.259	9.114	0.000	sig. at 0.01
	post-test	30	21.500	3.693			
Vowels	Pre-test	30	6.467	2.583	10.450	0.000	sig. at 0.01
	post-test	30	9.333	2.881			
SUM	Pre-test	30	23.633	7.486	13.357	0.000	sig. at 0.01
	post-test	30	30.833	6.379			

“t” table value at (29) d f. at (0.05) sig. level equal 2.02

“t” table value at (29) d f. at (0.01) sig. level equal 2.70

Table (4.4) shows that the T. computed value (13.357) is larger than T. table value (2.70) in the test, which means that there are significant differences at (0.01) in the total average score of the pre-post-test of the experimental group in favor of the posttest. The mean of the post-test in the experimental group reached (30.833), whereas the mean of pre-test was (23.633). This means that there are statistically significant differences between the pre- and posttest of the experimental group in favor of the posttest. This means that using computerized language games is very effective in the achievement of phonemic awareness skills.

To calculate the size effect the researcher used " η^2 " and "d" size effect by using the previous equation. The results of this test are shown in Table (4.5) below.

Table (4.5): The effect size of computerized language games in the checklist before and after the intervention for the experimental group

Skill	t value	η^2	d	Effect volume
Consonants	9.114	0.741	3.385	Large
Vowels	10.450	0.790	3.881	Large
Total	13.357	0.860	4.961	Large

Table (4.5) shows that the effect size of computerized language games is large on students' phonemic awareness. This means that the effect of computerized language games is significant. This large effect may be due to the activities and techniques which are used in the computerized language games to develop students' awareness skills.

4.2.4 Answer to the fourth question

The fourth question was formulated as follows: Are there statistically significant differences at ($\alpha \leq 0.05$) in the total mean scores in the checklist after applying the intervention between the experimental group and the control group? To answer this question, the researcher tested the following null hypothesis: There are no statistically significant differences at ($\alpha \leq 0.05$) in the total mean scores in the checklist after applying the intervention between the experimental group and the control group.

To examine the first hypothesis, means and standard deviations of both groups' results on the post-test were computed. Independent Samples T-test was used to measure the significance of the differences. Table (4.6) describes those results.

Table (4.6): T.Test independent sample results of differences between the experimental and the control group in the checklist

Domains	Group	N	Mean	Std. Deviation	t	Sig. value	Sig. level
Consonants	experimental	30	21.500	3.693	4.044	0.000	sig. at 0.01
	control	30	16.933	4.961			
Vowels	experimental	30	9.333	2.881	4.483	0.000	sig. at 0.01
	control	30	5.933	2.993			
SUM	experimental	30	30.833	6.379	4.387	0.000	sig. at 0.01
	control	30	22.867	7.633			

“t” table value at (58) d f. at (0.05) sig. level equal 2.00

“t” table value at (58) d f. at (0.01) sig. level equal 2.66

As shown in table (4.6), the T. computed value (4.387) is larger than T. table value (2.66) in the test, which means that there are significant differences at (0.01) in the total average score of the post-test between the experimental and control group in favor of the experimental group. The mean of the post-test in the experimental group reached (30.833), whereas the mean of the control group was (22.867).This result indicates that using computerized language games is more effective than the traditional method in developing the students' phonemic awareness.

Table (4.7) shows the effect size of computerized language games on the phonemic awareness.

Table (4.7): The effect size of computerized language games on the experimental group in the Post- phonemes checklist

Skill	t value	η^2	d	Effect size
Consonants	4.044	0.220	1.062	large
Vowels	4.483	0.257	1.177	large
Total	4.387	0.249	1.152	Large

Table (4.7) shows that the effect size of computerized language games is large on students' awareness skills. This means that the effect of computerized language games is significant. This large effect may be due to the activities and techniques which are used in the computerized language games to develop students' phonemic awareness skills.

4.2.5. Answers to the fifth Question

The fifth question was formulated as follows: Are there statistically significant differences at ($\alpha \leq 0.05$) in the total mean scores in the pre-posttest before applying the games and after applying them for the experimental group? To answer this question, the researcher tested the following null hypothesis: There are no statistically significant differences at ($\alpha \leq 0.05$) in the total mean scores in the pre-posttest before applying the games and after applying them for the experimental group.

To investigate this hypothesis, the means and standard deviations of the experimental group results were computed. T. Test Paired Sample was used to measure the significance of differences.

Table (4.8): T. Test paired sample results of the differences between the pre-test and the posttest of the experimental group

Domains	Group	N	Mean	Std. Deviation	t	Sig. value	sig. level
Letter-sound discrimination	pre-test	30	4.467	1.852	9.919	0.000	sig. at 0.01
	post test	30	8.867	1.456			
Rhyming	pre-test	30	3.533	1.279	10.277	0.000	sig. at 0.01
	post test	30	7.833	1.895			
Sound isolation	pre-test	30	5.800	2.870	5.423	0.000	sig. at 0.01
	post test	30	9.267	1.760			
Blending	pre-test	30	3.967	1.542	8.231	0.000	sig. at 0.01
	post test	30	7.533	2.097			
Segmentation	pre-test	30	3.733	1.741	7.234	0.000	sig. at 0.01
	post test	30	6.767	2.079			
Sound manipulation	pre-test	30	3.267	3.062	4.444	0.000	sig. at 0.01
	post test	30	6.700	2.336			
SUM	pre-test	30	24.767	8.633	10.208	0.000	sig. at 0.01
	post test	30	46.967	9.118			

“t” table value at (29) d f. at (0.05) sig. level equal 2.02

“t” table value at (29) d f. at (0.01) sig. level equal 2.70

Table (4.8) shows that the T. computed value (10.208) is larger than T. table value (2.70) in the test, which means that there are significant differences at (0.01) in the total average score of the post-test of the experimental group in favor of the post test. The mean of the post-test in the experimental group reached (46.967), whereas the mean of pre-test was (24.767). This means that there are statistically significant differences between the pre and post application of the test on the experimental group in favor of the post application. This means that using computerized language games is very effective in the achievement of phonemic awareness among third graders.

To calculate the size effect of the post application of the test, the researcher used " η^2 " and "d" size effect whose results are shown in Table (4.9) below.

Table(4.9): The effect size of the post application of the test on the experimental group

Skill	t value	η^2	d	Effect Size
Letter-sound discrimination	9.919	0.772	3.684	large
Rhyming	10.277	0.785	3.817	large
Sound isolation	5.423	0.504	2.014	large
Blending	8.231	0.700	3.057	large
Segmentation	7.234	0.643	2.687	large
Sound manipulation	4.444	0.405	1.650	large
total	10.208	0.782	3.791	Large

Table (4.9) shows that the effect size of computerized language games is large significant on students' phonemic awareness. This large effect may be due to the activities and techniques which are used in the computerized language games to develop students' phonemic awareness.

Summary

To sum up, Chapter Four dealt with data analysis and results. The results of each hypothesis were analyzed statistically using different statistical techniques. The results of all the hypotheses showed that there was a statistically significant difference between the experimental group and the control one in favor of the experimental group due to the implementation of the computerized language games. In the next chapter, there will be a discussion of these results.

Chapter 5

Findings, Discussion, Conclusions, Implications and Recommendations

Chapter 5

Findings, Discussion, Conclusions, Implications and Recommendations

The purpose of this study was to examine the effectiveness of computerized language games on the phonemic awareness of the third graders in Gaza UNRWA schools. To collect data a pre- and posttest and a checklist were employed. A panel of specialists agreed that the pre-posttest was valid. The items of the test had a KR20 coefficient of (0.811) and Spilt-half coefficient of (0.921) for the test as a whole. The data were tested through the application of T- test in addition to means and standard deviations.

5.1 Study findings:

The study findings as shown in Chapter 4 were as follows:

1. There were statistically significant differences at ($\alpha = 0.05$) in the mean of phonemic awareness post-test between 3rd graders who used computerized games (experimental group) and those who learnt through traditional methods (control group).
2. There were statistically significant differences at ($\alpha = 0.05$) in the mean of experimental group students' phonemic awareness in pre- application and post application of the checklist.
3. There were statistically significant differences at ($\alpha = 0.05$) in the mean of phonemes checklist between 3rd graders who used computerized games (experimental group) and those who learnt through traditional methods (control group).
4. There were statistically significant differences at ($\alpha = 0.05$) in the mean of experimental group students' phonemic awareness in the pre-test and the post-test.

5.2 Discussion of the study findings

In the sections that follow is a discussion of the study findings in relation to its hypotheses.

5.2.1 Discussion of the first hypothesis findings

The researcher investigated the first hypothesis which examined if there were no statistically significant differences at ($\alpha \leq 0.05$) level between the mean scores of the phonemic awareness posttest between the experimental group and the control group due to the teaching approach. The findings of this hypothesis outlined previously in Chapter 4, showed that there were statistically significant differences at ($\alpha = 0.05$) in favor of the experimental group. Thus, the first null hypothesis was rejected and the alternative one was accepted. To show the extent of computerized language games effect on the experimental group achievement in the awareness test, the study applied the "Effect Size" technique whose value was (0.383) which indicates the large effect size of using computerized language games in the posttest.

The researcher thinks that our students lacked the required extensive exposure to English and no doubt that listening is a major factor in acquiring any language. Concentrating on the listening skill and exposing the students to listening several times to the phonemes offer a number of advantages that make it easier to understand and to improve children's understanding of oral language. At this aspect the studies of Martinez (2011), Walter (2010), and Gromko (2005) revealed similar results and indicated direct instruction improves phonemic awareness which in its turn affects reading ability positively. Gromko (2005) states that with the extensive listening, "students are engaged continuously in an interactive experience, can control delivery, can verify their comprehension, can view multiple types of input, and can access more than one input simultaneously" (P.22). That appeared clearly when the researcher applied the computerized games and the students put on the headphones, they listened several times to the same phoneme so they could keep them in their memory and were able to recall them whenever required.

Although they were in separate classes, both the experimental group students and those of the control one were equivalent and shared the same characteristics, so their performance in the pre-test was almost the same. However, on the post-test, it was a different issue. Students who studied the phonemes using computerized games showed a great deal of pleasure and motivation to learn more about phonemes, but those who studied phonemes in the traditional way lacked this motivation. Since all variables were previously controlled, the games used in this research emphasized the integration between phonemic awareness and reading and did not neglect the role of repetition, drilling, or memorization. In the classroom,

the researcher told her students to work together in groups of four. They had a variety of tasks to do like word building, phoneme segmentation, phoneme blending and counting syllables and phonemes. Then they could choose the game they wanted to play and the researcher's role at this point was to go around the groups and check their playing.

The researcher thinks that the nature of the test is new, so the students felt weird to stand in front of the teacher to answer orally and get marked. But after the pre-test, she felt that all students got used to this kind of test. The posttest revealed a real and strong effectiveness of the computerized games.

5.2.2 Discussion of the second hypothesis findings

The findings of the second hypothesis which examined if there were no statistically significant differences at ($\alpha \leq 0.05$) level between the mean scores of the phonemic checklist of the experimental group before and after the intervention showed that the intervention affected the students' awareness of phonemes; that is clear from the students' ability to read the sentences correctly and more fluently than their performance before going to the computer lab and playing the games. Thus, the second null hypothesis was rejected and the alternative one was accepted.

This result is a real indicator of the strong relationship between phonemic awareness and reading. At this aspect, the studies of Edwards and Taub (2016), Fukuda (2013), and Fambro (2011) revealed similar results and indicated that phonemic awareness is an important factor of reading instruction. Not far from the calculated results, the researcher noticed a great difference between the pre-application of the checklist and its post-application. In the beginning students were reluctant and hesitated about reading the six sentences though they had been exposed to all vocabulary. Some students felt shy or afraid of failure, but after playing the computerized games students became more confident about reading though there were slight mistakes.

Again, the researcher would like to emphasize the role of extensive listening as listening is the first step in learning how to read. Because concentration is a key factor in successful aural comprehension, anything that increases students' attention span will also help them to improve their reading. For instance, the student who pronounced 'the' wrongly in the first time as /thi:/, can easily pronounce it correctly after the intervention. This is one

example of the cases the researcher observed. The visual connection between the letters and their sounds allowed students to differentiate between pairs like /d/-/b/and /p/-/b.

In contrast to a tape recorder, which will continue playing an audio or videotape until the end or until the user pushes a button, a computer can be programmed so that listening is determined to improve the goal which is to improve phonemic awareness.

5.2.3 Discussion of the third hypothesis findings

The findings of the third hypothesis which examined if there were no statistically significant differences at ($\alpha \leq 0.05$) in the total mean scores in the checklist after applying the intervention between the experimental group and the control group showed that there were statistically significant differences at ($\alpha = 0.01$) in favor of the experimental group. Thus, the third null hypothesis was rejected and the alternative one was accepted. The mean scores of the checklist for both consonant sounds and vowel sounds for the experimental group were larger than those for the control group.

Both groups faced problems in reading in the pre-application of the checklist but the experimental group showed a great improvement in the post- application. During the intervention, the experimental group learners talked a lot about the experience describing the sounds, words and pictures they had in the computer lab. The researcher added an attractive feature that the picture of the word appeared as soon as the player answered correctly. The pictures accompanying the words helped students acquire the vocabulary items rather than learning how to pronounce them.

Technology provides teachers with exciting and new ways to accommodate to individual differences among students while motivating them to accomplish the difficult cognitive work involved in becoming phonemically aware and literate. Using appropriate technologies, children can see, hear and feel the concepts of reading and writing spring to life. Children are highly motivated as they learn to manipulate letters and words in an interactive, multisensory environment.

Many phonemes, however, are difficult to hear because they are pronounced or blended together in rapid, everyday speech. Thus, in order to help students learn how to read, it is important to employ teaching technology that enables students to hear individual phonemes in order to develop phonemic awareness. The games used enabled students to simultaneously hear and match sounds (phonemes) to letters and words. When students can clearly hear

individual phonemes and then match them to individual spellings, they are on their way to reading and spelling success. Moreover, games provide students with the pictures of the games to make a visual connection between the spelling, phonemes and the meaning.

Because of the computerized game technology, teachers can easily provide learning experiences for each student - without having to be in 20 places at one time. In addition, they can set up workstations (with headphones) to enhance students' freedom in choosing whatever they want to play and learn. Almost like a personal tutor, games can give immediate and corrective feedback along the way as children work at their own pace. The player hears the sound of letters of the alphabet and their phonic pronunciations in the context of specific words. And they are able to hear them repeatedly as much as he/she wants to form the correct word.

As children learn, practice and work independently, the teacher is then free to work with small groups or other individuals who need personal attention. Games provide limitless opportunities for learners of all ages to listen to and articulate English sounds as often as necessary.

Finally, the child who is able to get over that first barrier and master phonemic awareness skills holds, in his or her hands. Using sight, touch and sound, teachers can directly address different learning styles and ability levels. Computerized games provide unlimited opportunities for practice and make learning to read fun and engaging.

5.2.4 Discussion of the fourth hypothesis findings

The findings of the last hypothesis which examined if there were no statistically significant differences at ($\alpha \leq 0.05$) level between the mean scores of the phonemic awareness pretest and posttest for the experimental group due to the teaching approach showed that there were statistically significant differences at ($\alpha = 0.01$) in favor of the experimental group. Thus, the fourth null hypothesis was rejected and the alternative one was accepted.

The designed computerized games enabled the focus of phonemic awareness to move elegantly, and on a moment by moment basis, between individual sounds to individual words. The researcher thinks that two levels are very important which are:

- **Sounds**

This level aims to develop in learners a deep and internally experienced awareness of how they produce sounds by manipulating their vocal musculature, and how the internal sensation of using the muscles relates to what is heard through the ears. The development of this awareness enhances learners' ability to change and modify how they use their musculature to produce new or different sounds.

- **Individual words**

This level aimed to train learners to pronounce the words gradually from onset to rime then produce the whole word. Liberman states that words spoken in isolation consist of a 'flow of sound' which is different from the sum of the individual phonemes and also emphasizes:

Neighboring sounds modify each other as the vocal muscles join them together and take short cuts. Also, in multi-syllable words, distribution of energy across the syllables creates an energy profile called word stress, which is typical and generally characteristic of a particular word when spoken on its own. (1997: 12)

In other words, the students who studied phonemic awareness skills through using the computerized language games strategy showed better performance in the posttest and this progress was due to the intervention and the teaching strategy. The researcher attributes this result to the nature of the computerized games which presents phonemes in an attractive way and suitable to differences in learning styles among learners, as it employs more channels that can facilitate learning and make it more meaningful. The research findings go along and agree with those of Fambro (2011), Martinez (2011), Walter (2010), MacArthur, et al. (2001) Gromko (2005), Flyn and Govis (2000) and Gaphardet (1997) whose findings indicated the importance of the direct instruction to the phonemic awareness skill and its strong relation with the students' reading. Concerning the computerized games, the results of this study agreed with Qteefan (2012), Chen (2013) Doran (2010), Kablan (2009) and others.

Most people would say that live interaction is better than computer interaction. While this is true as far as spontaneity of language is concerned with some cases, especially purposive listening, the computer may actually be better, as it gives students control that is not possible in a live situation. Rather than hearing the aural input only once as occurs in live interaction, thus increasing anxiety, which leads in turn to decreased attention, the learner can listen as many times as desired to computer-delivered audio or video, replaying parts that

cause difficulty and identifying the problem points. McKay (2007: 33) assumes that the software allows students to use the materials individually and to listen as many times as desired decreases the processing load of listening.

5.3 Conclusions

Based on the findings of this study, the following conclusions were reached:

- Computerized language games had superiority over the traditional method in developing phonemic awareness.
- Computerized language games provided the students with the chance to listen intensively, which affected their reading as a result.
- Computerized language games provided students with a better learning environment, which reflected on their awareness of English phonemes.
- Computerized language games stimulated students towards an independent practice of English language instead of direct instruction.
- Computerized language games developed competitive learning within the same group and other groups.
- Through computerized games the students played several roles as thinkers, problem solvers, observers, and researchers. These roles helped them acquire and employ English language in different situations more easily.
- Computerized language games motivated students to explore new knowledge for the first time.
- Computerized language games encouraged learners to participate; shy learners could be motivated to interact.
- Computerized language games provided students with enjoyment, pleasure, enthusiasm and variation which were significant enough to affect the students' achievement positively.

5.4 Pedagogical Implications

In the light of the study results, the researcher puts forward the following pedagogical implications:

- Phonemic awareness is a vital skill students should be aware with to avoid any problem in reading.

- Teachers should be aware of the importance of computerized language games in developing students' achievement in all skills.
- Using computerized language games enable students to move from one point to another according to their speed.
- Using computerized language games gives students the chance to listen to the phonemes countless times until they acquire the knowledge.
- Using computerized language games enable students to develop their attitudes and motivation towards learning in general and phonemic awareness in particular.
- Using computerized language games enables students with disabilities overcome their disability.
- Low-achievers feel relaxed and motivated when using computer games, so teachers should include suitable activities which fit their ability.
- Computerized language games can help to improve attention span, concentration, memory, listening, speaking, reading and writing skills.
- By using computerized language games, pupils are encouraged to participate; shy learners can be motivated to interact.
- Computerized language games help to create a fun atmosphere and reduce the distance between teacher and pupils.

5.5 Recommendations

In the light of results of the study, the following recommendations are offered:

5.5.1 Recommendations to curriculum designers and decision makers

Curriculum designers and decision makers are recommended:

- To involve phonemic awareness skills and activities in the curriculum to be presented to all ages especially at the primary stages.
- To train the teachers to deal with phonemic awareness and computerized language games.
- To enrich the Palestinian curriculum with different computerized games that tackle the different skills of English language.
- To increase English language periods to help the teachers concentrate on learning quality.

- To supply schools with necessary materials for employing computerized language games.

5.5.2 Recommendations to supervisors

Instructional supervisors are recommended:

- To prepare and distribute instructional materials that increase teachers' phonemic awareness through the use of computerized games and the necessity of using such games in teaching English, especially to young learners.
- To emphasize the fact that computerized games should not be considered as marginal activities but a strategy that should be used in different phases of the lesson.
- To conduct training courses that help teachers enhance their competencies of implementing the language games in their classes.
- To conduct workshops that aim at familiarizing teachers with different language games

5.5.3 Recommendations to English language teachers

English language teachers are recommended:

- To concentrate on the fact that computerized games is an important strategy. This is because they are activities based on the visual input, introduce immediate feedback and reinforcement. Furthermore, they include the factors of fun and enjoyment.
- To shift from the traditional teaching methods to communicative approach that is based on the students' real involvement in the teaching learning process.
- To use language games to create an appropriate learning environment.
- To enrich the curriculum with relevant computerized language games that enhance students' use of English inside and outside school.
- To consider students' individual differences and learning styles in selecting the computerized language games.
- To help students use English language in "life-like" situations.
- To adopt modern techniques that enhance students' participation and interaction.
- To change their role from instructors who dominate the class into educators whose role is to help, guide and support the students to acquire language.

5.5.4 Recommendations for Further Studies

Education in Palestine is still in need for a lot of research that touches all the inputs of the educational system. These inputs represented in the strategies, the teacher, the students, the curriculum, the administration and the local community. The researcher suggests the following titles for further studies:

- The effective of blended learning on developing the students' skills in phonetics
- The effect of computerized games on developing students' critical thinking.
- The effectiveness of computerized games on developing students' listening and speaking skills of English language.
- The use of social networks in educational computer-game based foreign language learning.
- The effect of educational computer games on developing literacy activities.
- The effect of educational computer games on developing the student's vocabulary retention.

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Appendix (A)
Teacher Guide of the Computerized
Language Games

About The Use of the Language Games:

For children to gain the most benefit from these goal-oriented games, it is important to stick to certain "rules."

- You must play regularly-ideally, every day for about 15-20 minutes.
- The games are sequenced according to difficulty. Although you may want to skip some games or add others, the overall sequence of objectives should be maintained. Once introduced, the games can be revisited in any order as often as needed or desired.
- Prior to beginning the program, read the entire curriculum and become familiar with all of the activities. If you think your students are ready, you may wish to introduce an activity earlier than suggested in a schedule. Even so, we caution against introducing this activity without first giving the children at least some groundwork in the concepts of words and sentences.
- In working with syllables and phonemes, it is important to regularly include activities involving both analysis and synthesis. Analysis refers to the breaking apart or segmentation of spoken words into syllables or phonemes. Synthesis refers to the blending of the syllables or phonemes into well-integrated spoken words. Both abilities are critical, if children are to learn how the letters and spellings of written words map onto units of sound in spoken words. This mapping process is key to learning how to decode printed words when reading and how to encode spoken words when spelling. Invite the children to look at each other while saying a given phoneme, or give them hand mirrors to examine the movement of their own mouths. The more approaches that are used, the greater the likelihood that each child will find his or her own way to understand the nature of the phonemes.
- While the designs of games in this program are intended to have a lot of "child appeal," they are also instructionally effective. That is, the children should feel as though they are playing even while they are learning. Nevertheless, the expectation should not be that all of the children will immediately be successful with each activity. If this were the case, there would be no reason for the training. Research shows that some children, by nature, find these sorts of language activities much easier than do others. You should expect a considerable span of abilities, ranging from

great ease to intense difficulty, across your students; be prepared to deal with this range constructively. Toward this end, great care should be given to the way in which activities are presented so that no child feels either unsuccessful or restless.

- Remember throughout that the principal goal of the games is to lead the children to attend to the phonological aspects of speech and, ultimately, to help them to hear and feel the phonemes in words. You pronounce words and sounds very clearly and slowly and then ask the children to articulate these words and sounds aloud to ensure that understand what is in reference.
- Please keep in mind that phonemic awareness is not an isolated skill. It is not intended to replace other forms of reading instruction, such as reading aloud, writing, and exposing children to the printed language. Phonemic awareness activities should be embedded in meaningful language instruction throughout the day and be fun and playful.

Overview of the games:

Phonemes: To develop the ability to analyze words into a sequence of separate phonemes and to develop the ability to synthesize words from a sequence of separate phonemes.

Rhyming: To use rhyme to introduce the children to the sounds of words.

Awareness of Syllables: To develop the ability to analyze words into separate syllables and to develop the ability to synthesize words from a string of separate syllables.

Initial and Final Sounds: To show the children that words contain phonemes and to introduce them to how phonemes sound and feel when spoken in isolation.

Manipulate phonemes: To allow students use different rimes with different onsets to form new words.

Game name: Ben's Letter watch

The objectives of the game:

At the end of this game, the player will be able to:

- Identify phonemic segmentation. (What are the sounds in cat ?)
- Identify and practice phonemic blending. (What word is made up of the sounds /k/ /æ/ /t/?)

Presentation:

To introduce this game, teacher starts the lesson by revising some vocabulary moving gradually from easy words consist of two phonemes to three and four phonemes. T. should hold the card of the word in front of the class to present the idea of unmatched number of letters and phonemes. Teacher says the word with stress on the sound of the initial letter in some words and stress on the medial or the last sound in other words. Then teacher continues to produce the phonemes of the words separately focusing on the phonemes

Group work:

T. asks student to work in groups and give them pieces of papers with letters and asks children "What's the letter makes the sound /k/? What's the letter makes the sound /æ/? What's the letter makes the sound /t/?" the students work in group to put the cards with (c . a . t) letters in the right order and they read the word they form. Teacher and students can repeat the same activity with different vocabulary. To enhance the learning T. can enrich the activity by offering some items pictures and let the students match the word with the right picture.

The description of the game:

The first slide of the game contains its name and the picture of BenTen is telling the player the instruction "Welcome to my world, my world is full of words. Could you help me to build some words? Clicking the icon (play), the player will move to another slide where Ben Ten stands in the right bottom of the slide and press his watch and eight letters appear.

Ben Ten says "I want to build the word (dress) what letter makes the /d/ sound? When the player chooses the right letter, it will move to the right space "What letter makes the /r/ sound?" Ben Ten says. And step by step, the player forms the word but if the player chooses the wrong letter Ben Ten will say "Sorry, it's not the right letter" if the player completes the word correctly Ben Ten says "Good job, you can make more words, click on my watch to make more words"

The words of the game:

1	Car
2	Big
3	Hot
4	Red
5	Green
6	Cold
7	Cloud
8	Windy
9	Sunny
10	Park

11	Music
12	Jump
13	Drums
14	Run
15	Pink
16	Shop
17	Dabka
18	Dress
19	Scarf
20	Shirt

Game Number: 2

Game name: Blending Race

The objectives of the game:

At the end of this game, the player will be able to:

- Practice forming words with the same rime.
- Identify and practice syllable blending. (the onset of cat is /k/ and the rime /æt/)

Presentation:

To introduce this game, teacher starts the lesson by presenting the idea of onset and rime giving students some vocabulary cards and asks them to omit the first letter and pronounce the rime. Then teacher can ask students to match different onsets with their rimes to form correct words according to pictures on the board or to the teacher pronunciation. This activity can be accomplished in pairs or in groups.

The description of the game:

It's a race between cars and the hero of the race is Lightning McQueen which gives the instruction in the first slide "**Welcome to the blending race. It is an exciting game here where the cars crash together to make words.**" With the play icon, the player can start the game. The next slide has ten cars, each one has a rime. "**Choose a car**" the judge says. The player can move above those cars to hear how each rime is spelled then he chooses one of the sounds. Let's say that the player chose the rime /ik/. The next slide has different group of cars holding the onsets of the words and the judge says "**Who will play against /ik/ ?**". The player chooses the onset and the judge whistles to start the game. Two cars showed in the next slide one is having the onset from the right side and the other is holding the rime from the left side. Each step the two cars move you can hear them saying the sounds they have to crash in the middle forming a word and the judge says "**Amazing**" and he says the word.

The list of the vocabulary:

Word to form	The onset	The rime
drop	Dr	Op
stop	st	
shop	sh	
hop	h	
sock	S	Ock
rock	r	
shock	sh	
clock	cl	

back black snack	B bl sn	Ack
can fan man plan	C f m pl	An
car jar star far	C j st f	Ar
best west test chest	B w t ch	Est
click pick trick quick	Cl p tr qu	Ick
bug hug rug	B h r	Ug
moon soon noon	M s n	Oon
sing ring wing	S r w	Ing

Game name: Saving Nemo

The objectives of the game:

At the end of this game, the player will be able to:

- Identify consonant sounds in one syllable words.

/m//n/ /ŋ//j/ /w//k/ /g//tʃ//dʒ/ /b//p/ /t//d/ /f//v/ /θ//ð/ /s//z/ /f//ʒ/

- Identify sound and word discrimination. (To determine what word does not belong with the others.)

Presentation:

T. displays the consonants chart and gives students an example for each consonant and ask them to write down words share the same target consonant. T. can make a table with three empty columns in order to encourage the students to write down three words where consonant is in different place: initial, medial and final. The students can work in groups to fill the table with words. The table below is an example for the teachers to follow:

No.	The sound	Initial	Medial	final
1.	/b/	<u>B</u> ook	Dab <u>b</u> ka	rob <u>e</u> *
2.	/k/**	<u>C</u> at <u>K</u> ite	apric <u>o</u> t an <u>k</u> le	picn <u>i</u> c bik <u>e</u>

* Teacher tell students he concerns in sounds not letters (e in the final position is silent)

** Teacher explains the letters that have more than one sound .(**th, c, ph, gh**.....etc.)

The description of the game:

The first slide has the major information about the games as its name and the scene will represent the sea with Nemo and his father swimming safely when sharks appear in the other side of the slide, between them there is a play icon to start a game. Pressing the icon moves the player to the next slide where is ten sharks, each sharks represents a pair of consonants, and each slide has a pair of consonants to differentiate between. The instruction tells the player "**Choose a shark to kidnap Nemo**". If the player chooses /m//n/ shark, he should listen to the pair of consonants carefully to be able to determine which word is different and he will

see four sharks making Nemo and his father go a part, one is in the top of the screen and the other is in the bottom. The four sharks hold four pictures and the instruction "Help dad to find Nemo by clicking on the different word they are all have /n/ sound but one does not, which it is?" The player has the ability to listen to the words more repeatedly in order to make a right decision. For example, he will see the pictures of (send one game son) and by listening, he should decide that three of them have /n/ and (game) does not, so the player will click on it to be chosen. The player do not have the words available firstly but after choosing the right answer, the pictures will vanish and the words will appear and Nemo goes back to his father. He can play again using the same sound by clicking the icon (play again) or choosing another sounds by clicking the icon (go to the sharks). If the player chooses the wrong picture, the big /n//m/shark will eat Nemo and the game over sign will appear.

/m/ /n/ /ŋ/			
send	one	game	son
person	kitchen	occasion	sing
song	ring	wrong	often
/j/ /w/			
yard	yacht	you	wet
tuesday	computer	swim	queen
/k/ /g/			
class	glass	girl	grow
ankle	angle	market	chicken
lake	fork	look	dog
/tʃ/ /dʒ/			
chest	chain	cheer	joke
large	pigeon	cake	edge
watch	catch	age	search
/b/ /p/			
pride	bride	park	pull
happy	apple	paper	symbol
robe	grab	cab	tap
/t/ /d/			

torn	two	tune	down
wedding	rider	letter	pudding
late	heart	bed	cat
/f/ /v/			
fast	fat	fear	van
live	save	wave	leaf
cliff	glove	dove	love
/θ/ /ð/			
thin	thank	three	then
brother	mother	nothing	other
tooth	clothe	smooth	breathe
/s/ /z/			
sink	said	seal	zoo
loser	fuzzy	lazy	racing
price	bus	his	place
/f/ /ʒ/			
treasure	ocean	explosion	measure
wash	garage	crash	fish

Game Number : 4

Game name: SpongeBob Words

The objectives of the game:

At the end of this game, the player will be able to:

- Manipulate the phonemes to form words.

Presentation:

T. asks students to work in groups and gives them pieces of papers with different onsets and rimes written on them. The task is to form as many words as they can in limited time

.Teacher whistles to end the time and count the correct words each group has formed to name the winner.

The description of the game:

SpongeBob is welcoming the players" **I want to go to the beach. Help me to speak correctly. Help me to match the two halves of the word?**" Then we can see a stairs and SpongeBob is standing down and two turtles with the halves of the first word **l** **imp** SpongeBob says "**limp**" then the **im** turtle and SpongeBob says "**let's spell chimp**" and three turtles come in the bottom **sh** **ch** **j** and the player should choose the right onset **ch** the turtle with (sh) will swim to the left of (imp) and SpongeBob says "**ch – imp chimp that's right. Great job**" now the turtle with **imp** swims away and SpongeBob moving up one step and says "**Let's spell chop**" and three turtles with three choices will swim down waiting for being chosen **ip** **up** **op** the player will choose (op) to form chop. All alternatives swim away but (op) one swims to the right of (ch) and SpongeBob will say "**Great job ch – op chop**". The turtle with (ch) moves and (op) is still swimming and so on to complete the chain and make SpongeBob goes up to the beach. If the player chooses a wrong answer, SpongeBob will say "**Sorry that's not it**"

	The feedback of SpongBob	The choices
↑ qu een		
t een ↑	t- een teen	t k d
t ick ↑	t-ick tick	ick ack eck
qu ick ↑	qu-ick quick	qu cl ch
qu it ↑	qu-it quit	it ilt ip
h it ↑	h-it hit	n p h
h en	h-en hen	ep en et
p en	p-en pen	p h n

	The feedback of SpongBob	The choices
g ot		
g ood	g-ood good	ood oob oon
h ood	h-ood hood	n h p
h ook	h-ook hook	ood ook oon
b ook	b-ook book	p f b
b et	b-et bet	en et er
l et	l-et let	g p l
l ook	l-ook look	oop ook oob

	The feedback of SpongBob	The choices
m ore		
sh ore	sh-ore shore	b c sh
sh orn	sh-orn shorn	orn ern est
c orn	c-orn corn	c w t
c are	c-are care	ake ape are
sh are	sh-are share	st sh w
sh ort	sh-ort short	ore ort orn
sp ort	sp-ort sport	sp s t

	The feedback of SpongBob	The choices
↑		
l et		
j et ↑	j-et jet	w p j
j am ↑	j-am jam	og am ab
r am ↑	r-am ram	b r h
r ust ↑	r-ust rust	ung ust ush
j ust ↑	j-ust just	d j m
j ump	j-ump jump	unk ump est
b ump	b-ump bump	p b d

	The feedback of SpongBob	The choices
↑		
n est		
b est ↑	b-est best	j p b
b et ↑	b-et bet	at en et
s et ↑	s-et set	b s g
s at ↑	s-at sat	it at op
h at ↑	h-at hat	n p h
h it	h-it hit	it en et
s it	s-it sit	s p v

Game name: Owl Stacker

The objectives of the game:

At the end of this game, the player will be able to:

- Identify simple vowel sounds (/ɪ/ /i:/ /ə/ /ʊ/ /u:/ /e/ /ɜ:/ /ɔ:/ /æ/ /ʌ/ /ɒ/ /ɑ:/) in one syllable words.
- Identify sound and word discrimination. (To determine what word does not belong with the others.)
- Determine which words rhyme with each other.

Activity (1):

To introduce this game, read several rhyme phrases aloud, emphasizing the rhyming words. Then, challenge the children to complete each rhyme aloud. For assessment purposes, it is recommended that you periodically request responses from individuals as opposed to the whole group. Following are examples of phrases that can be used:

A cat wearing a (hat).

A mouse that lives in a (house).

A sheep that is sound (asleep).

A bug crawled under the (rug).

An ape that is eating a (grape).

A goat that is sailing a (boat).

A duck that is driving a (truck).

A guy who is swatting a (fly).

A bee with a hive in the (tree).

On the swing, I like to (sing).

We drove far in our (car).

Hold the candle by the (handle).

Smell the rose with your (nose).

Airplanes fly up in the (sky).

Activity (2):

Teacher produces a word to be rhymed (e.g., *cat*), then signal to the children to give a rhyming word. You can increase the game's complexity by additionally challenging the children to suggest a second word that is meaningfully related to your due word as well as a rhyme for that word. Once the game is familiar, individual children may be invited to respond and to choose the next word to be rhymed. Examples include the following:

- cat-hat.....dog?
- car-far..... truck?
- mouse-house..... rat?
- bag-ragsack?
- chair-hairsofa?
- talk-walkshout?
- rose-hose..... flower?
- book-hookread?
- face-lace..... smile?
- bed-rednight?

The description of the game:

The first slide of the game contains of general information as its name and the picture of a big owl, the player hears the phrase: "**Let's stack some owls.**" And the icon  which will be pressed on to move to the next slide that contains twelve eggs, each egg has a sound in it, the instruction phrase will be heard and read "**Click a sound to choose it**" when the player chooses a sound let's say the /i:/ sound, another slide with the next instruction "**Stack five owls by picking the words with the /i:/ sound. It's the/i:/ sound in bean, read and lead**" the player will find a mark to follow  in the next slide the player will find a big egg in the middle and on the right a ladder and on the down of the

screen a moving owls working as a timer . In the big egg different words with one syllable will appear. The player should pick the words that contains /i:/ sound. The words that will pass in front of the player will be "seat, grow, fed, green, sit, which, meat, feet, reach" . By choosing this right owes, one after another will be stacked to the ladder. When the player picks five owls ,he wins the game and the big egg will break gradually to bring a beautiful bird alive giving the player an immediate feedback "That's great seat, green, meat, feet and reach all share /i:/ sound" . If the player pick the wrong word the feedback will be" Oops, sit doesn't have the long /i:/ sound in it as in bean, read and lead" and the game gives the player the ability to try again with the same vowel sound and won't be able to move to the next vowel unless he passes this one correctly.

sound	The Words
/ɪ/	bat, rich, bed, him, but, church, list, six, pan, fill
/i:/	jeans, grow, fed, green, sit, which, meat, feet, cat, beach
/ə/	Back, player, teacher, read, clock, very, trainer, wet, home, over
/ʊ/	Should, ask, could, peak, third, card, would, put, ten, foot
/u:/	Win, run, Pool, shirt, school, zoo, dress, blue, bird, luke
/e/	bet, short, rich, pan, lark, fell, net, duck, ten, wet
/ɜ:/	church, look, put, shirt, seat, heard, pet skirt, sit, learn
/ɔ:/	four, pick, lead, over, pink, shored, fun, world, look, bought
/æ/	dad, kill, rat, hit, cat, lock, pan, wed, suit, bat
/ɒ/	lost, bee, nurse, box, teacher, shop, run, tell, wad, lock
/ʌ/	card, tune, trick, mum, luck, leak, fun, but,bit, what
/ɑ:/	what, card, sit, read, dark, farm, lack, ten, scarf, park

Appendix

(B)

Phonemic awareness pre-posttest



The test refereeing checklist

Dear Referee,

The researcher is conducting a study for MA thesis entitled “**The Effectiveness of Using Computerized Language Games on Developing the Phonemic Awareness among Third Graders in Gaza UNRWA Schools**”. This study mainly aims at developing phonemic awareness skills of third graders by using computerized games. To fulfill the purpose of the study, a test was prepared. The test aims at determining the existence of the phonemic awareness skills that are appropriate for the third graders.

No.	The item	yes	no
1	Do the skills cover phonemic awareness?		
2	Does the test measure the identified phonemic awareness skills?		
3	Is the language of the test questions appropriate to the level of the pupils?		
4	Is the number of the questions included in the test as a whole appropriate?		
5	Is the number of the questions specified in each section appropriate?		
6	Are the rubrics and the instructions of the test clear?		
7	Do you consider the test as a whole valid to achieve its intended goals?		

Any further comments are highly appreciated.

Name of referee/.....

The degree/.....

The researcher/Nobogh Siam

Phonemic awareness test

Dear teacher:

This test has been constructed to examine the existence of the third graders' phonemic awareness, which is very important to any language learner. Phonemic awareness means the ability to hear, identify and manipulate phonemes which are the smallest units of sound that can make a difference in meaning. Each item of the test is followed by clarifying instruction.

No.	The skills
Letter –sound discrimination	
1	Identify different letters and different sounds they make.
2	Identify which word is different according to sounds.
Rhyming	
3	Identify whether words rhyme.
4	Produce words that rhyme.
Sound isolation	
5	Identify the first sound in a word.
6	Identify the medial sound in a word.
7	Identify the last sound in a word.
Blending	
8	Blend onset and rime.
9	Blend separated phonemes.
Segmentation	
10	Count words in sentences.
11	Count syllables in words.
Sound manipulation	
12	Add phonemes to words.
13	Substitute first and last phonemes in words.

General instructions for the teacher:

- 1- Make the objectives of the exam clear to the student by translating or giving examples.
- 2- Ask the test items one by one.
- 3- Record the mark directly after hearing the answer.
- 4- The test pages are three.
- 5- There are thirteen questions.
- 6- The final grade is 60.

Sound isolation	
5	Identifies the first sound in a word.
<p>T. tells the student he will listen to words and ask him "I am going to say a word. Can you tell me the sound you hear in the beginning of the word?"</p> <p>rug ___ cousin ___ leaf ___</p>	
___/3	
6	Identifies the medial sound in a word.
<p>T. tells the student he will listen to words and ask him "I am going to say a word. Can you tell me the sound you hear in the middle of the word?"</p> <p>fan ___ big ___ jet ___ sun ___</p>	
___/4	
7	Identifies the last sound in a word.
<p>T. tells the student he will listen to words and ask him "I am going to say a word. Can you tell me the last sound you hear in the word?". If the student answers correctly, the teacher marks 1. If the student answers it incorrectly, the teacher marks 0.</p> <p>leave ___ high ___ apple ___</p>	
___/3	
Blending	
8	Blends separated phonemes.
<p>T. tells the student he will listen to separated sounds and asks him "blend the sounds together to make a word. If the student answers correctly, the teacher marks 1. If the student answers it incorrectly, the teacher marks 0.</p> <p>b-l-ue ___ c-o-l-d ___ o-l-i-ve ___ p-l-a-y ___ f-r-o-m ___</p>	
___/5	
9	Blends onset and rime.
<p>Teacher says the word in parts and the student is expected to blend the syllables and say the whole word. T. says "blends the two parts to form a word". If the student answers correctly, the teacher marks 1. If the student answers it incorrectly, the teacher marks 0.</p> <p>r-ead ___ w-ish ___ bl-ock ___ m-oon ___ fr-og ___</p>	
___/5	
Segmentation	
10	Count words in sentences.
<p>T. tells the students that he will listen to sentences and ask him "count the words in the sentence you hear". If the student counts correctly, the teacher marks 1. If the student counts it incorrectly, the teacher marks 0.</p> <p>how old are you? ___ she is from London ___</p> <p>I get up at 6 o'clock ___ he's on the swings ___</p> <p>they eat ice-cream ___</p>	
___/5	
11	Count syllables in words
<p>T. tells the students that he will listen to words and ask him "count the syllables in the word you hear". If the student counts correctly, the teacher marks 1. If the student counts it incorrectly, the teacher marks 0.</p> <p>basketball ___ favourite ___ sport ___ homework ___ paint ___</p>	
___/5	

Sound manipulation

12	Add phonemes to words.	
	<p>T. tells the student he will say the rime. Students repeat the rime. Teacher says, “Add /*/ at the beginning and the word is? If the student answers correctly, the teacher marks 1. If the student answers it incorrectly, the teacher marks 0.</p> <p>1. ---ed /f/ _____</p> <p>2. ---ue /bl/ _____</p> <p>3. ---oot /f/ _____</p> <p>4. ---ome /h/ _____</p> <p>5. ---ee /tr/ _____</p>	___/5
13	Substitutes phonemes.	
	<p>Teacher says the word. Students repeat the word. Teacher says, “Change the /*/ to /*/ and the word is? /*/ is a letter sound. If the student answers correctly, the teacher marks 1. If the student answers it incorrectly, the teacher marks 0.</p> <p>1. <u>k</u>ite /b/ _____</p> <p>2. <u>c</u>an /f/ _____</p> <p>3. <u>v</u>an /m/ _____</p> <p>4. <u>d</u>ig /f/ _____</p> <p>5. <u>h</u>ouse /m/ _____</p>	___/5

Best wishes

Appendix

(C)

Phonemic Awareness Checklist



The checklist refereeing checklist

Dear Referee,

The researcher is conducting a study for MA thesis entitled “**The Effectiveness of Using Computerized Language Games on Developing the Phonemic Awareness among Third Graders in Gaza UNRWA Schools**”. This study mainly aims at developing phonemic awareness skills of third graders by using computerized games. To fulfill the purpose of the study, a checklist was prepared. The checklist aims at determining the existence of the awareness of phonemes (consonants and vowels)

How to fill the checklist:

Students will be asked to read the sentences and the teacher will listen and record their utterance and analyze it to determine if the student is aware of the right pronunciation of the phonemes or not.

No.	The item	yes	no
1	Does the checklist measure the phonemic awareness?		
2	Do the sentences cover every phoneme in English language?		
3	Is the language of the sentences appropriate to the level of the pupils?		
4	Is the number of the sentences appropriate?		
5	Do you consider the checklist as a whole valid to achieve its intended goals?		

Any further comments are highly appreciated.

Name of referee/.....

The degree/.....

The researcher/Nobogh Siam

Phonemic awareness skills checklist

Dear teacher:

This checklist has been constructed to examine the existence of the third graders' phonemic awareness, which is very important to any language learner. Phonemic awareness means the ability to hear, identify and manipulate phonemes which are the smallest units of sound that can make a difference in meaning. Ask the student to read the sentences one by one and record what they read using any recording instrument and then analyze the recording to decide if the student utter the phoneme correctly.

The checklist of the consonants:

No.	Sound	Word	Yes	No
1	/m/	men- from		
2	/n/	men- pink-van –nice		
3	/ŋ/	Cooking		
4	/w/	Window		
5	/j/	Yellow		
6	/h/	Hot		
7	/k/	Cooking – pink		
8	/g/	Garage		
9	/tʃ/	Chair		
10	/dʒ/	Joke		
11	/ʃ/	Shirt		
12	/ʒ/	Garage		
13	/b/	Butterfly		
14	/p/	Pink		
15	/t/	it –butterfly		
16	/d/	dad – window		
17	/f/	from – butterfly		
18	/v/	Van		
19	/θ/	Three		
20	/ð/	The		
21	/s/	sit – shirts		
22	/z/	Is		
23	/r/	butterfly - shirts		
24	/l/	yellow- butterfly		

The checklist of the vowels:

No.	Sound	Word	Yes	No
1	/ɪ/	pink-is – sit		
2	/i:/	Three		
3	/ə/	from – butterfly		
4	/ʊ/	Cooking		
5	/u:/	Food		
6	/e/	men		
7	/ɜ:/	Shirts		
8	/ɔ:/	All		
9	/æ/	van – dad		
10	/ɒ/	Hot		
11	/ʌ/	Butterfly		
12	/ɑ:/	garage- are		

The sentences for reading:

1. A butterfly is nice.
2. All the men are cooking, it is not a joke.
3. I see three pink shirts from the window.
4. "Can I sit on the chair, Dad, please?"
5. A yellow van is in the garage.
6. The food is hot

Appendix

(D)

Games Evaluation Modal



The games evaluation checklist

Dear Referee,

The researcher is conducting a study for MA thesis entitled “**The Effectiveness of Using Computerized Language Games on Developing the Phonemic Awareness among Third Graders in Gaza UNRWA Schools**”. The researcher has designed five games to develop phonemic awareness. You can evaluate the games concerning the characteristics in the table by ticking on the scale.

No.	The characteristic	high	average	low
1	The objectives are clear			
2	The content suits the objectives			
3	the games focus on learning			
4	The content is suitable to the learners' age			
5	The games provide a sufficient feedback			
6	The games has an acceptable level of difficulty			
7	The games are well-designed			
8	The games are rule – governed			
9	The games are fun and motivated			
10	The games have closure			
11	The voice is clear			
12	The pictures are clear and suitable			
13	The colours of the screen is appropriate			
14	The font of the games is appropriate			
15	The time is suitable			

Any further comments are highly appreciated.

Name of referee/.....

The degree/.....

The researcher/Nobogh Siam

Appendix
(E)
Computerized Language Games



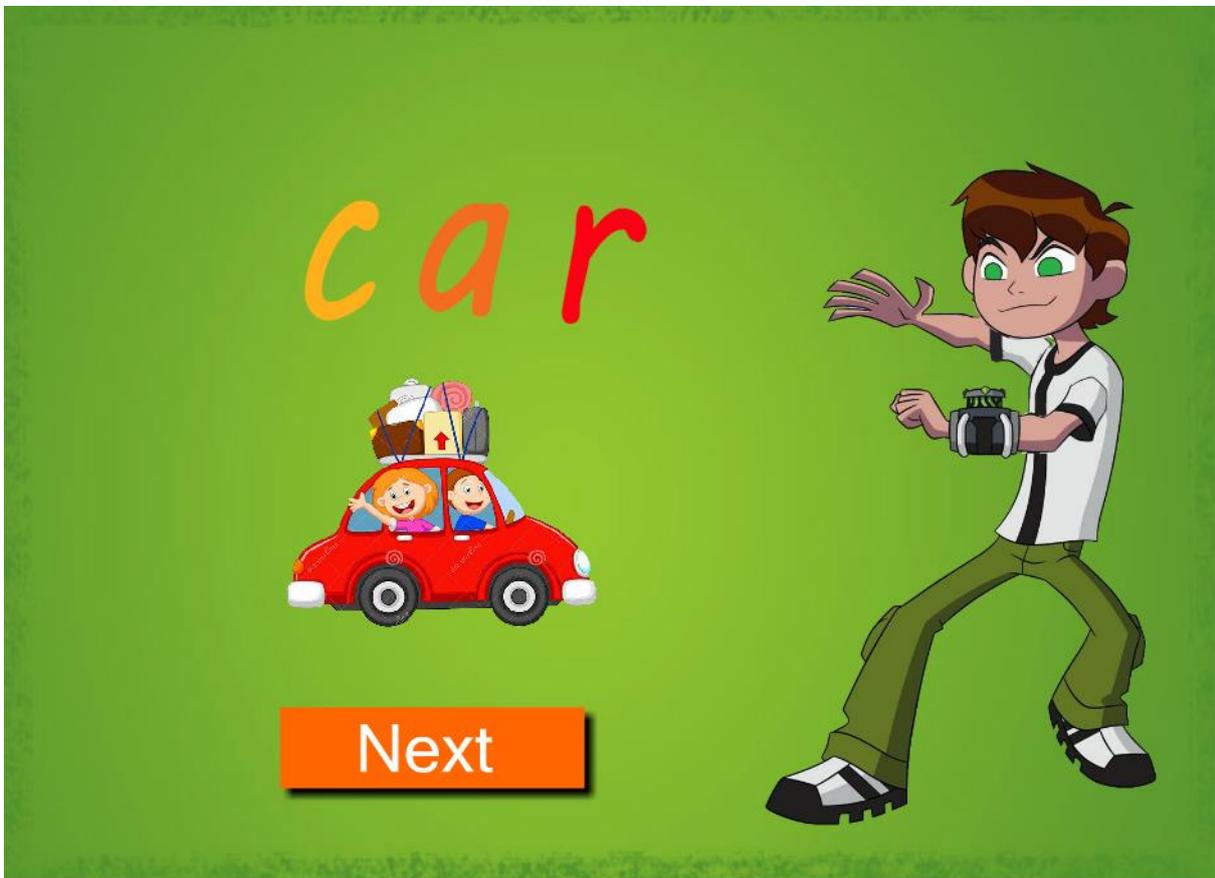
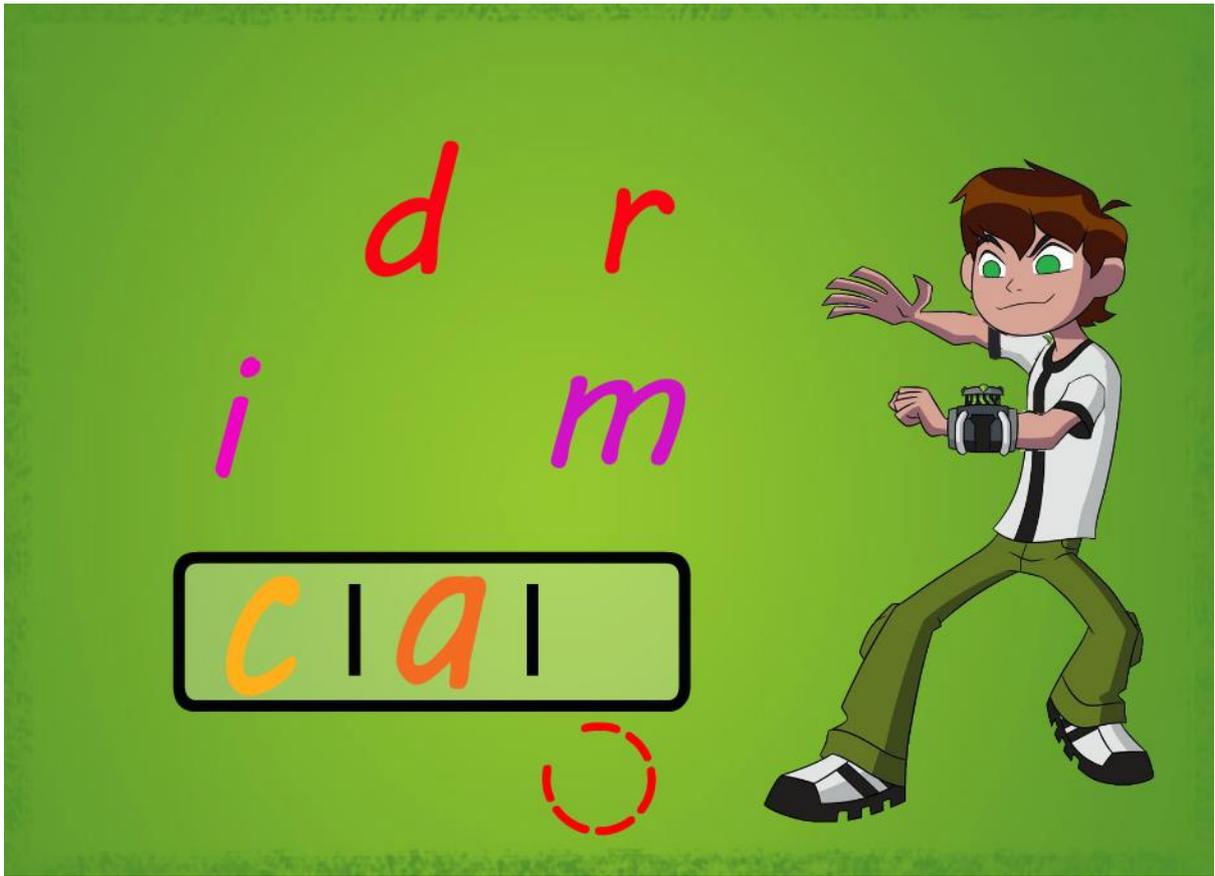
BEN
10

play

a d r
i c m

— | — | —

○



cloud

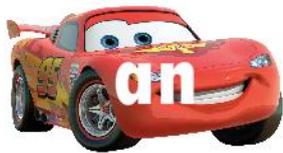


Next





Blending Race



Choose a car

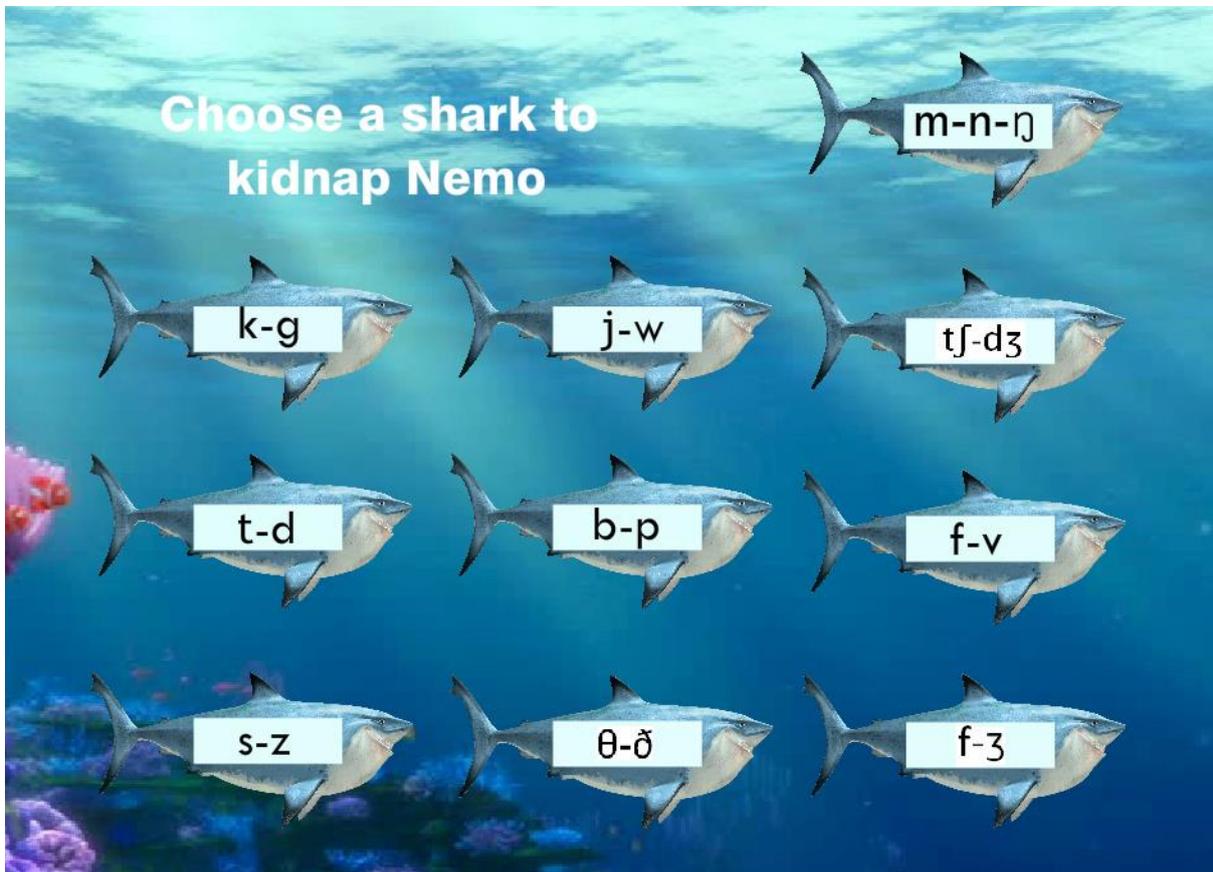
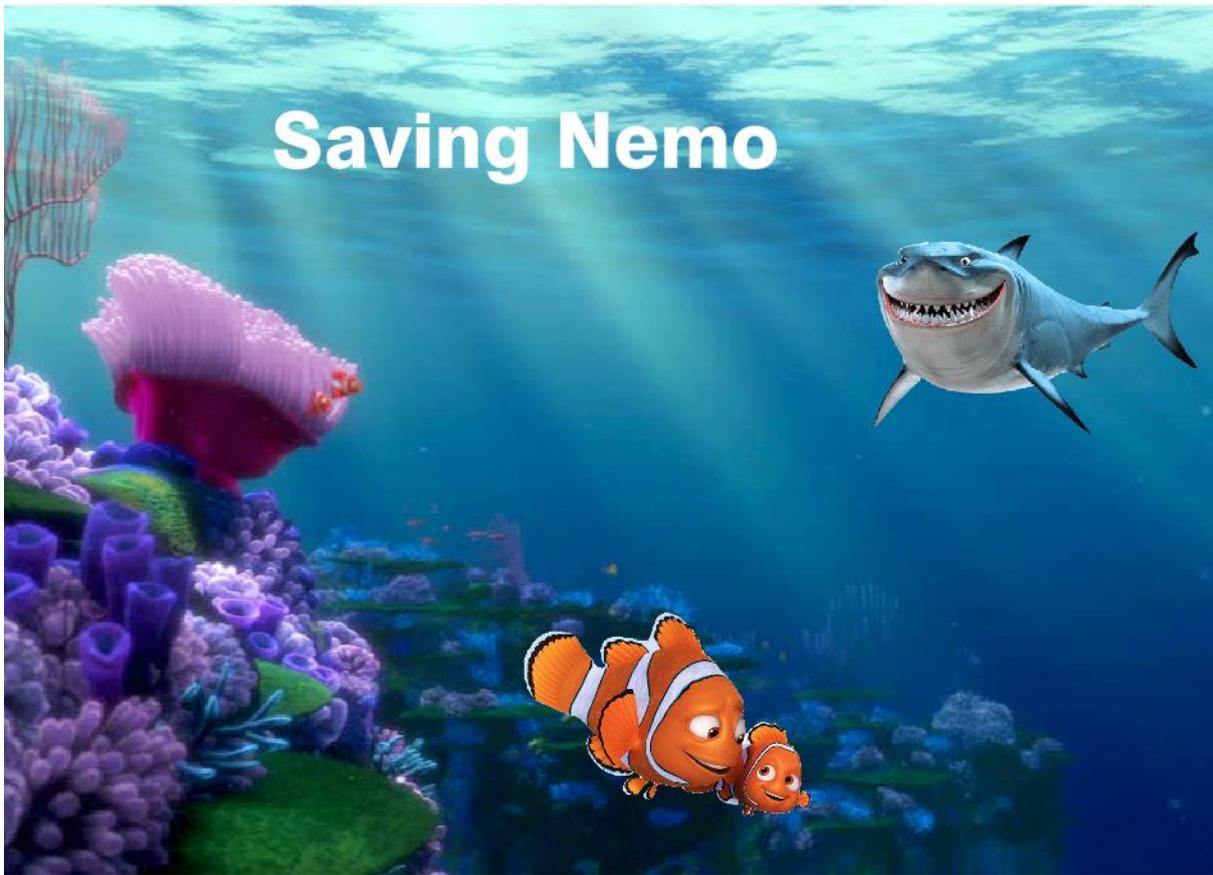
Who will play against /op/

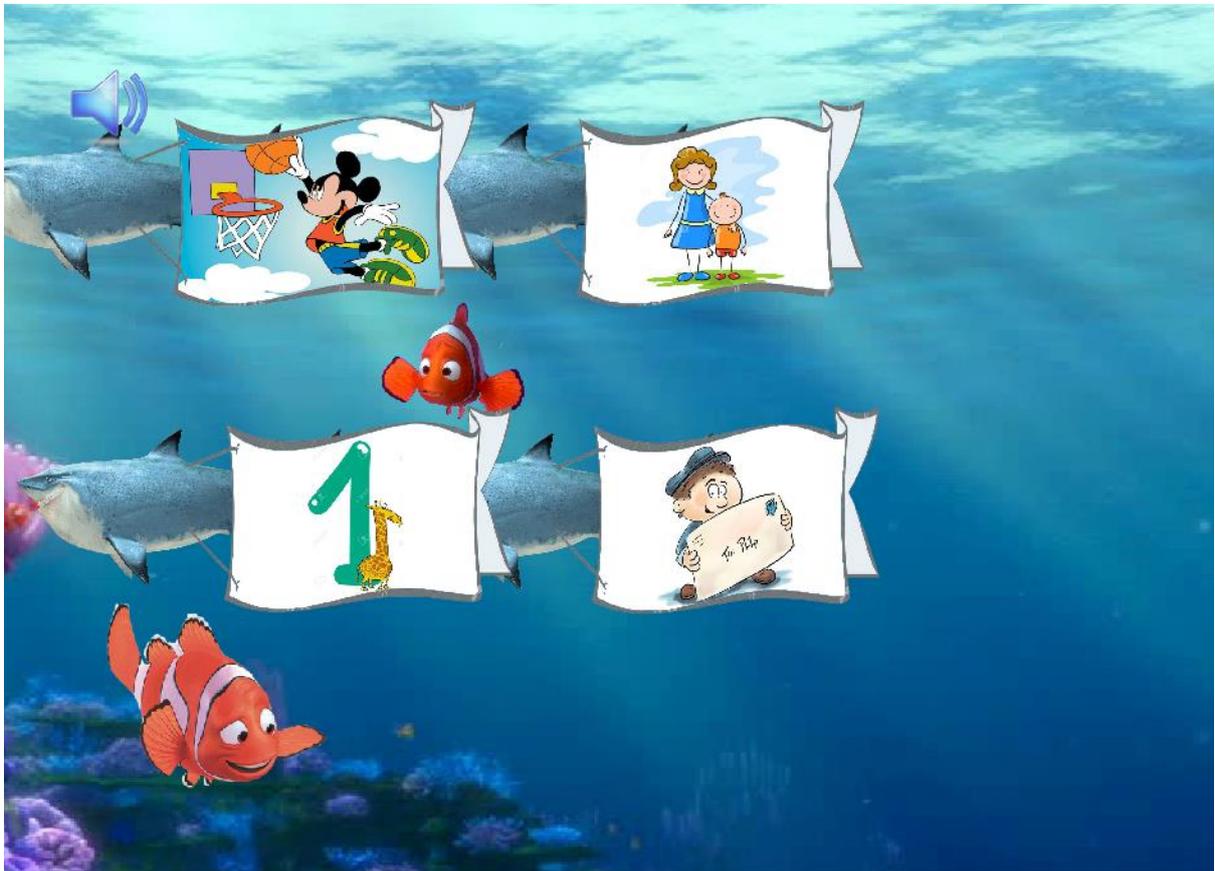
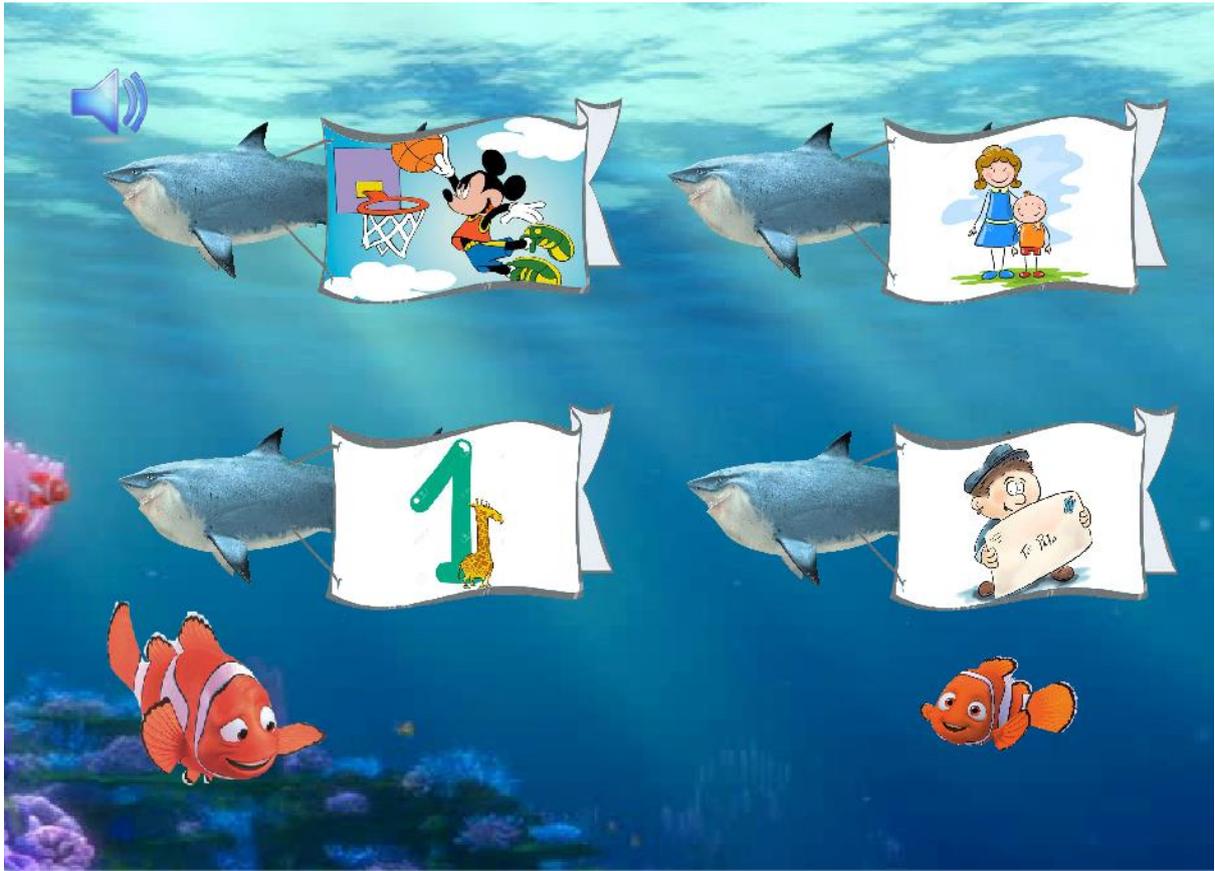


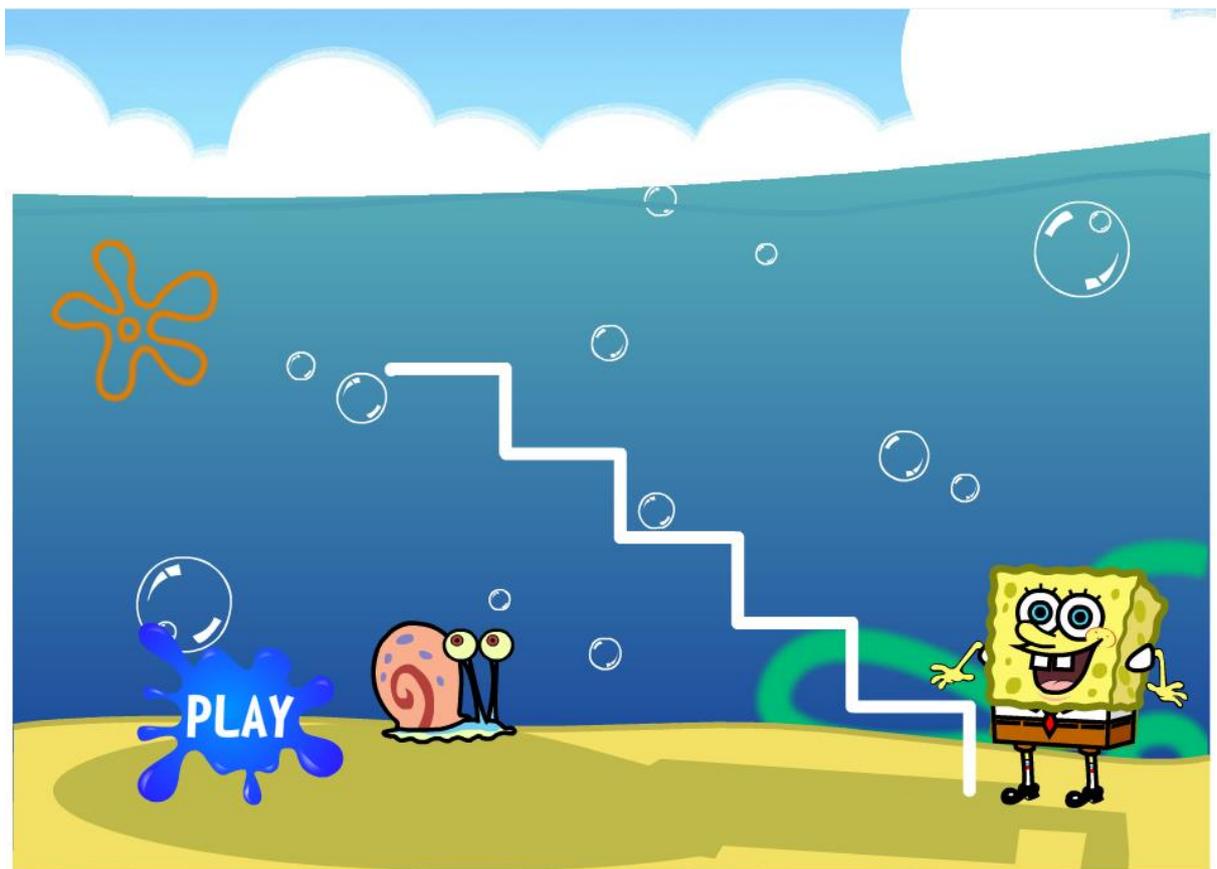
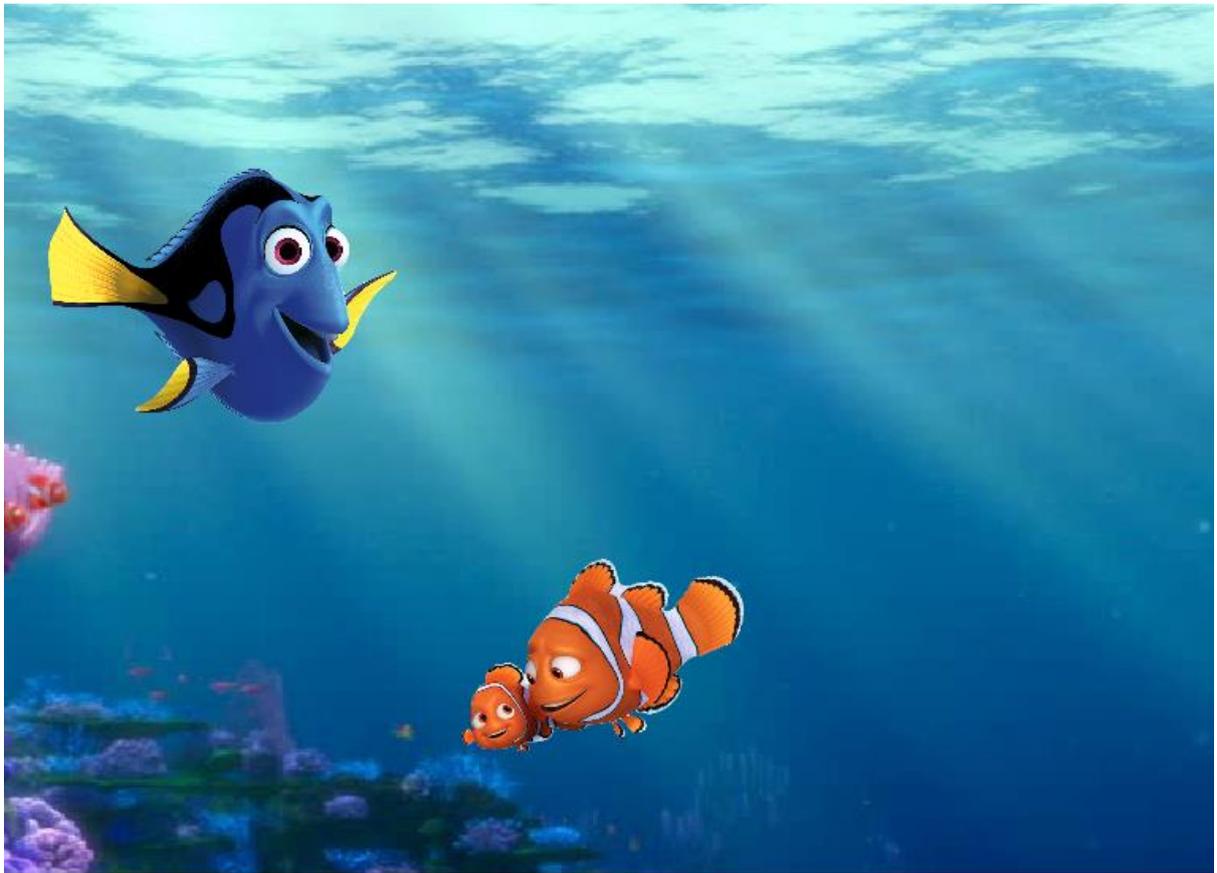


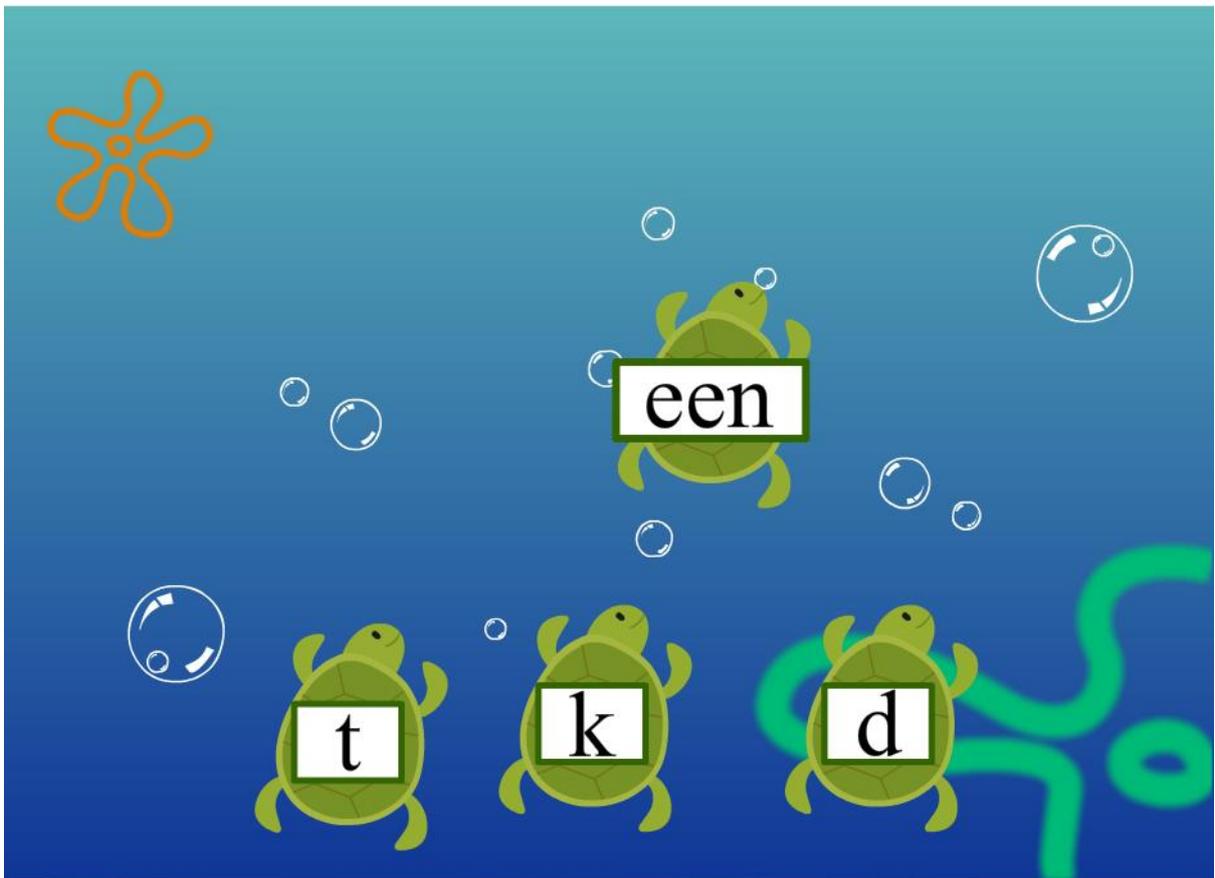
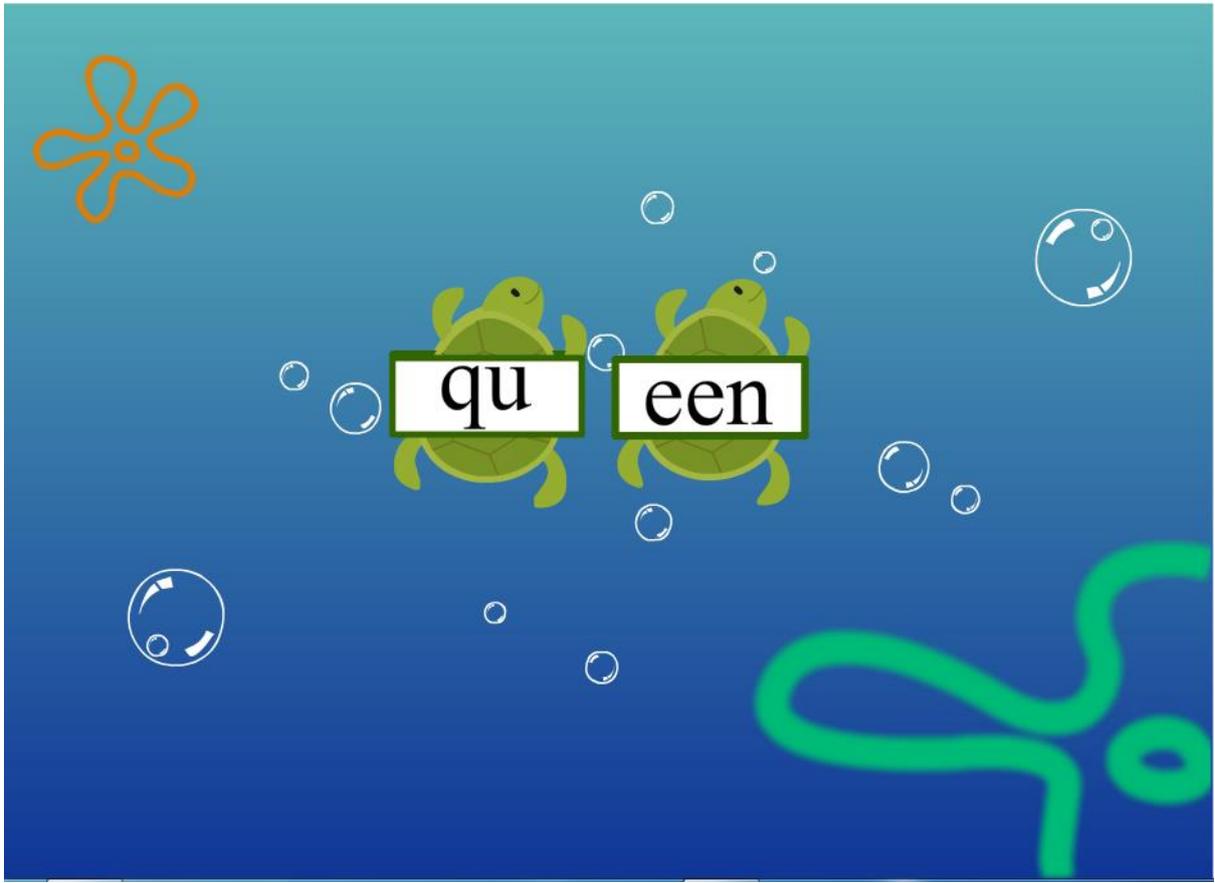
drop

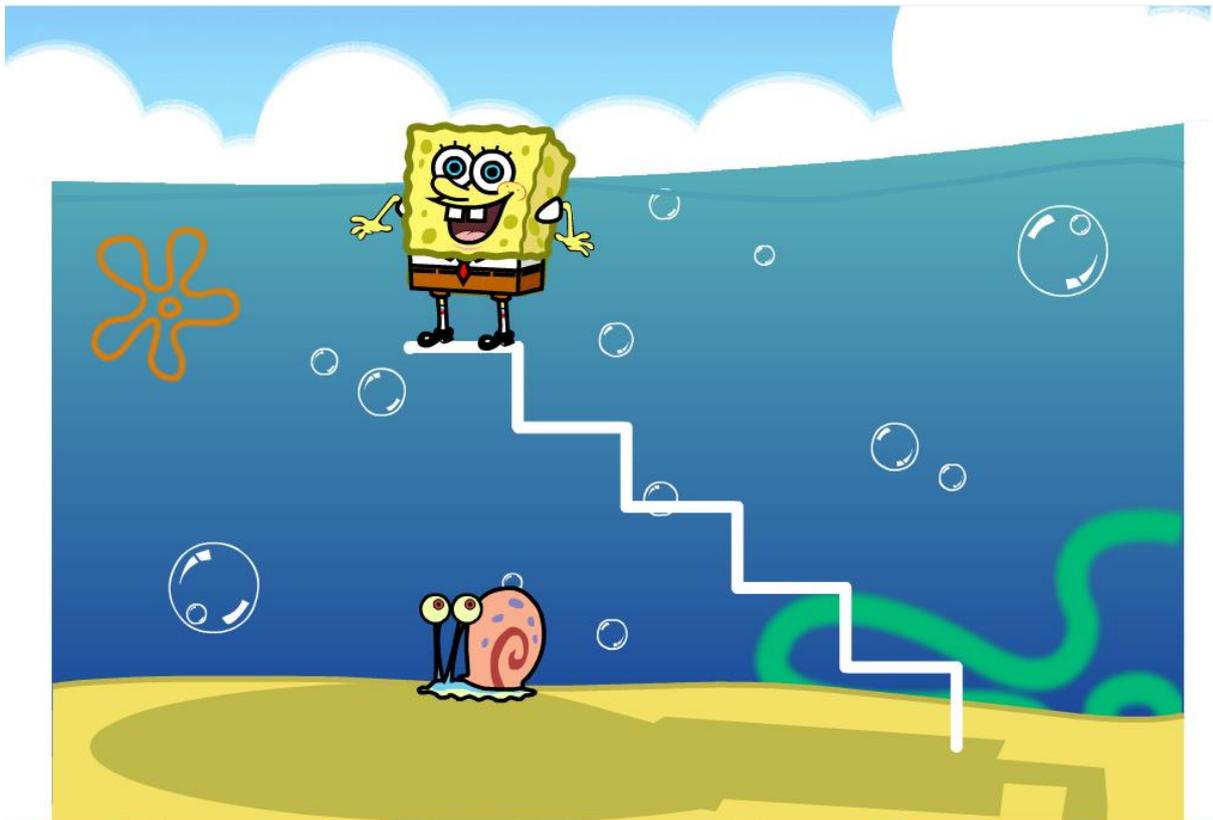
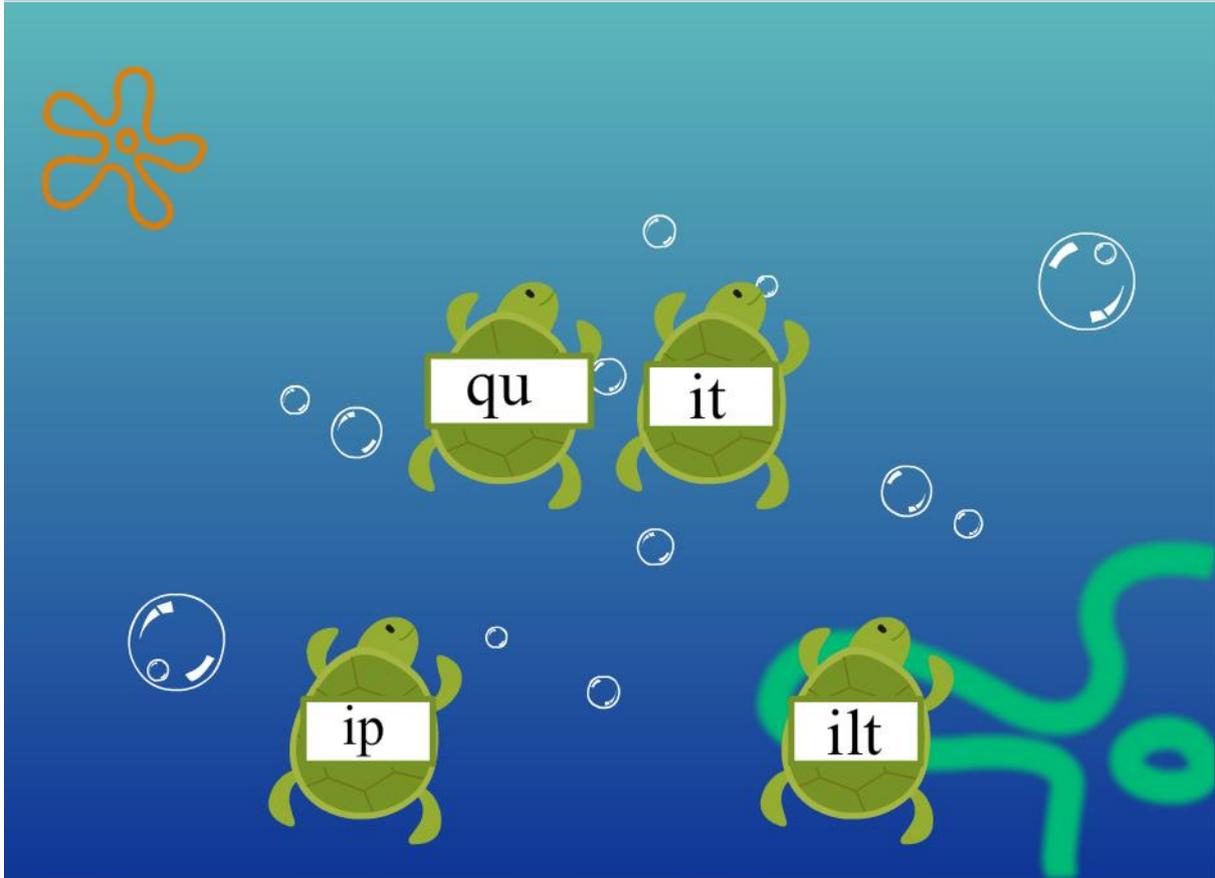






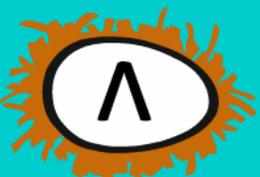
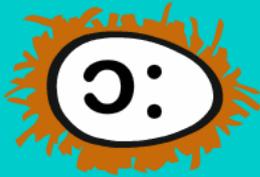








Click a letter to choose it.

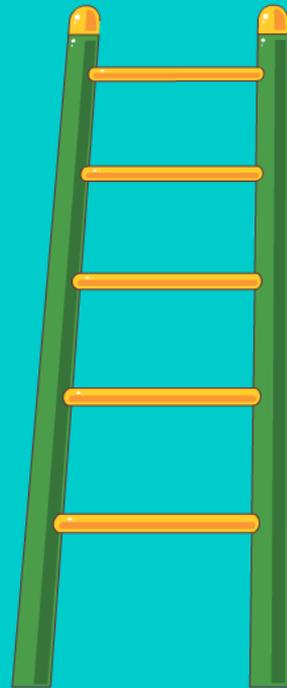
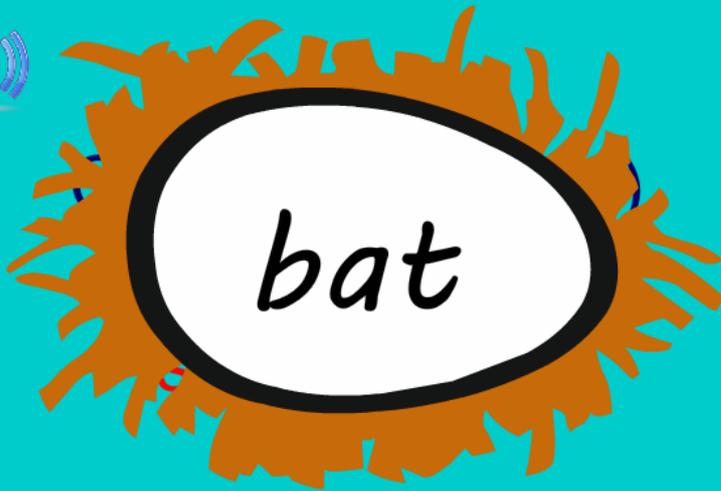


Click the short(**I**)
words like **list**,
six and **fill**

Let's stack
some owl



Stack five owls by picking the words with the /I/ sound



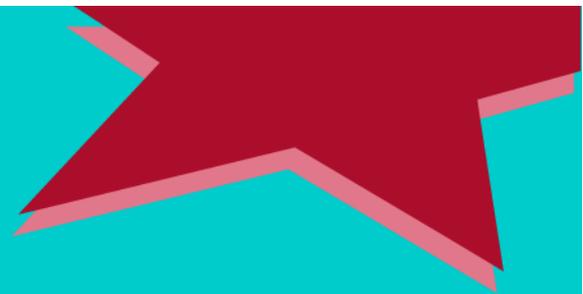
Stack five owls by picking the words with the /I/ sound



Stack five owls by picking the words with the /I/ sound



Great job!



The words **rich**, **him**, **list**, **six** and **fill** all have the short /**I**/ sound in them



Oops,

bat

doesn't have the /ɪ/
sound in it as in **rich**,
him and **fill**



try again

Appendix
(F)
Pictures of the experiment









Appendix (G)
List of referee

List of referee

This list includes the names and titles of the referees who refereed the Pre-Post Test, the checklist and the computerized language games where (1) refers to those who refereed the test and (2) refers to those who refereed the checklist while (3) refers to those who refereed the games.

Name	Field	Institution	1	2	3
Prof. Khader Khader	Faculty of Art	IUG	√	√	
Prof. Mohammed Shoqeir	Faculty of Education	IUG	√	√	√
Dr. Nashat El.Masri	Faculty of Art	Quds Open U.	√	√	
Dr. Jihad El.Mesalami	Faculty of Art	Quds Open U.	√	√	
Dr. Samar Abu Shaban	Faculty of Education	Al.Azhar U.	√	√	
Dr. Abd Allah Kurraz	Faculty of Education	Al.Azhar U.	√	√	
Rida Thabet	Specialist	UNRWA	√	√	√
Mohamed El Astal	Specialist	UNRWA	√	√	√
Ali Mahmoud	Specialist	UNRWA	√	√	√
Maher Sharaf	Specialist	UNRWA	√	√	
Mahmoud Baroud	Specialist	MEHE	√	√	
Ibraheem ElSahbani	Specialist	MEHE	√	√	
Husam Ishtewee	Specialist	MEHE	√	√	
Iman Balousha	Deputy principal	UNRWA	√	√	√
Amera Abu Rafee'	teacher	UNRWA	√	√	√
Abeer Abu Nada	teacher	UNRWA	√	√	√

UNRWA stands for United Nation for Relief and Work Agency

IUG stands for The Islamic University of Gaza.

MEHE stands for Ministry of Education and Higher Education

Appendix (H)
Letter of permission and Approval

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



الجامعة الإسلامية - غزة
The Islamic University - Gaza

Office of the Vice President for Scientific Research & Graduate Studies Ext: 1150

الرقم ج.ب.س.ع. / 35 /
2016/04/05
التاريخ

To: Chief of UNRWA Education Program

To Whom It May Concern

This is to certify that the researcher, Ms. NOBOGH S. S. SYAM, university ID 220130501, studies in the Curricula and Methodology Master Program in the Faculty of Education. You are highly appreciated to assist the researcher in the process of data gathering and applying the study tools, which may enable the researcher to complete her thesis entitled:

**The Effectiveness of Using Computerized Language Games on
Developing the Phonemic Awareness for the Third Graders in Gaza
UNRWA Schools**

With all respect,

إطاره
بالسبب
التاريخ
9/4/2016

Vice President
for Scientific Research and
Graduate Studies

Prof. Abdelraouf A. Elmanama



اللغ / سرنقة - جاليا لتعلم
برامج مساهمة الطالب لتطبيق
أدوات دراستك في بيئة
جاليا الاثنية التي طرقت
لنيل درجة الماجستير
5.4.2016