

**The Effectiveness of Designing an Adaptive
- Learning system Based on Stretch Text
Content in Developing English Reading
Skills of EFL University Students in K.S.A
M.A. Thesis in Education In Partial Fulfill-
ment of the Requirements for the Degree
of Master of Education (E - Learning)**

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The effectiveness of Designing an Adaptive - Learning system Based on Stretch Text Content in Developing English Reading Skills of EFL University Students in K.S.A

ABSTRACT: This research aimed at measuring the effectiveness of designing an adaptive - learning system based on stretch text content for developing English reading skills of EFL Students in KSA. The Participants were 60 students from English, Law and Computer Science departments in Mustaqbal University in KSA. They had difficulty in reading skills that was clear in the pilot study results. The research tools were Pre - posttest, a questionnaire, reading skills checklist and the reading program. The experimental group (N 30) used the reading program that is based on stretch text technique to develop their reading skills, whereas the control group (N30) was taught through traditional or conventional technique. The pre - posttests were comprised of three different reading passages. This research is limited to the following six reading skills; vocabulary expansion when reading, sentence construction and cohesion, decoding, reasoning and background knowledge, working memory, and fluency. The results of the t - test analysis revealed that stretch text technique yielded significant effects on developing students' reading skills, i.e. the experimental group outperformed the control group.

Key words: adaptive learning system - stretch text - reading program - reading skills - University students.

Introduction

Adopting technology in English language skills was apparent since the appearance of web 1 and web 2. Web 2.0 represented a different standpoint. It provides both teacher and the learner an opportunity to face each other outside the classroom Wang & Vasquez (2012). The learner could participate and be independent.

The results of the empirical researches conducted by (Warschauer & Grimes, 2007 & Antenos - Conforti, 2009) revealed that Web 2.0 technologies offer language learners the potential for a collaboration - oriented and community - based learning environment. For language skills, computer represented a common trend to teach and learn them.

For reading skills. Taj et al., (2017) investigated the effectiveness of the affordance of computer - assisted language learning (CALL) and mobile assisted language learning (MALL) on EFL reading comprehension at tertiary level. Results of the study also suggest that freely available technological resources could be used to create a conducive reading environment. Morales, (2019) investigated the impact of blogs on reading skills. He assured that educators could no longer choose not to integrate technology into their daily routine. Chee et al (2017) investigated the effectiveness of smartphone application on reading skills and sought students' perception on the use of smartphone applications regarding motivation, interest, and confidence.

Stretch text technique

It is one of adaptive learning technique. It refers to Fragments on the page may be expanded and collapsed by the user. For example, by clicking the mouse over a word, the page content expands to in-

clude the word's definition. The page is presented to the user in a state where the most appropriate fragments are expanded, and the less relevant fragments collapsed.

1.1. Context and statement of the problem:

The problem was derived from the following two resources:

a. Pilot study

It was conducted at March 2019 at Mustaqbal University. It included two reading exercises. The students were asked to answer different questions about it. The success ratio was 43.5% for the test.

a. Previous researches

The researcher deduced throughout many researches that technology is an effective tool for learners. Learners should use technology as a significant part of their learning process. Concerning using technology in education, Baytak, et al (2011) study revealed that learners increased their learning through incorporating technology into their classes. In addition, Peregoy and Boyle (2012) study which indicated that technology tools enhanced learners' reading and writing skills because they are user - friendly, and learners can learn at a faster and more effective way.

Furthermore, the study of Reinking and Schreiner, (1985) which assured that the computer should aid in reading process. Finally, the study of Villesseche et al (2019) indicates that develop an adaptive e - learning platform that enhances skills from primary school to university learners. He confirmed that the effectiveness of an adaptive e - learning tool in the case of individualized cross - disciplinary competences, such as comprehension of implicit information in written texts.

1.2. Research Questions

The researcher formulated the problem of the study in this main question:

How do you design Adaptive - Learning system Based on Stretch Text Content in Developing English Reading Skills of EFL Students in K.S.A?

- a. What are the computer skills require to create stretch text?
- b. What are the theoretical bases of using stretch text technique in teaching English?
- c. What are the suggested elements of reading comprehension skills?
- d. What are the necessary reading skills for students?

1.3. Research Hypotheses

- a. There are no statistically significant differences at the level of ($\alpha \leq 0.05$) between the mean scores of both the controlled group (Which is taught in the current way) and the experimental group (Taught by using stretch text technique) on developing reading skills in the pretest.
- b. There are statistically significant differences at the level of ($\alpha \leq 0.05$) between the mean scores of both the controlled group and the experimental group on developing reading skills in the post test in favor of the experimental group
- c. There are statistically significant differences at the level of ($\alpha \leq 0.05$) between the mean scores of the experimental group on developing reading skills in the pre - post - test in favor of post - test.

1.4. Research objectives

The objectives are divided into two types;

a. General objective

To examine the effectiveness of using Adaptive - Learning system based on stretch text content in developing the English reading skills of EFL learners.

b. Specific objectives

- c. To identify the English reading skills for university students.
- d. To identify the proposed design of the adaptive - learning system based on stretch text content.
- e. To investigate the effectiveness of designing an adaptive - learning system based on stretch text content in developing English reading skills of EFL University students in KSA.

Literature Review and Related Studies It is not correct to start with theories. We must start with adaptive learning, then the pattern that is being studied in the current research, and then talk about the theories that support it.

1.

1.1. Constructivism

It is one of the three learning theories; behaviorism, mentalism, and constructivism, that interpret learning process. It focuses on constructing meaning. Learning is authentic, complex, and contextualized, resembling real - life experiences. Constructivist learning is process oriented and emphasizes collaboration and conversation among learners and teachers. Instruction is inductive not deductive. It begins from the bottom to up. The instructor

is a model and a coach. In addition, he is not the controller of learning process. It is learner - centered and learning – generating environment. It engages the learner in an active learning process. The active learning process places responsibility on the learner and lends itself to a wider range of learning styles. If the student is to construct meaning from content, faculty, activities, and peers, then learning environments must be rich with strategies and resources (Jonassen et al., pp. 19 - 20).

2.1.1. Meaningful Learning

According to Jonassen et al., (2008), meaningful learning can be achieved by tasks that students could be engaged in engage active, constructive, intentional, authentic, and cooperative activities. Incorporating a constructivist approach to designing and implementing online learning can provide the instructor and student with a variety of learning opportunities achieving the objective of meaningful learning. The following figure explains the characteristics of meaningful learning.



Figure: (1) Jonassen’s characteristics of meaningful learning (Jonassen et al., 2008, p. 3).

There are five factors lead to meaningful learning. They are

active, constructive, authentic, intentional and cooperative (Jonassen et al., 2008, p. 3)

Adaptive learning

The concept of adaptive learning is not new idea in the field of teaching it started at the end of seventy. Any system collects information on a student's skill, knowledge and confidence levels, and uses it to change the material or tasks presented to that student. The adaptation can provide a better learning environment since learners perceive and process information in very different ways (Lee, 2001). With the advance of technology, adaptive learning the adaptive educational systems are an alternative to the traditional teaching; it is considered the next generation of e - learning. They attempt to build an adaptive model of goals, preference level of knowledge of each individual student and using this model throughout the interaction with the student in order to adapt to his/her needs (Verdú, 2008).

1.1.1. Adaptive learning and intelligent E - Learning system

A full Intelligent Tutoring System (ITS) should be developed to imitate the one - on - one learning process between teacher and student, but adding new facilities and utilities taking advantage of the technology. Therefore, a full intelligent system should include the learning process components: representing the content, implementing the instructional strategy and providing a mechanism for assessing the student's learning progress (Brusilovsky & Peylo 2003). They were the first to discuss the idea of curriculum sequencing technology. They divided this process into three parts; adaptive hyper system, web system and intelligent tutoring system.

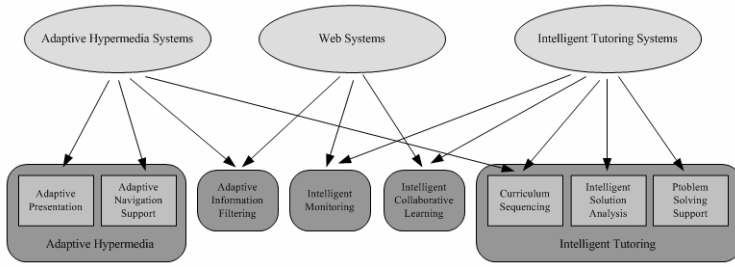


Fig.2. Origin and classification of adaptive learning systems. (Verdú. 2008).

1.1.2. Adaptive learning systems

Web - based Adaptive and Intelligent Educational Systems (AIES) inherit their characteristics from two earlier kinds of two AIES: intelligent tutoring systems (ITS) and adaptive hypermedia systems (Brusilovsky, 1999). The following figure explains this relation between the two types of adaptive learning system.

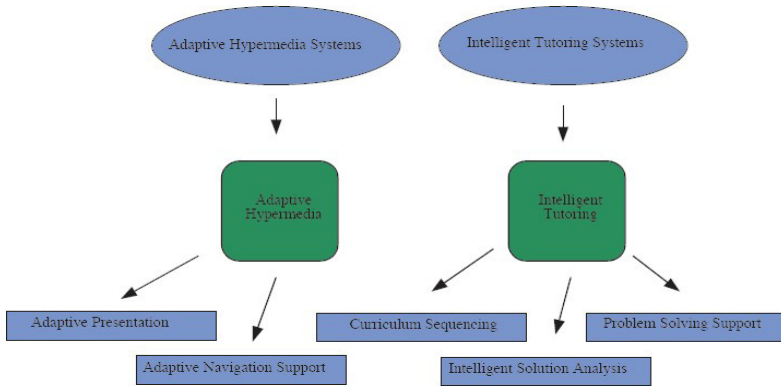


Figure 3: Adaptive Technologies (Brusilovsky, 1999)

1.2. Adaptive learning and teaching English language

Adapting learning in the field of English language learning is limited. It is not like computer science. However, the idea of adaptive learning is that it is possible to have multiple scenarios to fit the

needs of multiple individuals:

Different students have different preferred ways to learn. Some may understand quickly through images; others may prefer texts and readings. Some may deal well with theories; others may learn through experiments and examples. By gaining insights into different learning styles, it offers means to design and provide interventions tailored to individual needs (Truong, 2016, p. 1185)

It is not correct to confine ourselves to talking about adaptive learning and not to talk about the type of subject of the study, which is stretch text content

Reading skills

Reading skill as well as listening are regarded as receptive skills whereas writing and speaking are regarded as productive skills. It represents the key factor for developing other skills. If the students are not able to read, they will face problems in other skills like writing. Reading skills is a main part of integration with other skills. The ability to read and understand a simple text is one of the most fundamental skills a child can learn (Bhlool, 2013). It is not just only reading a text. Most of our students thinks that it is a matter of vocabulary. However, it is reading comprehension.

1.2.1. The suggested reading skills

i. Expand vocabulary when reading.

One of the goal of reading skills is to expand your vocabulary. Reading as a receptive skill provides reader with vocabulary when he reads. To achieve such skill, the reader needs the following subskills;

a) Use context to clarify meanings of unfamiliar words and phrases

b) Use dictionary, glossary, thesaurus, and other word reference materials.

c) Develop vocabulary by listening to and reading a variety of texts.

ii. sentence construction and cohesion

This skill is required through the following subskills

a) Use context and sentence structure to determine meanings and differentiate among multiple meanings of words.

b) Use knowledge of roots, affixes, synonyms, antonyms, and homophones.

c) Identify an author's use of figurative language.

d) Study word meanings across content areas.

e) Identify structural patterns found in nonfiction.

iii. Decoding

a) Identify the main idea of nonfiction texts.

b) Use text organizers such as type, headings, and graphics to predict and categorize information digital texts.

c) Skim materials to develop a general overview of content and to locate specific information.

iv. Reasoning and background knowledge

a) Use prior knowledge and build additional background knowledge as context for new learning.

b) Summarize supporting details in nonfiction texts.

c) Identify new information gained from reading.

v. Working memory

a) Locate information to support opinions, predictions, and conclusions.

b) Identify cause - and - effect relationships following transition words signaling the pattern.

- c) Differentiate between fact and opinion.
- d) Identify, compare, and contrast relationships;
- e) Use reading strategies throughout the reading process to monitor comprehension.

vi. Fluency

- a) Read with fluency and accuracy.
- b) Repeated reading of passages increases fluency

2.4. Related Studies Conducted On Adaptive Learning and Stretch Text

Many studies were conducted about the effectiveness of adaptive learning in English language field.

Abdi. (2013) assures that one of the significant advantages that internet technology offers to English language learners is the abundance of hypertext materials where unfamiliar and ambiguous concepts can be followed through the hyperlinks. This study aimed at investigating the effectiveness of using hypertext materials on reading comprehension ability of learners as compared to the normally written materials.

This study dealt directly with developing reading skills through using hypertext material. Hence, the reading was provided with hyperlinks that move the students to external material outside the reading text. It was significant in providing students with digital resources to the reading text. **Accordingly**, to the current research, the learners are not in need to move or leave the reading text to external materials. Additionally, the current study represented an integrated unit for the students to develop reading skills.

Amin (2019) explored how the students could develop their reading skills by using effective reading approaches. For six months,

an action research had been applied to 40 students at higher secondary level in Manikganj, Bangladesh. The most important question of the study was “could the reading approaches help students English reading comprehension skills?” The outcome of the study specified that students who had been tutored in the reading strategies had a development to a great level.

Both researches assured the importance of reading skills in teaching English language and problems solving students face to develop their reading skills. The current research dealt with adaptive learning as one of the solutions to develop reading but Amin (2019) surveyed the teaching approaches used in developing reading skills.

Alrashedi. (2020) stated that adaptive learning represented a solution for the educational problems faced students in learning process. The adaptive learning focuses on meeting students’ diverse needs and interests, provided conditions for their life self - determination and self - realization, and created a favorable psychological climate for the pedagogical interaction of all subjects of the educational environment.

In accordance with this study, the adaptive learning is one of the best solutions that contributes to developing learning process in general and English language skills in specific.

Finally, reading as a receptive skill represents the learners’ resources for acquiring information about language. Reviewing the related studies on stretch text and reading skills revealed a research gap in dealing with reading skills. It could be achieved through adopting the suggested program.

2. Research Methodology

The research followed a quasi - experimental approach that is more like experimental designs, test causal hypotheses. Quasi -

experimental designs identify a comparison group (control) that is as similar as possible to the treatment group (experiment) in terms of baseline (pre - intervention) characteristics. Therefore, the researcher implied Pretest/Post - test to both of the treatment; control and experimental groups. The process of the research design runs as follows;

Figure. (4) A quasi experimental (pre - test/post - test design)

1.1. Research participants

Sixty students will be chosen from Mustaqbal University to participate in the research. They will be assigned into two groups; the experimental and controlled. They were 30 female students and 30 male students. Their ages ranges from 19 to 27 years. They are from different levels from English Department, Law Department and computer science department.

Table. (1). Sample Distribution According to Group:

No.	No. participants	Department
	8	Computer science
	8	Law
	44	English

Program duration

This treatment will take place in the second term of the scholastic year 2019/2020. It will continue for 4 weeks starts from 12/4/2020 to 10/5/2020.

1.2. Study Instruments

To attain this research aim, the researcher conducted the following tools;

1. The reading skills checklist.
2. The pre/post - test.

3. The questionnaire.
4. The suggested program.

1.3. The suggested application

The suggested program was represented through a computer and mobile application. This application should be based on one of the Educational designed models or what is called Instructional design. It is the entire process of analysing learning needs, goals, design and development of a delivery system that meet those needs. It included development of instructional materials, activities, technology, try out and evaluation of all instruction and learner activities. The process of choosing well educational design model ensures continuous interest in the suggested program or application, whereas the poor design creates problems for the learners. Therefore, the researcher focused on building a computer simulation program under the current research on a model.

Because of the widespread ADDIE model, there are many variations of this model. One of these models is El Desouky's model. The researcher chose this variation of the ADDIE model for the following reasons.

1. Ease and flexibility to modify, delete and add steps and elements for each stage of the model
2. The stage of the internal assessment, which is concerned with the evaluation of the basic elements) is available, and we move to the next stage.

This model can be summarized in the following figure'

The researcher applied the seven phases in this model to his program as follows. They are as follow

1. Input evaluation phase

It included identifying teacher and learner requirements and the environment. It stated whether they are appropriate for educational design according to their suitability will follow the six stages of the model, and this stage included several requirements. It was divided into three parts;

- a. **For the teacher**, the suggested application was based on learner - centered approach. It was a self - learning. The learner would be in no contact with the teacher except if he faced a problem during the treatment.
- b. **For the learner**, it required two things from the students; to have a strong will to learn and develop his reading skills, the second was to have an android mobile or a laptop or desktop.
- c. **For the environment**, there was no need for any environment as it was available offline on his smartphone or laptop.

2. Initialization phase

The main goal of this phase was to check the shortage in the environment or learner usability for the suggested application. Although this phase was nearly represented any obstacle to conducting the program, there was a problem faced the researcher. Ten of the participants did not have android smartphone; consequently, the application would not run on their phones. Because of this, the researcher designed a version of the program that ran on the desktop. It was difficult for the researcher to run a version on IOS system.

3. Analysis phase

It included two components

1. Defining general objectives of educational content.

The general objective of the suggested application is to develop students' reading skills.

2. Determining learners' needs and general characteristics.

It was determined before the beginning of the study. The researcher conducted a pilot study to investigate the students' levels and recognitions for reading passage. The pilot study revealed that reading skills were limited for the students. Therefore, the researcher conducted this study to develop their reading skills.

4. Design Phase

It represented one of the most important phases in this model. It was the phase in which the researcher used the provided information that were got in the last two phases to design the application. It included the following:

a. Formulating procedural goals

In this phase, the procedural goals were formulated through English reading skills checklist. It was submitted for the validation process. It included 6 reading skills and 21 objectives. It was shown in detail in the study instruments in this chapter of the study.

b. Designing educational content appropriate to the learning environment.

Based on the previous procedural goals and reviewing the related literature and studies related to developing reading skills, the researcher designed the application content.

The suggested content for the application should have the following characteristics.

1. The educational content should cover the educational goals previously identified and work towards achieving them.
2. The scientific content was correct.
3. The content should be balanced in terms of depth and clarity.
4. Consider logical sequence and complementarity in presenting

educational content.

5. Production phase

This phase is divided into two main stages.

1. The early production

To design the suggested application. It included the following:

a. Used software

This application was designed by using Unreal Engine. Unreal Engine's original release was in 1998, while Unreal Engine 4 was released for the first time in May 2012. This engine is suitable for rendering 3D graphics. It is free and open source and is one of the most popular game engines, as many games have been created with it and succeeded in the industry such as Absolver. The version we used in this study is 4.24. Unreal engine V4 has adopted a new coding system called "Blueprint" as a successor to the old and infamous "Kismet". Blueprint is a unique tool that could eliminate the generic image of coding as a stack of complicated, non - sense lines and replaces it with a visual representation. This presentation can be helpful for tracking the execution flow, debugging, avoiding the hassle of syntax errors, and speeding the prototyping process.

b. Brainstorming:

The researcher started putting rough outlines, concepts, and thoughts about how a reading development software should look like. The researcher tried to find out answers for the following questions.

- a. How to use adaptiveness with a typical thing as reading a passage?
- b. How could a user interact with the content in a simple manner to understand and make use of the stretch text as a helpful tool when reading?

- c. How to develop a tracking system that
 - 1. Engages every student's progress and to be displayed on the home page showing: the number of passages read, the number of stretches used and a timeline - like list of the passages read with the students score on each one.
 - 2. Process analytically outputs data to provide teaching staff with accurate indicators of the amount of success or failure done by the app and the overall amount of interest shown by the student in the experiment especially stretch text as a tool.
- d. How to create a UI/UX that was simple but efficient for its use case.

2. The actual production

It referred to the final copy of the application. It included the following:

a. Designing

Once the concepts were put, the researcher hired a 2D designer to translate those concepts and thoughts to an actual design for an android app with an elegant UI to make it appealing for the learners. Designing had come to many milestones with major changes to the app as a whole and the UI as an important aspect to look for with each change. There were some considerations during this phase like;

- a. The user flow should support repetitiveness as key feature during designing the application that aimed to drive the user to read as many passages as possible.
- b. Navigating through screens should not be a hassle, which could be achieved with bigger buttons, and icons that match their purpose.

Balanced UI that was simple. The following figures represented the application interface.

6. Evaluation phase

This phase was divided into four main parts

a. The experimental stage.

The researcher made more than five experiments of the application on different devices. It ran on four types of smartphones android, Huawei, Samsung Note, and Honor. It ran on laptop and tablet.

b. Validating the application

The application was submitted to two assistant professors in teaching computer sciences.

They suggested some notes related to the application.

The following form was provided to the juries to validate the program.

c. Conducting the English language skills pretest.

After validating the pre/posttest, the researcher conducted the pretest on both experimental and controlled group.

d. Conducting the English language skills posttest.

After conducting the treatment, the researcher conducted the post-test on both experimental and controlled group to investigate the effectiveness of the treatment.

7. Implementation phase

It was divided into the following steps

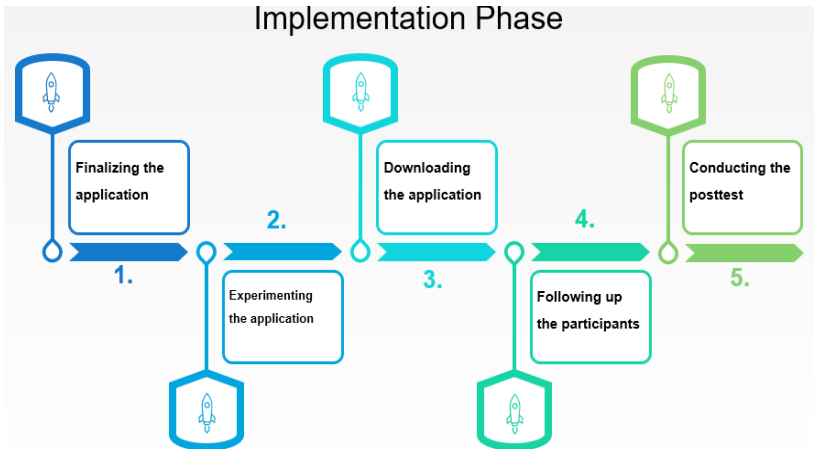


Fig. (5) Implementation phase timeline

The implementation phase can be summarized in the following steps.

1. Finalizing the application.

After validating the application and carrying out their remarks, the application came to the final step for finalizing it. It ran as follows.

a. Choosing a suitable name for the application.

There were many names suggested by the researchers and the juries for the application like master reading, reading way, time to read, and reading skills. Therefore, the reader discussed the application name with some students and two of the program juries. The researcher decided to use a simple name for the program, just only one word. It is (Reading App).

b. Revising the content of the application.

The researcher revised the content of the program for three times. Furthermore, the researcher submitted the application for one of the interested users in attempting new applications to check the application buttons.

2. Experimenting the application.

This step passed through the following procedures.

- a. The researcher asked ten students to run the program on their computers or laptops.
- b. Some students faced problems in setting up the application to their computers or laptops. It was due to the version of DirectX version. The application required a modern version.
- c. Some students were not able to use the program well. Therefore, the researcher deigned a tutorial page for the program.
- d. Using this icon (?) in the program was not clear for them. It refers to the question page.
- e. Some students do not have a computer or laptop. Therefore, they were not able to use the application.

3. Downloading the application.

The researcher was not able to discuss with the students how to solve the problems they faced before uploading the application for the students to download it. The researcher carried out the following steps.

- a. Designing an application version for Android mobiles for the students who did not have a laptop or mobile.
- b. The researcher uploaded a new version of DirectX program with the application.
- c. The researcher simplified the tutorial page to be clear for all users.
- d. The researcher uploaded the application and the DirectX on google drive. The researcher sent the drive link to the students to download them.

4. Following up the participants.

After downloading the program, the participants began their treatment for one month. Therefore, there should be a policy or a technique for checking their progress and following up. Therefore, the researcher adopted the following steps.

- a. The researcher provided the students with a mobile number to send their weekly screenshot for their results and their inquiry about the application.
- b. The researcher collected their weekly responses in database file.
- c. The researcher asked the assigned teacher who volunteered to contact the students to finish their weekly report on time.

5. Conducting the posttest.

After spending a month of the experimentation of the treatment, the researcher sent the link for the students of the experimental group to answer the posttest. Finally, the researcher conducted posttest to both groups on 10^{May} 2020.

3. Results:

Research results are formulated according to the followings;

- a. Findings related to the research questions
- b. Finding related to hypotheses
- c. Findings related to the questionnaire

3.1. Findings related to Research Question:

4.0.1 Findings related to Question (1):

What are the necessary reading skills for students?

To answer this question, the researcher designed English reading skills checklist for identifying the English reading skills. The English reading checklist had been validated by five juries. The following reading skills are expanding vocabulary when reading, sentence construction and cohesion, decoding, reasoning and background

knowledge, working memory and fluency. The English reading skills checklist represented the base through which the application was designed.

1.1.2. Findings related to Question (2):

What are the proposed design of Adaptive - Learning system Based on Stretch Text Content?

To answer this question, the researchers summarized literature review for the stretch text in teaching reading skills. Additionally, the researcher designed the application by using Unreal Engine version 4.24. Behind the scenes, the current application is using a data table containing passages with information like passage details including title, content, questions list, and stretch text keywords. Finally, the application interfaces were designed.

Findings related to Question (3):

What is the effectiveness of Designing Adaptive - Learning system Based on Stretch Text Content in Developing English Reading Skills of EFL Students in K.S.A?

To answer this question, the researcher validated research hypotheses.

1. Hypotheses Results

i. Hypothesis (A)

There were statistically significant differences at the level of ($\alpha \leq 0.05$) between the mean scores of both the controlled group and the experimental group on developing reading skills in the post test in favor of the experimental group

The researcher used (Independent Samples t - test) to investigate the significance of the differences according to the total average score of the tool of the research by measuring the mean of the

students' scores on the post test of the two groups. The total mean values and standard deviation for both control and experimental group posttest are summarized in the following.

Table. (2) Total results (Mean values \pm SDs) for both control and experimental groups posttest.

					Group Statistics	
	VAR00002	N	Mean	Std. Deviation	Std. Error Mean	
VAR00001	1.00	30	26.3333	15.13237	2.76278	
	2.00	30	42.2000	10.18924	1.86029	

As noted, comparing the mean for both experimental and controlled groups are found to be higher for the experimental group. Therefore, it is an earlier evidence for the successful treatment or application.

Table. (3) Total results (t. & p value) for both control and experimental groups posttest.

Pretest		Statistics	
Mean			
Controlled	Experimental	T value	P value
25.33	42.2	4.75 -	010.

The results showed that p value was more than the t. value. It means that there are significant differences between the controlled and experimental groups for the later. Additionally, it means the reading application that is based on stretch text was an effective tool in developing students' reading skills. The experimental group yielded better results than the control group.

These results are in line with (Abdi, 2013; Kang, 2004; Amin, 2019; and Chen, 2015)

ii. Hypothesis (B)

There are statistically significant differences at the level of ($\alpha \leq 0.05$) between the mean scores of the experimental group on developing reading skills in the pre - post - test in favor of post - test.

The main purpose of these hypotheses and questions was to be sure whether the students' progress in reading skills are due to the stretch text or not.

Table. (4). Total results (Mean values \pm SDs) for both control and experimental groups pretest.

		Group Statistics			
		N	Mean	Std. Deviation	Std. Error Mean
Variables	1.00	30	30.5333	12.73803	2.32564
	2.00	30	42.2000	10.18924	1.86029

As noted, there was a difference between the means of the pretest and the posttest in favor of the posttest. Therefore, it is an evidence for the effectiveness of the stretch text in developing students' reading skills. Furthermore, the researcher conducted one - sample t. tests for the pre/post in the following table.

Table. (5) Total results (t. & p value) for both pre/posttest for the experimental group

Experimental group		Statistics	
Mean			
Pretest	Posttest	T value	P value
30.53	42.2	3.917 -	108.

The results of the previous table represented another evidence for the effectiveness of the stretch text in developing students'

reading skills.

These results are in line with Marandi, 2008; Kasper, 2003; Shang, 2015 and Yang & Hsieh, 2015.

1.2. Findings related to the study questionnaire

The study questionnaire represented the qualitative part of the study. The main aim of this questionnaire is to investigate students' opinions about the stretch text effectiveness for them. The questionnaire consisted of sixteen questions. The results of these questions as follows.

- a. For the questionnaire, it represented the qualitative side of the study. The researcher conducted this questionnaire to investigate the effectiveness of the stretch text. The students' answers for the questionnaire was effective. They expressed the effectiveness of stretch text to make them understand the reading passage or continue reading. The students mentioned an effective characteristics in stretch text. When they read about a new topic they have not got information about, they used stretch text that provided them with useful information about the reading passage. The researcher chose unfamiliar topics for the reading passage. The students have never heard about them. Therefore, the students had to use the stretch text to answer questions, otherwise it will be difficult for them. The stretch text was optional for them to use.

Conclusion

The results of this research are consistent with all previous studies that used in the literature review mentioned in chapter two. The results of this study are in line with **Kasper. (2003)** in stressing the effectiveness of the internet technology in developing reading skills for the ESL students. Additionally, it is in line with **Shang, 2015**.

in investigating the effectiveness of the hypertext in developing reading skills. **Shang, 2015**. compared between the hypertext and traditional reading to develop reading skills. Furthermore, the current research emphasized the importance of vocabulary and background information as it was in line with **Kang, (2014)** results. The current results are in line with the **Marandi (2008)**, in the first part of its results in stressing the importance of hypertext in developing reading skills.

The research results that are in consistent with the previous studies represented a clear evidence for the effectiveness of the stretch text in developing the reading skills. However, the current research added more depth than the previous studies. They could be summarized in the following points;

- a. The current study adopted what is called stretch text in an application that was available to desktops, computers, laptops or android mobile systems.
- b. The current study application did not require internet connections on contrary to other studies which required internet to activate the hyperlink or hypertext.
- c. The reader or learner is free to access this application anywhere without requiring any additional resources like dictionaries or additional information.
- d. This application is auto correct for the reading passage. Therefore, there is no need to go for teacher to ask about the correct answer.
- e. This application could be upgraded to add another kind of reading contents or any number of passage. The researcher added just only twenty - one reading passage as an attempt to investigate the effectiveness. However, more can be added.

- f. The program achieved the two main goals of reading practice which are getting knowledge and increasing students' vocabulary.
- g. It provides the students with the opportunity of continuing reading. The experimental group students did not stop reading as everything related to the reading passages were available to them.
- h. The current application represented an integrated unit for reading practice.

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