



**Regular Article**

**The Effect of Intelligent Tutoring System on Teaching English for  
Enhancing Primary Stage Pupils' Vocabulary**

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**ABSTRACT**

This research aimed at investigating the effect of using intelligent tutoring system on teaching English vocabulary for third grade primary stage pupils. The participants of the research included (60) third grade primary stage pupils from El-Dawa primary schools, Beni-Suef. The participants were randomly assigned to form two groups; one to be a non-treatment group (30) and the other to be a treatment group (30). The quasi- experimental design was used in the study. The data were collected by the researcher using a vocabulary test in English language. Findings showed that the participants of the treatment group outperformed those of the non-treatment group in learning vocabulary, indicating a significant effect of the strategy in this regard. The research results also showed that there was a strong positive change in the participants' vocabulary learning and this change appeared in their post test marks. The research presented some recommendations and suggestions for further research.

**Keywords:** Artificial Intelligence, Intelligent tutoring system, vocabulary, primary stage pupils.

## المخلص

تهدف الدراسة الحالية الي معرفة أثر استخدام نظام المعلم الذكي على تدريس مفردات اللغة الإنجليزية لتلاميذ الصف الثالث الابتدائي. تكونت عينة الدراسة من مجموعه من ٣٠ تلميذا من الصف الثالث الابتدائي من مدارس الدعوة الابتدائية ببني سويف. وقد قام الباحث بتقسيمهم بشكل عشوائي الي مجموعتين أحدهما مجموعة غير معالجة مكونة من (٣٠) تلميذا والآخرى مجموعة المعالجة مكونة من (٣٠) تلميذا. تم استخدام التصميم شبه التجريبي في الدراسة. وقد تم جمع البيانات من قبل الباحث باستخدام اختبار المفردات في اللغة الإنجليزية. وأظهرت النتائج تفوق أفراد المجموعة المعالجة على أفراد المجموعة غير المعالجة في تعلم المفردات، مما يشير إلى وجود تأثير كبير للاستراتيجية في هذا الصدد. كما أظهرت نتائج البحث أن هناك تحويراً إيجابياً قوياً في تعلم المفردات لدى المشاركين، وظهر هذا التحوير في درجات الاختبار البعدي الخاصة بهم. وقدم البحث بعض التوصيات والمقترحات لمزيد من الابحاث القادمة.

**الكلمات المفتاحية :** الذكاء الإصطناعي، نظام المعلم الذكي، مفردات اللغة الإنجليزية، طلاب المرحلة الإبتدائية

## Introduction

Nowadays, more and more people are dedicating time to studying English as a foregin language. Many countries include English in their school syllabus and children are starting to learn English at a younger and younger age. Whether one is looking for a new job or planning to travel the world, studying English can help one progress in life both personally and professionally. One can compete in the global job market, increase career skills and start to meet people around the world.

Teaching a language has many different features. A teacher does not only teach and pay attention to students' language skills, such as reading, writing, listening, and speaking, but also helps, facilitates, and encourages students to have enthusiasm, good attitude, and motivation towards English. Furthermore, teachers have to understand what students learn, how and why such learning influences them, how lessons could be beneficial for them in the future (Derakhshan, 2015). Hence, language teaching requires teachers to teach students to develop both academic and personal abilities.

For about last two decades, the World Wide Web(WWW) is being used to improve communication, collaboration, sharing of resources, promoting active learning, and delivering of education in distance learning mode. The WWW helps teachers in

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planning suitable online delivery structure, sharing goals of learning, and activities for their courses (Rajiv and Manohar, 2011). In recent years, many of the universities and educational institutions worldwide offer online services such as for admissions, virtual (online) learning environments in order to facilitate the lifelong learning and to make this compatible with other educational management activities. For example, a teacher may create a purely Web-based delivery system including online handouts in respect of student's activities, projects and lists of resources for reference. The students and other learners may access web based material anytime from anywhere in the world, being connected through Internet. Since the 1990s when the World Wide Web was established, it has evolved from the earlier versions, viz. Web 1.0 to Web 2.0, and finally is evolving into the newest version, viz., Web 3.0 (Jinhong, 2008).

Web 1.0 is Read Only, static data with simple markup for reading. Web 2.0 is Read/Write dynamic data through web services customize websites and manage items. Web 3.0 is Read/Write/Execute." In Web2.0, user not only reads information from the internet, but also provides information through internet to share with others. Currently we have many popular Web 2.0 interactive applications like Blog, Podcast, Mashup, Tag, RSS/Atom, Wiki, P2P, Moblog, Adsense and so on (Juan, 2008).

Some think that emerging technologies such as the Semantic Web will transform the way the Web is used, and lead to new possibilities in artificial intelligence based applications. Other visionaries suggest that increase in Internet connection speeds, modular web applications, or advances in computer graphics will play the key role in the evolution of the new version of World Wide Web (Strickland, 2011).

Experts believe that one of the most promising features of Web 3.0 will be Web with intelligence, i.e., an intelligent web. Applications will work intelligently with the use of Human Computer interaction and intelligence. Different Artificial Intelligence (AI) based tools & techniques (such as, rough sets, fuzzy sets, neural networks, machine learning etc.) will be incorporated with the applications to work intelligently. This means, an application based on Web 3.0 can directly do intelligent analysis, and then optimal output would be possible, even without much intervention

of the user. Documents in different languages can be intelligently translated into other languages in Web3.0 era. Web 3.0 should enable us to work through natural language. Therefore, users can use their native language for communication with the others around the world (Han and Niu, 2010).

Tech adoption in the classroom has increased over the past two decades. Interactive whiteboards, tablets, and laptops have all but replaced the chalkboards, textbooks, and clunky desktop computers of the traditional classroom, and today's teachers and students have access to hundreds of thousands of apps, videos, and online courses designed to enhance the learning experience. Now, in the middle of a global pandemic, technology has assumed an even greater role in the education of our kids. At the height of the COVID-19 outbreak, over 1.5 billion children across the world were taken out of the classroom because of school closures, which, in turn, forced the widespread adoption of remote teaching technologies and the suspension of in-person instruction (Sarah, 2021).

Because of that pandemic, the researcher tried to find a computer learning environment that helps pupils' master knowledge and skills by implementing intelligent algorithms that adapt to students at a fine-grained level and that instantiate complex principle of learning. He searched for the most suitable tool of web.03 tools that may be effective for his pupils and suits their stage and the content they study.

Intelligent tutoring system is an eLearning system that can adapt to an individual learner. It is a computer system that provides customized and immediate instruction and feedback to students without the intervention of a human teacher. Intelligent tutoring system is also called Intelligence Computer-Aided Instruction (ICAI), a personal training assistant that captures the subject matter and teaching expertise and individualize the curriculum to meet each learner's needs in order to master the subject matter. Its main goal is to provide benefits of the one-on-one instruction: lessons are conducted at the learner's own pace; practices are interactive so the learner can improve their weaker skills; and real-time question answering clarifies learner's doubts or misunderstanding; and an individualized curriculum based on the

learner's needs (Gianni and Esplica, 2021).

Intelligent Tutoring Systems use Artificial Intelligent skills and methodology to the development of computer-based learning systems so as to build adaptive systems. An Intelligent Tutoring System, emphasizes education as a course of collaboration among tutor and student in which the tutor attempts to demonstrate concepts to the student. Generally, the procedure is controlled by the tutor, who needs to investigate the behavior, the knowledge and the satisfaction of the student. The tutor has to regulate and apply the more suitable teaching approaches at every minute. These strategies must answer a sequence of questions to guarantee that the learning process is carried out effectively. These questions are: what detail level is necessary, what to explain, when and how to interrupt the student and how to detect and to correct errors (Hilles and Abu Naser, 2017).

The main four basic components that classically are identified in Intelligent Tutoring System are: domain module, pedagogical module, student module, and dialogue module.

### **1-Domain Module**

Domain module represents expert knowledge, or how experts perform in the domain.

### **2-Pedagogical Module**

Pedagogical module represents teaching strategies, (examples, and analogies) and includes methods for encoding reasoning about the feedback. In another words, pedagogical module controls the overall functions of the intelligent tutoring system.

### **3-Student Module**

Student module represents students' mastery of the domain and defines how to reason about their understanding. It comprises both stereotypic student knowledge of the domain (usually student skills) and information about the present student.

### **4-Dialogue Module**

Dialogue module represents methods for communicating between students and computers. It includes discussing student reasoning, managing communication, and sketching graphics to illustrate a point, showing or detecting emotion, and explaining

how conclusions were reached.

One of the most important tools of AI is Chat GPT. Chat GPT is a conversational language model developed by OpenAI. It is part of the GPT (Generative Pretrained Transformer) family of models, which are based on the Transformer architecture and trained on vast amounts of text data to generate human-like text (Sakib, 2023).

Vocabulary is crucial to a student's language development and communication skills. After all, without adequate words, it is difficult for students to relate thoughts, ideas, and feelings about who the pupils are and how the pupils interpret the world around. But how do teachers achieve this goal without making students memorize lists of ESL vocabulary that will be forgotten after the next pop quiz? Teachers have to learn teaching strategies to introduce new vocabulary, making it available for recall in students' minds, and practicing it in a relevant and engaging way whether you're giving classroom lessons or teaching English online (Lorena, 2020).

Teaching vocabulary is a vital part of any English language course. Many teachers are concerned about how to teach vocabulary. New words have to be introduced in such a way as to capture the students' attention and place the words in their memories. Students need to be aware of techniques for memorizing large amounts of new vocabulary in order to progress in their language learning. English vocabulary learning can often be seen as a laborious process of memorizing lists of unrelated terms. However, there are many others much more successful and interesting ways to learn and teach vocabulary in the EFL classroom.

With hundreds of thousands of words in the English language, teaching vocabulary can seem like a very daunting prospect. The average number of words that the native speaker uses around is only five thousand words in everyday speech. Moreover, the students will not need to produce every word they learn, some they will just need to recognize. Selecting what to teach, based on frequency and usefulness to the needs of the students is therefore essential. Once the teachers have chosen what to teach, the next important steps are to consider what students need to know about the items, and how the teacher can teach them (Richard, 2021).

Technology and teaching go hand in hand, no matter how much of a distraction phones and iPads can become in class. It is true that technology can be overwhelming when trying to understand how it works and taking the time to add “one more thing” to one’s lesson plans. However, integrating technology in the classroom can make a huge difference in regard to the success of the students and the sanity of the teacher. Using technology with vocabulary instruction has a huge number of benefits from assessment to engagement (Vocab, 2017). So the researcher tries to use one of the effective tools of technology that may help the pupils learn English vocabulary in an effective way.

### **Statement of the Problem**

The problem of the research was observed by the researcher through teaching English to grade three at El Dawa primary school that many pupils have had problems in learning vocabulary and this weakness clearly appears in the achievement of the pupils when they write or read English texts in class. The researcher decided to make a diagnostic test to stand on the type of the problem. This test included different questions on vocabulary.

### **Aim**

The current research aimed at:

-Identifying the effect of using intelligent tutoring system on enhancing learning vocabulary for primary stgsge pupils.

### **Hypothesis of the Study**

This study seeks to test the validity of the following hypothesis:

There is a statistically significant difference between the mean scores of treatment group and the non-treatment group in English vocabulary post-test in favor of the treatment group.

### **Method**

The current study adopted the quasi-experimental design where 60 pupils of the third grade primary stage from El-Dawa primary school, Beni-Suef Governorate were

randomly selected. They were assigned to two groups, a treatment group (N=30) and a non-treatment group (N= 30). The treatment group learnt by intelligent tutoring system in teaching English vocabulary, while the non-treatment group received the regular method of teaching vocabulary. Both groups received English vocabulary pre-posttest. Treatment took place during the first semester of the school year 2022/2023 for seven weeks.

### **Participants**

Sixty pupils of the third grade primary stage from El-Dawa primary school, Beni-Suef Governorate were randomly selected. They were assigned to two groups, a treatment group (N=30) and a non-treatment group (N= 30).

### **Instruments**

For the purpose of the study, the following instruments and materials were designed and used by the researcher:

- 1- A vocabulary pre-post test.
- 2- A teacher's hand book based on intelligent tutoring system.
- 3- Pupils' worksheets.

### **The pre-post English vocabulary Test**

#### **The General Aim of the Test**

The general aim of the test was to measure the effect of using intelligent tutoring system strategy in teaching English vocabulary for third year primary stage pupils, and how that would enhance their vocabulary learning. On the consideration that the treatment group members were taught using intelligent tutoring system Strategy, while the non-treatment group members were taught using the regular teaching strategy.

#### **Constructing the Pre/post English vocabulary Test**

To construct the test, the researcher referred to the directives of the Ministry of



Education particularly English vocabulary of primary stage and reviewed literature and related studies regarding English vocabulary learning.

### **Validity of the Pre/post English vocabulary Test**

To confirm that English Vocabulary Test measures what it is mainly designed to measure, it was evaluated by a panel of experts in educational studies and EFL specialists. Their recommendations and comments were carefully considered. Test questions were reformed according to their suggestions. For estimating the validity of the test, it was submitted to a panel of jurors (N=6), six faculty members in TEFL. There were some recommendations as follows:

- 1- They recommended modifying the questions; in order to fit the age group of the third year primary stage pupils.
- 2- Some of jury recommended reducing the number of questions. The validity of the test was established according to the following criteria:
  - a- The test items reflect the objectives.
  - b- The questions suit third year primary stage pupils ' level.
  - c- There is coherence between the test items and the table of specifications.
  - d- The layout is acceptable.
  - e- The time assigned is enough to answer all questions.

### **Reliability of the Pre/post English vocabulary Test**

To prove the reliability of the test, a pilot study was conducted, with a group of 20 pupils from El-Dawa primary school who were excluded from the sample, to check the reliability of the pre-test and post-tests. In order to prove that the test was reliable, Cronbach's Alpha was calculated and it was 0.89, which indicated that the questions were highly reliable. The correlation coefficients ranged between the score of each question and the total score of the scale from 0.46 to 0.79 which they are all high and function at 0.05.

### **Duration of the Pre/post English vocabulary Test**

The researcher specified the time needed for answering the test items during piloting

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the pre-post English grammar proficiency test on a randomly 20 students from El-Dawa primary school for boys and girls. The researcher calculated the time of the test of each student and divided the total time by their number and the average time was taken according to the following equation:  $1200/20 = 60$  minutes.

### **Administration of the Pre/post English vocabulary Test**

After modifying the test according to feedback of the jury members, the final form of the test which included (34) questions was pre-administered to both the treatment and non-treatment groups on 30 Sep.2022, namely, two days prior to the treatment, before teaching by using intelligent tutoring system. Test time was (60) minutes. The pupils were given an idea about the purpose of the test that it had nothing to do with their academic evaluation.

The post/test was administered to the two groups three days after the treatment which ended on 25 Dec, 2022. Post/test conditions were relatively the same as those of the pre-test in terms of place and time.

### **Test specifications table**

Types of questions	Number of questions	Score	Types of questions	Number of questions
Choose the correct answer	10	10	Choose the correct answer	10
Read and match	6	6	Read and match	6
Rearrange the following	2	2	Rearrange the following	2
Supply the missing letters	12	12	Supply the	12

			missing letters	
look and write	4	4	look and write	4
	34			34

### **The Aim of the Test Specification Table**

The researcher designed this table to determine the types of questions and the items which he wanted to measure by these questions as well as deciding on the objectives of each question and its relative weight as shown in appendix (H).

### **Constructing the Test Specification Table**

To construct the table, the researcher determined the types of questions which he would use in the English vocabulary test. He determined the words of the lessons which he tried to know if the pupils are able to learn and use or not. He constructed five types of questions as mentioned before in the description of the test:

### **Significances of the Study**

The researcher provides teachers of English with a tool that may help in teaching English language vocabulary to deliver the information faster and easier and it may make the pupils more effective.

### **Intelligent tutoring system may help pupils in the following:**

1. Recognize the meaning of each word in an easy way.
2. How to form sentences or questions in correct way using these words.
3. How to answer the questions without mistake.
4. How to keep the words quickly and make them memorable.
5. Know how to read correctly and answer the reading questions effectively.

### **Intelligent tutoring system may help teachers in the following;**

1. It may help them to deliver the information to their students faster and easier.
2. It may help teachers make the pupils more effective.
3. It may help teachers to achieve to the language proficiency to their pupils.
4. To make pupils depend on themselves and have self-autonomy.

**Intelligent tutoring system may help course designers in the following:**

1. It may help them to design programs that depend on intelligent tutoring system to make them easy to use.
2. It may help them to think in using modern teaching methods in their courses.

It may encourage them to ask programmers to build them intelligent tutoring systems to help them in their courses.

**Definition of Terms**

**Intelligent tutoring system;**

Intelligent tutoring system (ITS) is defined as “a computer learning environment that helps students' master knowledge and skills by implementing intelligent algorithms that adapt to students at a fine-grained level and that instantiate complex principle of learning.” (Graesser et al., 2018). Intelligent Tutoring System is an eLearning system that can adapt to an individual learner (Dennis , 2018). Libi Shen, Irene Chen, Anne Grey and Anchi Su defined intelligent tutoring system as "A computer system that provides customized and immediate instruction and feedback to students without the intervention of a human teacher" (Libi et al., 2021).

Intelligent tutoring system is a personal training assistant that captures the subject matter and teaching expertise and individualize the curriculum to meet each learner's needs in order to master the subject matter (Irwin et al., 2009). Intelligent tutoring system is A computer system that tutors a student on some subject matter by presenting course content based on a model of the student (Carol et al., 2009). It is a computer program that contains some intelligence and it can be used in learning. Moreover, ITS is an outgrowth of the earlier computer-aided instruction (Joel et al., 2013). ITS is a computer-supported learning system which uses artificial intelligence techniques in order to adapt to the learner (Emmanuel and Claude, 2008).

**Procedural definition**

The researcher defines intelligent tutoring system as one of the Web 3 tools that enables the learner to master the content that the teacher wants to teach in a simple and fast way through the use of artificial intelligence. The application and the sites

that support artificial intelligence and Chat GPT teach pupils the content developed by the teacher through images, videos, examples, questions and hyperlinks. The learner searches for the content that he wants to learn individually or collectively using an audio engine, image or definition.

The application or the sites identify what the pupil wants to learn and displays everything relates to the content that he wants to learn. They displays everything relates to the content that the pupil wants, and evaluates the pupil and corrects his mistakes without the intervention of the teacher..

### **Vocabulary**

(Rouhani and Purgharib, 2013) defined vocabulary as, a language element, that links the four language skills including listening, speaking, reading, and writing in learning a foreign language. Vocabulary means words that learners recognize and understand when they are used in context (Stuart, 2008). Vocabulary can be defined as " words we must know to communicate effectively; words in speaking (expressive vocabulary) and words in listening (receptive vocabulary)" (Neuman and Dwyer, 2009).

Vocabulary is the collection of words that an individual knows (Linse, 2005). (Hebert and Kamil, 2005) define vocabulary is the knowledge of meanings of words. (Diamond and Gutlohn, 2006) defined vocabulary as the knowledge of words and their meanings.

### **The operational definition**

The researcher defines vocabulary as the total number of words that are needed for third grade primary pupils to communicate ideas and express the speakers' meaning.

#### **4.1.1. Results of the Study**

#### ***Testing the hypothesis***

"There is a statistically significant difference between the mean scores of non-treatment group and the treatment group in vocabulary post- test in favor of the treatment group."

**Table: (1) Presents t- test results of the English vocabulary post –test**

<b>Group</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>t-test</b>	<b>Sig level</b>	<b>Effect size</b>
<b>treatment</b>	30	55.57	1.67			
<b>Non- Treatment</b>	30	32.93	3.37	32.92	0.000	0.95

Table: (1) shows results concerning the first hypothesis which addressed the differences between the mean scores of the non-treatment group and those of the treatment group on the post administration of a pre post English vocabulary test.

t-test for independent samples was used to compare the mean scores of the treatment and non-treatment groups. Table (1) proves that there was a significant difference between the results of the non-treatment group and the treatment group, the calculated effect size value of the instructional strategy on students' writing skills was (0.95). Therefore, it can be inferred that the intelligent tutoring system had a large effect on the treatment group pupils' learning vocabulary on the post- test as compared to that of the non- treatment group pupils receiving conventional teaching. Moreover, in order to make sure that the results obtained from the t-tests are reliable and to measure the effect of intelligent tutoring system on pupils' learning English vocabulary, the effect size of this tool on pupils' learning English vocabulary was calculated according to the following Formula suggested by (Dunlap, 1994).

2t

d =

$\frac{2t}{\sqrt{d.f}}$

Where d = the calculated effect size, t = the estimated t value and  $\sqrt{d.f}$  = the square root of degrees of freedom. The referential framework for identifying the effect size

of t- values is as follow:

**Table: (2) The referential framework for identifying the effect size of t-values**

<b>Effect size ( d value)</b>	<b>Degree</b>
From 0.2 till less than 0.5	Small
From 0.5 till less than 0.8	Medium
0.8 or more	Large

As shown in table: (2), the calculated effect size value of the instructional tool on pupils' learning English vocabulary was (0.95). Therefore, it can be inferred that intelligent tutoring system had a large effect on the treatment group pupils' learning English vocabulary and the performance on the post- test as compared to that of the non-treatment group pupils receiving conventional teaching.

### **Discussion of Results**

Several existing studies on intelligent tutoring system focus on the importance of ITS in the educational sector. It can be advised that ITS should replace large group instructor lead leaning session in every school or training institute. A study was conducted by (Dabae et al., 2018). They studied the demand for ITS in educational organizations by teachers. The results suggested that more than half of the teachers want to use technologically equipped systems for delivery of lectures but sadly most of the organizations are not providing this facility. There is no doubt that ITS has increased the efficiency of students, (Ghali, et al., 2018) proved in their study that more than 97% of the teachers were satisfied with the materials provided by ITS and 90% students benefit from this system and recorded significantly measurable result. (Kulik & Fletcher, 2016) compiled 50 studies on ITS with the stipulation that all studies they analyzed involved a control group that received ITS instruction. They

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distinguished ITS instruction from other computer-based instruction by requiring that the ITS operated from a knowledge database and that they used a computational and dialogue-generating tool that extracted relevant information from said knowledge database. After analyzing these 50 studies, Kulik and Fletcher discovered that in 46 of the 50 studies, students who received ITS instruction outperformed students in traditional classrooms.

Several contemporary studies articulate the problematic situations in teaching vocabulary. The main difficulty is related to the hesitant teacher who confuses to select the best approach to teach vocabulary and at many times cannot choose how, where, and when to start teaching words using a pedagogical concentration (Berne & Blachowicz, 2008). Teaching words is of great importance and a critical factor in learning a language, as words are the main pillar of any language (Thornbury, 2002). Learning a language without words is almost questionable, since it is the building blocks; even useful communication cannot be effective without words. So, it is not astonishing to have clear harmonization between students and teachers on the aspect of vocabulary as it is a leading factor in developing the teaching process of any language (Walters, 2004).

(Nation, 2002) pointed out the importance of presenting the words by teachers in an easy way so that students can actually remember the words. He added that students need to relate vocabulary to their own lives and to categorize the family of the word as the easy presenting will facilitate the understanding of syntax. (Renatha, 2009) explained the role of strategy used by teachers in teaching English vocabulary and in guiding learners into success in learning English vocabulary. Noticeably, the method of English language teaching is one of the very important aspects which promote children's ability to use vocabulary and new words. Many recent pedagogical techniques are common and widely used include the use of dictionaries, student book, workbooks, materials, word-lists, choral negotiation, and visuals such as pictures and drawings.



## **Conclusions**

Within the delimitations of the study and on the basis of the study results, the following conclusions have been drawn:

- 1- Intelligent tutoring system is effective in developing pupils' reading skills and learning vocabulary.
- 2- Intelligent tutoring system may provide a means to foster language performance among students as it provides an enjoyable chance to teach reading and vocabulary to EFL learners.
3. Intelligent tutoring system strategy has significance in shaping the cognitive structure and generating meaningful learning. This strategy is usable for every branch of education.
- 4- Intelligent tutoring system appears to enhance the learners' confidence in learning English.
5. Intelligent tutoring system increases the pupils' success and remembrance by the help of its properties such as attracting attention, good presentation of information and having more enjoyable learning atmosphere.
- 6- Intelligent tutoring system represents a visual representation of the learners' cognitive structure, and therefore, can reveal the myth in the learner's mind.
- 7- Through Intelligent tutoring system learners become meta-cognitively, motivationally and behaviorally active participants in their learning process.

## **Recommendations of the Research**

Based upon the findings of the study and the above mentioned conclusions, the following recommendations are suggested:

### **1- Learners of English Language:**

1. EFL learners should be encouraged to use intelligent tutoring system to enhance

their reading skills and learning vocabulary.

- 2- Pupils centered learning should be emphasized and activities (before, during and after learning) should be maximized.
3. Pupils should become the center of the learning process and should share more responsibilities. Hence, more opportunities should be given to self-evaluate the reading performance.
4. Pupils should be motivated to freely communicate and interact with each other to practice the reading activities and learn vocabulary in good way.
5. Pupils should play their roles in learning reading skills. They have to participate actively in different activities in the classroom to use the language in real life situations.
6. Pupils should use ChatGPT in learning as an electronic tutor.

## **2--Teachers of English are recommended to**

1. Follow the current trends and research in teaching English to recognize solutions to the teaching problems and its implementations.
2. Think about the usage of intelligent tutoring system and its use in teaching English for their importance in achieving the teaching intended goals and outcomes.
3. Have an idea of intelligent tutoring system variations to take individual differences, subject matter, pupil abilities, and teaching learning context into consideration.
4. Take care of planning and time organization in applying intelligent tutoring system as it has to be limited with the time that pupils need to learn in order not to waste their time.
5. Start intelligent tutoring system teaching with short video that shows pupils how to use it and how to learn by using it.
- 6- Encourage group work and pair work during the process of reading.
- 7- Give immediate feedback after each activity to enhance pupils' learning.
- 8- Evaluate reading during the whole year regularly to help pupils be

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- 9- Use more active learning strategies and activities during the process of learning in general and in teaching writing in particular.
- 10- Change traditional roles from being just as a carrier of knowledge to a facilitator, a guide, an adviser, a manager and an encourager for the educational process.
- 11- Organize special training for the low-achievers to give them the opportunities to participate and correct their mistakes.
- 12- Develop pupils' reading skills by giving them enough time to interact with each other freely.
- 13- Enroll in training courses for self-development to be able to use the modern active learning strategies.
- 14- Provide pupils with a relaxing, effective, and interactive environment that fosters interaction and helps to develop the pupils' restorative learning skills.
- 15- Exchange their ideas and experiences with other teachers of English from different countries.
- 16- Offer different opportunities for pupils to use the language they know by using different activities and taking into their consideration the individual differences among pupils'.

### **3- Course Designers**

- 1- More concentration should be paid to develop curricula which develop creative thinking of pupils rather than memorizing
- 2- Since reading is an important skill in developing other skills, it should receive the attention it deserves, so more focus should be given to reading especially in primary and preparatory stages.
3. Course Designers are advised to integrate the use of intelligent tutoring system in the English curriculum.
4. Course Designers Put into consideration the new methodologies when design the educational curricula especially those related to teaching languages.

5. Course Designers should design educational curricula which are related to the real-life to make the pupils more attractive for the studying.
- 6- Course Designers have to insert different activities in the curriculum which help pupils work cooperatively and give them opportunity to write more.
7. Course Designers should design educational curricula which depend on using active learning strategies in general and with intelligent tutoring system in particular to develop reading skills and give pupils the opportunities to practice the language freely and correctly.

#### **4 -English language experts, specialists, and supervisors are recommended to**

1. Organize training sessions and workshops to introduce intelligent tutoring system to in-service teachers to benefit from it in enhancing their teaching with a variety of cooperative techniques that improve learning, eliminate boredom and increase pupils' motivation.
2. Ask teachers to use different methods and new trends of active and cooperative learning in teaching English language such as intelligent tutoring system and other modern strategies that proved to have positive effects on pupils' performance.
3. Encourage teachers to emphasize on learner- centered classroom regarding its importance in promoting and retaining learning.
4. Set training courses should be provided for EFL teachers to give them practice on the use of intelligent tutoring system in the learning process.
5. Organize workshops for teachers of English about using intelligent tutoring system in teaching English language in general due to the effect of this strategy on developing the language skills.

#### **Suggestions for Further Research**

In light of the present research results, more studies can be suggested in the area of using digital graphic organizers strategy in teaching English as a foreign language:

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- 1- Conducting a study to investigate the effect of using intelligent tutoring system on developing Pupils' motivation towards learning English language.
- 2- Conducting a study to investigate the effect of using intelligent tutoring system on developing receptive skills (listening and speaking)
- 3- Conducting a study to investigate the effect of intelligent tutoring system on developing pupils' fluency.
- 4- Conducting a study to investigate the effect of intelligent tutoring system on developing prep language skills integration.
- 5- Conducting a study that investigates the effectiveness of using intelligent tutoring system on the students of special needs.
- 6- Conducting a study that investigates the effectiveness of using intelligent tutoring system on the students' attitudes towards English as a foreign language.
- 7- Conducting studies on using intelligent tutoring system to develop some other English language branches such as drama, translation, poetry and telling stories.
- 8- Conducting a study to find out the effect of positive attitudes of teachers towards using intelligent tutoring system on developing the English speaking skills for their students.
- 9- Conducting a study to find out the effectiveness of using intelligent tutoring system on developing the students' other language skills and sub-skills at different educational stages.
- 10- Conducting a study to find the effect of using ChatGPT in teaching writing for prep stage pupils.

## References

- Berne, J. I., & Blachowicz, C. L. (2008).** What reading teachers say about vocabulary instruction: Voices from the classroom. *The Reading Teacher*, 62(4), 314-323.
- Carol, L., Diane, L., & Neil, M. (2009).** *COTS Computer Game Effectiveness*. <https://www.igi-global.com/chapter/cots-computer-game-effectiveness/20091>
- Dabae, L., Yeol Huh<sup>1</sup>, H., Chun, Y. L., & Charles, M. (2018).** Technology Functions for Personalized Learning in Learner-Centered Schools. *Educational Technology Research and Development*, 66, 1269-1302. <https://doi.org/10.1007/s11423-018-9615-9>
- Dennis, m. (2018).** A Reference Architecture for Game-Based Intelligent Tutoring. <https://www.igi-global.com/chapter/reference-architecture-game-based-intelligent/52517>
- Derakhshan, A. (2015).** *The challenges of teaching English language: The relationship between research and teaching*. *International Journal of Linguistics* Vol. 7(1), pp.102-110.
- Diamond, L., & Gutlohn, L. (2006).** *Vocabulary teaching: looking behind the word*. <https://academic.oup.com/eltj/articleabstract/50/1/52/378248>
- Emmanuel, B., & Claude, F. (2008).** *Cross-Cultural Adaptation of E-Learning*. <https://www.igi-global.com/chapter/cross-cultural-adaptation-learning/20833>
- Ghali, M. A., Ayyad, A. A., Naser, S. A., & Laban, M. A. (2018).** An Intelligent Tutoring System for Teaching English Grammar. *International Journal of Academic Engineering Research (IJAER)*, 1-6.
- Gianni, P., & Esplica, I. (2021).** *Handbook of Research on Teaching With Virtual Environments and AI*.
- Grsser,c., Hu,x., & Sottolare, R.(2018).** *International Handbook of the LearningSciences*. <https://www.taylorfrancis.com/chapters/edi>

[t/10.4324/9781315617572-24/intelligent-tutoring-systems-arthur-graesser-xiangu-hu-robert-sottolare](https://doi.org/10.4324/9781315617572-24/intelligent-tutoring-systems-arthur-graesser-xiangu-hu-robert-sottolare)

- Han, X., & Niu, L. (2010).** *Subject Information Integration of Higher Education Institutions in the Context of Web3.0*, 2nd International Conference on Industrial Mechatronics and Automation,. Cambridge: Cambridge University press.
- Heibert, E. H., & Kamil, M. L. (2005).** *Teaching and Learning Vocabulary*
- Hilles, M. M., & Abu Naser, S, S. (2017).** *Knowledge-based Intelligent Tutoring System for Teaching Mongo Database, European Academic Research.* v, 4(10).
- Irwin, B., Danielle, S., Joseph , P & Keith, K .(2009).** *NLP Techniques in Intelligent Tutoring Systems.* <https://www.igi-global.com/chapter/nlp-techniques-intelligent-tutoring-systems/10400>
- Jinhong, C. (2008).** *The use of advance organizers in the learning and retention of meaningful verbal materials.* Journal of Education Psychology, pp. 51, 267-272.
- Joel, J., Pedro F., & Isabel, T. (2013).** *Recent Advances in Intelligent Tutoring Systems: A Case Study.* <https://www.igi-global.com/chapter/recent-advances-in-intelligent-tutoring-systems/80312>
- Juan, M. S., (2008).** Web 3.0: A Vision for Bridging the Gap between Real and Virtual ACM 978-1- 60558-319-8/08/10
- Kulik, J. A., & Fletcher, J.D. (2016).** Effectiveness of intelligent tutoring systems: A meta analytic review. Review of Educational Research, 86(1), 42–78.
- Libi, s., Irene, c & Anne, G.(2021).** *Teaching and Learning With Artificial Intelligence.* <https://www.igi-global.com/chapter/teaching-and-learning-with-artificial-intelligence/261496>
- Linse, T. (2005).** *Practical English Language Teaching: Young Learners*, (New York: The McGraw-Hill Companies, Inc, p. 121)
- Lorena, S. (2020).** *HowtoTeachESLVocabulary.*

- <https://bridge.edu/tefl/blog/teach-esl-vocabulary>
- Nation, P. (2002).** *Methodology in language teaching: An anthology of current: practice Best practice in vocabulary teaching and learning.* Cambridge: Cambridge University Press.
- Neuman, S. B., & Dwyer, J. (2009).** Missing in action: Vocabulary instruction in pre-K. *The Reading Teacher*, 62(5), 384–392.
- Rajiv, I., & Manohar, L. (2011).** *Web 3.0 in Education & Research* International Journal of Information Technology, Vol. 3 No 2, ISSN 0973-5658.
- Renatha K.D. (2009).** *A Comparative study between FAIES and Grammar translation method in teaching English vocabulary at LPIA Depok.* Jakarta: Gunadarma University.
- Richard, F. (2021).** *Presenting vocabulary.*  
<https://www.teachingenglish.org.uk/article/presenting-vocabulary>
- Rouhani, M., & Pourgharib, B. (2013).** *The Effect of Games on Learning Vocabulary.* International Research Journal of Applied and Basic Sciences Vol, 4 (11):3540-3543 Science Explorer Publications
- Sakib, M. (2023).** *What is ChatGPT?* [file:///C:/Users/Ahmed/Downloads /What is ChatGPT.pdf](file:///C:/Users/Ahmed/Downloads/What%20is%20ChatGPT.pdf)
- Sarah, R. (2021).** *Technology in the classroom: remote learning during COVID-19and beyond*  
<https://www.ringcentral.com/us/en/blog/technology-in-the-classroom/>.
- Strickland, J. (2011).** *How Web 3.0 Will Work*  
<http://computer.howstuffworks.com/web-30.htm>,
- Stuart, W. (2008).** *Receptive and productive vocabulary size of L2 learners, Studies in Second Language Acquisition*, v.30 (01), pp. 79 – 95.
- Thronbury , S.(2002).** **How to Teach Vocabulary.** Pearson longman: United Kingdom ProQuest® Dissertations & Theses.
- Vocab, G. (2017).** *Using Technology in Teaching and Learning Vocabulary.* <https://www.sadlier.com/school/ela-blog/using-technology-in-teaching-and-learning-vocabulary>



**Walters, J.M. (2004).** Teaching the use of context to infer meaning: A longitudinal survey of L1 and L2 vocabulary research'. *Language Teaching*, 37(4), 243-252.