# Vocabulary Development in English for Primary School Pupils with Learning Disabilities Using Digital Storytelling

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## Abstract

This research aimed to examine vocabulary development in English for primary school pupils with learning disabilities through using digital storytelling. A quasi-experimental approach was used to collect data. The total number of research participants is (20) pupils. They were selected and divided into two groups; one is the experimental group and the other is the control group and each one consists of (10) pupils. The researchers prepared and administered a vocabulary skills' test. The necessary vocabulary skills for fourth grade were determined through using a checklist accepted by a jury of experts in teaching EFL and special education. The experimental group received instruction through using digital storytelling, whereas the control group received regular instruction. The results of the research confirmed the vocabulary development in English for fourth grade primary school pupils with learning disabilities. Thus, the aim of the research was achieved as using digital storytelling revealed a great effect size on the vocabulary skills development for the participants of the experimental group. The significant of this research is to develop vocabulary skills for primary school pupils with learning disabilities. Also, it is expected that the research findings would present further confirmation on the signification of developing most necessary vocabulary skills in English for primary school pupils with learning disabilities. Moreover, it may contribute to attracting the attention to the importance of using digital storytelling in developing vocabulary skills.

**Key words:** Vocabulary; Digital Storytelling; Learning Disabilities

## المستخلص

هدف البحث إلى التحقق من تنمية المفردات اللغوية باللغة الإنجليزية لتلاميذ المرحلة الابتدائية ذوي صعوبات التعلم من خلال استخدام سرد القصص الرقمية. وقد تكونت عينة البحث من (٢٠) تلميذًا وتم تقسيمهم عشوائيًا إلى مجموعة تجريبية ومجموعة ضابطة تكونت كل منها من (١٠) تلاميذ. كما أعد الباحثان اختبار المفردات اللغوية باللغة الإنجليزية. وتم تحديد مهارات المفردات اللغوية اللازمة لتلاميذ الصف الرابع الابتدائي وتلقت المجموعة التجريبية التدريس باستخدام سرد القصص الرقمية، بينما تلقت المجموعة الضابطة التدريس التقليدي. وأكدت نتائج البحث تنمية المفردات اللغوية باللغة الإنجليزية لتلاميذ الصف الرابع الابتدائي ذوي صعوبات التعلم. وبالتالي تحقق الهدف من البحث؛ حيث أن حجم الأثر لاستخدام سرد القصص الرقمية كان كبير في تنمية المفردات اللغوية باللغة الإنجليزية اللازمة لتلاميذ الصف الرابع الابتدائي لذوي صعوبات التعلم. و قد أوصى البحث بضرورة اهتمام المعلمين بتنمية المفردات اللغوية باللغة الإنجليزية باستخدام سرد القصص الرقمية لذوي صعوبات التعلم. وقد اقترح البحث استخدام سرد القصص الرقمية فى تنمية مهارات لغوية أخري.

**الكلمات المفتاحية :** المفردات اللغوية ـ سرد القصص الرقمية ـ صعوبات التعلم

## Introduction

Technology is a powerful means that can support education in several ways. It plays a vital role as teachers can create instructional materials to enable new methods for learners to learn and work together easily. Also, using technology provides opportunities to change education to be effective, efficient and accessible to everyone everywhere.

According to Robin (2008, p.222) digital storytelling is a technology application that is used to help teachers overcome some difficulties they may face in teaching in their classrooms. Also, it is a useful educational tool that develops learners' understanding and helps them accomplish and comprehend their writing process. Besides, students discover their lives in both an extraordinary and familiar environment through using digital storytelling (Saunders, 2014, p. 61).

Moreover, Anilan et al. (2018, p.264) indicated that using technology in teaching provides active learning environments and makes it easier to understand any material. The fact that the new approaches are required in education and that the digital storytelling among these new approaches has a nature to respond to learners' needs has increased the importance of using digital storytelling method in classrooms. Furthermore, it is an unusual method that makes learning English more interesting. It affords students a chance to improve their knowledge, education, and skills. (Syafryadin & Salniwati, 2019, p. 3147)

Fluency in English language depends on the awareness of its vocabulary accomplished by language learners. Although developing vocabulary is vital, it causes several problems, particularly, to non-native learners of English. Learners with a low vocabulary knowledge show weakness in academic performance in different courses related to language skills. (Afzal, 2019, p.81)

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While vocabulary is a vital aspect of language, teaching new vocabulary words in foreign language classrooms may be a confrontation for many instructors. This is because a whole knowledge of a word requires more than merely knowing the word or having ability to give its meaning; it consists of learning its meaning, form, and use. (Kacani & Cyfeku, 2015, 390)

In addition, Biemiller (2012, p.29) assured that there is little attention to vocabulary development. Moreover, a number of studies such as the studies of Beach et al. (2015), Kennedy et al. (2015), Kuder (2017), Jalaluddin et al. (2020), and Mohamed and Shaaban (2021) emphasized the fact that vocabulary skills are neglected with pupils with learning disabilities despite their great importance in learning English skills. Furthermore, O'Connor et.al., (2022, p.108) revealed that learners with learning disabilities regularly have extraordinary difficulty with the vocabulary words in texts because these academic words are not usually used in dialogue and instead appear in texts these learners may be unable to read independently.

**Therefore, the researchers after reviewing the literature and previous studies saw that using digital storytelling is important for developing the most necessary vocabulary skills in English for 4$^{th}$ grade primary school pupils with learning disabilities for the following reasons:**

1. The use of digital storytelling is mainly interesting in teaching foreign languages because it encourages practicing different language skills. (Norman, 2011)
2. Digital storytelling is important for teaching social skills to pupils with autism. (Chatzara, Karagiannidis, & Stamatis, 2012)

3. Ohler (2013) pointed out that digital storytelling can help learners learn language for the interaction between listening, writing, and speaking.

4. According to Tahriri (2015) using digital storytelling motivates learners in language learning and improves their oracy skills.

5. Using digital storytelling can support diverse classes with students with learning disabilities, contributing to enhancing social and psychological abilities, and may therefore be used to reinforce learners with learning disabilities in inclusive classrooms. (Giannakou &    Klonari, 2019).

6. Digital storytelling improves the communication and collaboration between learners and their teacher. Also, it promotes engagement and entertaining in learning. (Özüdoğru and Çakır, 2020)

7. It is used to improve attention, activity level and related behaviour of autism pupils. (Ecoben, 2021)

Based upon what is mentioned above, it is clear that using digital storytelling is so important in developing vocabulary skills. So, the current research attempted to examine developing most necessary vocabulary skills in English for 4th grade primary school pupils with learning disabilities using digital storytelling to solve a due problem they face in learning English.

## Context of the Problem

**The problem of the current research was derived from the following resources:**

**First**: The problem of the research was supported by reviewing previous related studies. Recent related studies such as Beach et al. (2015), Kennedy et al. (2015), Kuder (2017), Jalaluddin et al. (2020), and Mohamed and Shaaban (2021) assured the weakness of EFL students in vocabulary skills and recommended finding new strategies, methods and techniques to

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develop these skills. So, there was a bad need for using new strategies to develop EFL pupils' vocabulary.

**Second:** The researchers designed and administered a vocabulary skills test to the 4th grade primary school pupils with learning disabilities in English to approve, document and analyze the information derived from the review of the related previous studies. Pupils' answers revealed the profound weakness in their vocabulary skills and are in a dire need of developing their vocabulary skills.

Accordingly, it was doubtless that those students were in dire need of developing their vocabulary skills in English.

## Statement of the Problem

The research problem was identified in 4th grade primary school pupils with learning disabilities in English weakness in vocabulary skills. Thus, the present research attempted to help such pupils acquire different vocabulary skills using digital storytelling.

## Questions of the Research

**This research tried to answer the following main question:**

"What is the effect of using digital storytelling on developing the most necessary vocabulary skills in English for 4th grade primary school pupils with learning disabilities?"

**So, the following sub questions developed:**

1. What are the most necessary vocabulary skills in English for 4th grade primary school pupils with learning disabilities?

2. What are the features of the proposed framework using digital storytelling on developing the most necessary vocabulary skills in English for 4th grade primary school pupils with learning disabilities?

3. What is the effect of using digital storytelling on developing the most necessary vocabulary skills in English for 4th grade primary school pupils with learning disabilities?

## Hypotheses of the Research:

**The present research hypothesized that**:

1. There is a statistically significant difference between the experimental group and the control group pupils' mean ranks on the post-administration of the vocabulary skills test in favour of the experimental group.
2. There is a statistically significant difference between the experimental group's mean ranks on the pre- and post-administrations of the vocabulary skills test as a whole and each skill in favour of the post-administration.
3. There is no statistically significant difference between the experimental group pupils' mean ranks on the post and follow up administrations of the vocabulary skills test.

## Variables of the Research

**Independent Variable:** This referred to the treatment implemented with the experimental group in this research (the proposed framework using digital storytelling).

**Dependent Variable:** This referred to the development in the experimental group's vocabulary skills by the treatment.

**Aims of the Research**

## This research aimed at:

1. Identifying the vocabulary skills most necessary in English for $4^{th}$ grade primary school pupils with learning disabilities.
2. Developing the vocabulary skills in English for $4^{th}$ grade primary school pupils with learning disabilities through designing a proposed framework digital storytelling
3. Measuring the effect of the proposed framework using digital storytelling on developing the vocabulary skills in English for $4^{th}$ grade primary school pupils with learning disabilities.

## Significance of the Research

**The present research's significance lies in the fact that it was an attempt to develop 4th grade primary school pupils with learning disabilities and it is hoped that the research results would contribute to:**

1. Further affirmation on the importance of developing most necessary vocabulary skills in English for 4th grade primary school pupils with learning disabilities.

2. Attracting the attention to the importance of using digital storytelling in developing vocabulary skills in English.

## Delimitations of the Research

**The present research was delimited to the following**:

1. A sample of (20) 4th grade primary school pupils with learning disabilities.

2. Developing only the most necessary vocabulary in English for 4th grade primary school pupils with learning disabilities.

3. Using digital storytelling in teaching (9) vocabulary skills for 4th grade primary school pupils with learning disabilities.

4. A limited duration for implementing digital storytelling for 4th grade primary school pupils with learning disabilities. (Two sessions per week, and each session takes 90 minutes over a period of five weeks).

## Definitions of Terms

### 1. Digital Storytelling:

According to digital storytelling Reinders (2011, p. 2) digital storytelling is defined as simply telling a story in an electronic form. The users can combine text, audio, music, videos and images to create a digital story.

Also, Razmi et al. (2014, p.1542) defined digital storytelling as the recent manifestation of the early art of storytelling. It derives its influence by merging music, pictures, narrative and voice together, thus giving profound element and vivid colour to conditions, characters, experiences, and visions.

Moreover, digital storytelling is defined as mixing the art of telling stories with a combination of digital media, including text, pictures, recorded audio narration, video, and music. These multimedia elements are combined using software to say a story that revolves around a definite theme or topic and frequently covers a certain point of view. (Robin, 2016, p.18)

In the present research, digital storytelling is defined as an instructional style used to present stories based on technology (Photo Story 3 for Windows software) to create stories included texts, images and sounds whether by the teacher or the pupils.

## 2. Vocabulary:

Neuman and Dwyer (2009, p. 385) defined vocabulary as words we recognize to connect efficiently such as words in dialogue which is expressive vocabulary and words in listening which is receptive vocabulary.

Also, Sukrina (2010, p.3) defined a vocabulary as totally the words recognized and used by a specific person or a specific group.

In this research, vocabulary is defined as 4th grade primary school pupils' ability to: recognize synonym and antonym of the word correctly, identify different parts of speech, use word roots, prefix, and suffix correctly, identify the correct definitions of words, spell the words correctly, and use the words in the appropriate grammatical forms.

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## 3. Learning Disabilities:

Cortiella and Horowitz (2014, p.3) defined learning disabilities as unpredicted, major complications in academic accomplishment and linked parts of learning and behaviour in individuals who have not responded to high-quality teaching and for whom struggle cannot be recognized to medical, educational, environmental or psychiatric causes. Also, The National Joint Committee on Learning Disabilities (NJCLD) defined learning disabilities as a lack that has several categories of disabilities which obviously prove a difficulty in understanding and using skills in listening, speaking, reading, writing, reasoning and or math skills (Gartland & Strosnider, 2018, p. 195).

In this research, learning disabilities defined as a category of 4$^{th}$ grade primary school pupils who have difficulties in recognizing and using vocabulary in English.

## Theoretical Background

The theoretical background consists of three sections. The first section is about some overviews of digital storytelling use in English language teaching, stages of using digital storytelling, previous studies, and steps of using digital storytelling. The second section includes vocabulary importance and its skills. The third section presents different learning disabilities characteristics and types of learning disabilities.

**The First Section: Digital Storytelling**

**Digital Storytelling Significance in Teaching English Language Skills**

Several studies have shown that digital storytelling is necessary in teaching and learning as it makes educational environments more attractive and exciting. According to Rossiter and Garcia (2010) digital storytelling helps learners create their own learning and involve them in an inquiry-based on dynamic learning process. It may also bridge language barriers because using stories is more easily adaptable than other mediums. This is because they can be presented in a variety of ways such as through pictures, videos, and podcasts.

Also, Castaneda (2013) indicated that using digital storytelling allows learners create improved type of their stories, which motivates them to learn the language and develop literacy. Besides, Sandaran and Kia (2013) indicated the importance of digital stories for developing listening comprehension among primary school pupils. Moreover, Razmi et al. (2014) revealed that the process of creating digital storytelling develops students' literacy skills and oral performance. Furthermore, Alkhlili (2018) proved that using digital stories is important to develop pupils' reading skills among first year preparatory school pupils.

From what is mentioned above, it is clear that using digital storytelling is very important to develop learners' English language skills. Also, creating digital storytelling encourage learners to be active in the learning process.

## Software Applications Used in Creating Digital Storytelling

According to Botturi et al. (2014, 5-6) there are various software applications have been used in storytelling tasks. MS Photo Story is software which was designed to improve storytelling whereas there are other software used for general purpose applications that can be involved into storytelling assignments such as MS MovieMaker, Apple iMovie, MS PowerPoint, Audacity, and Apple Garage Band. Recently, mobile technologies have also been used in digital storytelling projects.

## Stages for Creating Digital Storytelling

Frazel (2010) classified the stages of creating and using digital storytelling into three stages. The first stage is the preparation stage at which learners should think out the parts of their work so that may influence the final product. To do this, they can use a variety of tools and techniques to write their speech. The second stage is the production stage after collecting the necessary information and writing a script, learners begin to design their product using various applications for creating videos, presentations, audio narration, and so on. The final stage is the presentation stage at which learners must be sure in saving and gaining access to final product.

**Also, Robin (2016) classified the steps of creating digital stories into twelve steps as follows:**

1. Choose a topic for your digital story
2. Investigate the topic
3. Write the initial design of the script
4. Receive feedback on the script after sharing it with peers
5. Revise the script just writing and rewriting
6. Search and add pictures
7. Respect copyrights
8. Build a storyboard
9. Record audios for the story
10. Support background music (optional)
11. Construct the digital story
12. Broadcast the digital story using online platforms like Youtube, Google Drive, Microsoft Onedrive, and Dropbox.

**The Second Section: Vocabulary**

**Vocabulary Importance**

Numerous studies have shown that teaching vocabulary is required in teaching and learning foreign languages. Al-Dersi (2013) showed that vocabulary is a very important aspect of teaching and learning any foreign language as the familiarity of vocabulary regulates and chooses the level of a foreign language learner. It shows a very essential role in the major language skills such as listening, speaking, reading and writing.

Besides, Alqahtani (2015, p.21) claimed that vocabulary acquisition is necessary for positive foreign language use for without wide vocabulary, a language learner will be incompetent to use the structures and functions properly in communication. So, learning vocabulary is fundamental to language teaching and has a vital importance to language learners. Furthermore, vocabulary acquirement has a significant role in conducting a language. A student with inadequate vocabulary size will not do well in every phase of language itself. (Susanto, 2017, 183)

From what is mentioned above, it is clear that teaching vocabulary is essential to English language learning as it has a major role in language skills such as speaking, listening, writing and reading.

**Vocabulary Skills**

Awad **(2011, p.1629) stated that vocabulary skills are as follows:**

1. Identifying the correct definitions of words.
2. Spelling the words correctly.
3. Knowing in what ways the word can combine with other words (i.e., its correct collocation).
4. Using the dictionary to determine the meaning of an unfamiliar word.
5. Using the words in the correct grammatical forms.
6. Knowing synonyms of the words.
7. Knowing antonyms of the words.

## The Third Section: Learning Disabilities

**Learning Disabilities Characteristics**

According to Schuchardt et al. (2008) pupils with learning disabilities struggle with working memory and central executive functioning due to major limitations in getting the basic skills required for effective reading. Also, Swanson et al. (2013, p.5) claimed that pupils with learning disabilities have very exact deficiencies in one or more of the psychological procedures related to learning including language processing such as understanding and expressing information using words, visual-spatial processing such as distinguishing or organizing visual information, visual-motor processing such as carrying out hand-eye activities, phonological processing such as recognizing and using speech sounds, processing speed such as speed of taking in, using or pulling out information, and decision-making functions such as planning and organizing.

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Besides, some common behaviours in learning disabilities and language achievement are difficulty concentrating, poor auditory memory, difficulty following directions, a tendency to become quickly frustrated, and challenges in processing difficult language (Klingner & Eppolito 2014, p.2). Moreover, Ali and Rafi (2016) indicated that pupils with learning disabilities may have difficulty in writing, spelling, reading, and cognition and shaping information if left to figure things out by them or if taught in predictable ways.

Furthermore, Namkung and Peng (2018, p.4) revealed that although learners with learning disabilities have normal to above-normal intelligence, they display shortages in cognitive abilities, such as working memory, attention, processing speed, and long-term memory, compared to their naturally developing peers. For instance, learners with learning disabilities have major trouble attendance to classroom instruction and ignoring other provocations (For example, auditory and visual) in the classroom.

According to what is mentioned above, it is clear that learners with learning disabilities have normal to above-normal intelligence, they show lacks in cognitive abilities, such as attention, processing speed, working memory, and long-term memory, compared to their naturally developing peers. Also, they may have struggle in spelling, writing, reading, and reasoning.

## Types of Learning Disabilities

**Nasser elSayed (2013, p.126) revealed that types of learning disabilities are as follows:**

a) Reading learning disabilities (dyslexia): This type involves difficulty in understanding the relationship between sounds, letters and words, inability to grasp the meaning of words, phrases, and paragraphs, letter and word recognition, understanding words and ideas, reading speed and fluency, and general vocabulary skills.

b) Learning disabilities in writing (dysgraphia): This type includes the physical performance of writing or the mental activity of understanding and producing information. Main writing disorder refers to physical difficulty forming words and letters. Expressive writing disability indicates a problem to form thoughts on paper. Symptoms of a written language learning disability revolve around the act of writing. They contain problems with: simplicity and consistency of writing, precisely writing letters and words, spelling reliability, and writing organization and coherence.

c) Language learning disabilities (aphasia/dysphasia): Language and communication LDs include the capability to comprehend or produce spoken language. Signs of a language-based learning disorder include verbal language skills difficulties such as the skill to retell a story and the fluency of speech, in addition to the capability to recognize the meaning of words, directions, and parts of speech.

## Methodology:

### Participants

In order to select the sample of the research, the researchers used the Stanford-Binet Intelligence Scale to measure intelligence and cognitive abilities and assist in identifying pupils with learning disabilities and the researches selected the pupils with average from 90-100 score on the Stanford-Binet Intelligence Scale. Also, the researchers reviewed the scores of the pupils in the first semester in all subjects to identify pupils with learning disabilities in English as these pupils have high marks in all subjects except English. Moreover, the researchers applied the prefix-suffix test (Lenz et al., 2007) to assess knowledge linked to recognizing prefixes and suffixes. Pupils identify whether prefixes or suffixes exist in the words through drawing lines between the prefix and the word stem and between the word stem and the suffix.

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The total number of the participants is (20) pupils. They are divided into two groups; each group consisted of (10) pupils. The experimental received the treatment using digital storytelling. And the control group received regular instruction. The research was conducted in a governmental primary school named Belal Ibn Rabah for Basic Education, Giza, aiming to improve their vocabulary skills.

## Duration of the Experiment

The proposed framework was taught in five weeks, two sessions per week, and each session takes 90 minutes during the second semester of the academic year 2021-2022. In addition to an introductory session which was held in order to introduce "digital storytelling" to the pupils. The experimentation started on the $20^{th}$ of February and ended on the $20^{th}$ of March, 2022.

## Vocabulary Checklist

The researchers designed a checklist to determine the most important vocabulary skills required in English for $4^{th}$ grade primary school pupils with learning disabilities. The checklist in its primary form included (11) vocabulary skills (see Appendix I). These skills had to be rated by a panel of jury experts in teaching EFL and special education according to a rating scale containing three levels; very important, important, and less important. Each level of importance was given an estimated value to be scored by the researchers (very important = 3, important =2, and less important = 1).

## Validity of the checklist

**The checklist was submitted to a panel of jury specialized in the field of curriculum and methods of teaching EFL and special education. The following modifications were carried out as suggested by the panel of jury:**

- Omitting the skills "Use correct collocation" and "Use the dictionary to determine the meaning of an unfamiliar word."
- Arranging the chosen skills logically.

So, as the jury indicated, the checklist became valid and the skills included became adequate and clear. After analyzing the jury responses, the researchers selected those skills that were agreed upon by at least 80% or more by the jury members to be the most necessary skills that 4th grade primary school pupils with learning disabilities. The final form consisted of (9) skills. Thus, the first question of the present research was answered. (The checklist in its primary and final forms and the names of the panel of jury are in appendices (I) and (VI).

## Instrument of the Research

A pre/post- vocabulary test was designed by the researchers to measure the vocabulary skills of the research participants. It was constructed to be administered to the two groups of the present research twice: first, prior to the experiment as a pre-test and to make sure that the students of both groups were at the same level before starting the treatment. Hence, the progress achieved by the experimental group could be attributed to digital storytelling. Second, it was to be used as a post-test, to compare its scores with those of the pre-test to investigate the effect of digital storytelling on developing the experimental group students' vocabulary skills.

**The test was constructed by the researchers after reviewing the following sources:**

– Previous studies concerned with language tests, especially those that are concerned with developing vocabulary skills such as **Awad (2011),** Migdad (2016), and Khweireh (2017)**.**

– Identifying the skills to be measured by the test through the final form of the checklist. (See appendix I for the final form of the vocabulary skills checklist).

The final form of the test consisted of eight main questions contain (45) items that were prepared by the researchers to test the necessary vocabulary skills for 4<sup>th</sup> grade primary school pupils. One point for each correct answer so scoring was objective. The final version of the test is shown in Appendix (II) and the key answer of the test is shown in Appendix (III)

## Validity of the test

To find out whether or not the pre/post- test was valid for what it was intended to measure, the researchers depended upon two aspects of validity. The first one was the content validity; the first form of the test was given to 5 TEFL specialists to evaluate each question in terms of content and level of vocabulary skills measured. Besides, they were asked to evaluate the test as a whole in terms of: correctness and number of questions. The second aspect of validity was the experimental validity which was calculated by the square root of the reliability coefficient.

To determine content validity of the test, a criteria questionnaire developed by the researchers kindly asked 5 TEFL specialists to validate the test. The test proved to be mostly valid as the jury approved most of the questions and suggested only using simpler test instructions that may not confuse the pupils.

The researchers computed experimental validity of the test statistically using the following formula.

Test validity $= \sqrt{\text{reliability coefficient}}$

Validity $= \sqrt{(0.9\wedge\circ)}$

Validity $= 0.9\wedge$

This proved that the vocabulary test was statistically valid.

The pre- administration of the test to the control and experimental groups was on the 1$^{st}$ of November 2021. The post- administration to the two groups was on the 15$^{th}$ of November 2021. Post- administration conditions were relatively the same as those of the pre- administration. The follow up administration of the test was on the 2$^{nd}$ of May 2022.

## Piloting the Test

The pre/post- test was piloted on (20) 4$^{th}$ grade primary school pupils with learning disabilities in English, other than the subjects of the research. To test its reliability, the test was administered to them twice and the time between the two administrations was two weeks to ensure that they would not be able to remember their answers in the first administration. So, the pilot study of the test aimed at the following:

## Estimating the time for the test

It was decided that a period of 90 minutes would provide ample time for the students to answer the test questions. As the group used to calculate reliability of the test was the same group used to estimate the test time, each student was required to write down on his/her exam paper the time taken for answering the test exactly. Then, the test time was estimated in the following way:

$$\frac{\text{Summation of the time taken by all students}}{\textit{Number of students}}$$

So, test time = 90minutes

### Establishing test reliability

To establish the pre/post- vocabulary test reliability, the following methods were used:

**Interrater reliability**

The answers of the group of (20) students mentioned in piloting the test were evaluated by two independent raters. Using Pearson's coefficient correlation between the first and the second rater's estimations, it was found that the correlation coefficient was (r =٠.٩٨) which is significant at the level 0.01.

## Test-retest reliability

A vocabulary skills test was pre-administered on 1st/11/2021 and after two weeks the test was post-administered on 15th/11/2021. The two administrations of the test were administered to (20) pupils using Pearson's coefficient correlation. The correlation was (r =٠.٩٨) thus the pre/post-vocabulary test had high test-retest reliability.

## Treatment Material

The researchers designed the proposed framework using digital storytelling which consisted of (10) sessions. The first session was an introductory session about digital storytelling and tools used in the sessions, the skills of EFL vocabulary skills and the importance of these skills to the research sample. The rest sessions were instructional ones through which the EFL vocabulary skills were practiced (recognizing synonym of the word, recognizing antonym of the word, identifying different parts of speech, identifying word roots correctly, using prefix properly, using suffix correctly, identifying the correct definitions of words, spelling the words correctly, and using the words in the appropriate grammatical forms). (See Appendix IV)

## Software Used in the Framework

Photo Story 3 for Windows software was used to create digital storytelling because it is easy to use and has recording feature with photo effects.

## Procedures and Phases Using Digital Storytelling:

**During the sessions of the framework the following main procedures and phases using digital storytelling were used:**

**A. Warm-up:**

▪   The instructor began every session by giving the pupils a story title and asks them to list as many words connected to this title as they can.

**B. Teaching Steps:**

▪ Teaching using digital storytelling is divided into five main phases. These phases are as follows:

**1. Modelling and Group Discussion:**
- The teacher presents a digital storytelling.
- The teacher divides the pupils into two groups.
- The teacher asks the pupils to finish some tasks.
- The teacher gives the pupils feedback.

**2. Planning Phase:**
- The teacher divides the pupils into two groups.
- The teacher assigns the topic for them to discuss together.
- The pupils share the ideas with each other and brainstorm the story in different ways.
- They write their first script of the story for a particular topic the teacher had given them.

**3. Searching the Multimedia Phase:**
- The teacher demonstrates to the pupils how to look for pictures and audios from the internet.

- The pupils collect and prepare media resources.
- They organize materials used in the story.

**4. Creating the Digital Storytelling Phase:**

- The teacher asks pupils to open Photo Story 3 for Windows software.



Figure (1) Print screen of the software used in the treatment

- The teacher explains how to import pictures from the folder to which they downloaded them into Photo Story 3 for Windows software.
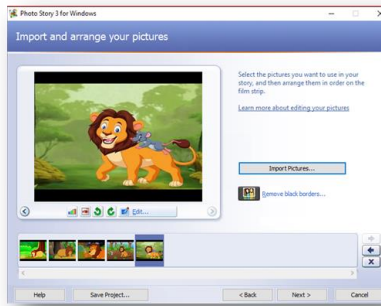


Figure (2) Print screen of importing and arranging pictures

- The pupils record their voices and use these records within the story.

**Figure (3) Print screen of narrating and customizing motion**

✛ The pupils add background music to the story.
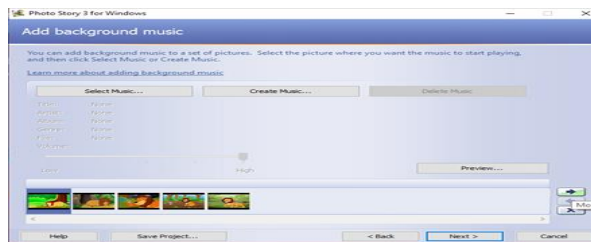


**Figure (4) Print screen of adding background music**



**Figure (5) Print screen of adding background music**

✛ The pupils save the story.

**Figure (6) Print screen of saving the story**
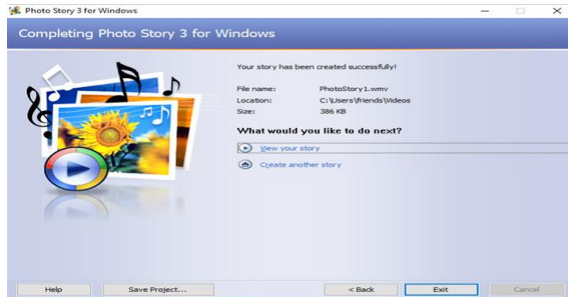


**Figure (7) Print screen of viewing the saved story**

### 5. Presentation and Evaluation:

➕ The pupils present their digital stories.

➕ The teacher provides the pupils with feedback to improve their digital stories.

➕ The pupils revise and edit their digital stories according to the teacher's comments.

## Home Assignment:

**Each session will end with assigning two assignments. These assignments are as follows:**

➕ The teacher asks the pupils to make a glossary of vocabulary they have learned in the session.

➕ The teacher asks the pupils to use the learned vocabulary in different sentences.

## Groups Equivalence

The key aim of the current research was to improve most necessary vocabulary skills in English for 4th grade primary school pupils with learning disabilities through using digital storytelling. So, before applying the suggested lessons with those pupils, the researchers administered a

vocabulary skills test to both the control and the experimental groups of the research. Mann-Whitney U test used to calculate (U, Z) value of significant difference between the experimental group and the control group pupils' mean ranks on the pre-administration of the vocabulary test.

**Table (1). "U, Z" Value of the Difference between the Mean Ranks of the Experimental and Control Groups' Pupils on the Pre-Administration of the Test**

| Group | N | Mean Ranks | Sum of Ranks | Calculated U -value | Calculated Z -value | Sig. |
|---|---|---|---|---|---|---|
| Control | 10 | 10.85 | 108.50 | 46.500 | .273 | Non Significant |
| Experimental | 10 | 10.15 | 101.50 | | | |

Tabulated U –value at N1= 10, N2 =10 and significant at 0.05 = 23.00

Tabulated Z –value significant at 0.05 = 1.96

The previous table indicates that there was no statistically significant difference between the mean scores of the control and the experimental groups on the pre-administration of the test in the vocabulary skills. Thus, the two groups are equivalent at vocabulary skills test before the experiment.

## Data Analysis and Results

**The findings of the research are discussed in relation to the research questions and hypotheses stated earlier as follows:**

The first sub-question was answered as to recognize the essential vocabulary skills in English for 4$^{th}$ grade primary school pupils with learning disabilities; a checklist was designed by the researchers. The checklist was submitted to five jury members and they approved it. The checklist included nine skills in its final version (see appendix 1). Therefore, the first sub- question of the current research was answered.

Also, the second sub-question was answered before as the proposed steps for using the suggested framework of using digital storytelling as were shown before in the previous pages. For the proposed framework of the current research see appendix IV.

**Moreover, the answer of the third sub-question is related to verifying the hypotheses of the present research. So, they will be tackled as follows:**

## Findings linked to the first hypothesis

**The first hypothesis stated that**: "There is a statistically significant difference between the experimental group and the control group pupils' mean ranks on the post-administration of the vocabulary test in favour of the experimental group".

Non parametric statistics Mann-Whitney U test used to calculate (U, Z) value of significant difference between the experimental group and the control group pupils' mean ranks on the post-administration of the vocabulary test to verify this hypothesis and the following table (2) shows that:

**Table (2). "U, Z" Value of the Difference between the Mean Ranks of the Experimental and Control Groups' Pupils on the Post-Administration of the Test**

| Group | N | Mean Ranks | Sum of Ranks | Calculated U -value | Calculated Z -value | Sig. |
|-------|---|-----------|--------------|--------------------|--------------------|------|
| Control | 10 | 5.50 | 55.00 | .000 | 3.800 | Significant at 0.01 |
| Experimental | 10 | 15.50 | 155.00 | | | |

Tabulated U –value at N1= 10, N2 =10 and significant at 0.05 = 27.00 and significant at 0.01 = 19.00

Tabulated Z –value significant at 0.05 = 1.654 and significant at 0.01 = 2.33

## The above table (2) confirms the following:

1. The experimental group pupils' mean ranks (15.50) was higher than the mean score of the control group pupils' mean ranks (5.50) on the post-administration of the vocabulary test. This is a very significant difference which indicated that the experimental group students reached amazing higher scores than the control group students in the post-test.

2. There is a statistically significant difference between the experimental group and the control group pupils' mean ranks on the post-administration of the vocabulary test as U value is (.000) and it is a statistically significant at (0.01) and Z value is (3.800) and it is a statistically significant at (0.01).

3. The effect size of vocabulary test was calculated and the result was (١.٠٠) and it is a large effect and this showed that using digital storytelling with the experimental group had a large effect on developing pupils' vocabulary skills. Thus, the third question of the present research which is "What is the effect of using digital storytelling on developing the most necessary vocabulary skills in English for 4th grade primary school pupils with learning disabilities? was answered.

## Findings linked to the second hypothesis

The second hypothesis stated that: "There is a statistically significant difference between the experimental group's mean ranks on the pre- and post-administrations of the vocabulary test as a whole and each skill in favour of the post-administration."

To verify this hypothesis non parametric statistics Wilcoxon test used to calculate (T, Z) value of significant difference between the experimental group pupils' mean ranks on the pre and post-administrations of the vocabulary test and the following table (3) shows that:

## Findings related to the third hypothesis

The third hypothesis stated that: "There is no statistically significant difference between the experimental group pupils' mean ranks on the post and follow up administrations of the vocabulary skills test."

To verify this hypothesis non parametric statistics Wilcoxon test used to calculate (T, Z) value of significant difference between the experimental group pupils' mean ranks on the post and follow up administrations of the vocabulary test and the following table (4) shows that:

**Table (4). "T, Z" Value of the Difference between the Mean Ranks of the Experimental Group Pupils on the Post and Follow Up of the Test**

| Test | Rank-difference correlation | N | Mean Ranks | Sum of Ranks | Calculated T-value | Calculated Z-value | Sig. |
|------|------|------|------|------|------|------|------|
| Vocabulary skills | Negative | 1 | 2.50 | 2.50 | 2.50 | 1.000 | Non Significant |
|  | Positive | 3 | 2.50 | 7.50 |  |  |  |
|  | Neutral | 6 |  |  |  |  |  |

**Tabulated Z –value significant at 0.05 = 1.96**

From the above table (4), it is clear that the calculated T-value of the vocabulary (2.50) and calculated Z –value is (1.000) and it is nonsignificant. Thus, the third hypothesis of the research was verified.

## Discussion of Results

The statistical analysis given above assured the verification of all the hypotheses of the research and answering the research questions. Also, it realized the attainment of the research main objective, which was developing the most necessary vocabulary skills in English for $4^{th}$ grade primary school pupils with learning disabilities through digital storytelling. The experimental group showed a great improvement in the necessary vocabulary skills more than that of the control group in the post tests. So, the researchers attributed this development to the following reasons:

1. Using technology is an effective way to enhance pupils' engagement and develop their learning in the classroom. This is consistent with Smeda et al. (2014) and Herdaa and Mekiri (2016) who stressed that using digital media managed to develop students' engagement level and that using new educational technologies can be efficient to inspire students and foster their learning.

2. Increasing pupils' motivation through searching the multimedia such as pictures and sounds individually helps them in the learning process. This result ensured what Panagiotidis et al. (2018) mentioned about that increasing students' motivation can lead to the utilization of their personal, cognitive, emotional and behavioural resources and therefore it leads to better learning results.

3. The suggested framework was planned in different steps. Each step had its aims and activities to be dealt with. The instructor has an important role as a guide and also pupils play an active role in each step.

4. Doing homework and getting feedback from the teacher encouraged pupils and develop the use of new vocabulary in different sentences. Also, having a glossary for each pupil help to overcome forgetfulness.

5. Using digital storytelling which combine text, pictures, and sounds help pupils to use different senses which fosters learning. This finding ensured what Suwardy et al. (2013) mentioned as a digital storytelling can involve learners' visual and auditory senses in a way that the written word alone cannot.

6. Working in groups and group discussion while creating digital stories in the classroom sessions enhance co-operation and collaboration between the pupils. This result confirmed what Brenner (2014) mentioned about implementing digital storytelling promoted not only developing learners' skills but also supporting skills such as co-operation, teamwork, self-management and leadership.

## Recommendations

Based on the results of this research, it can be assured that the pupils who took part in the digital storytelling did very well in their vocabulary skills and the use of digital storytelling had a great effect on developing vocabulary skills. So, taking into account the findings of the current research, the researchers suggested the following recommendations:

1. Developing vocabulary skills should be given more attention in the foreign language classroom for pupils with learning disabilities.

2. Pupils should be given more chances to use technology to perform language skills easily.

3. Using digital storytelling to develop other language skills such as reading, writing, listening and speaking with students in the university level.

4. Improving language skills such as writing and reading with other pupils with special needs in the primary stage using digital storytelling.

## Suggestions for Further Research

**This research suggested further research to explore the following**:

1. The effectiveness of digital storytelling on improving other language skills (reading, speaking, and listening) for university learners.

2. Investigating the effect of using digital storytelling on developing students' critical reading skills.

3. Examining the use of digital storytelling on developing other language skills (reading, speaking, and listening) for learners with learning disabilities.

4. Using other teaching methods based on technology for developing vocabulary skills among learners with learning disabilities in different stages.

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