# The Effect of AI Sites on EFL Secondary Stage Students' Fluency (Case Study)

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## Abstract

The research aimed to examine the effect of using Artificial Intelligence Sites on enhancing EFL fluency of first-grade secondary stage students. The study begins with a review of literature and previous studies about AI and EFL fluency. Participants of the research were a random group of 1st year students, (n=5) first-grade secondary stage students at Omar Ben Alkhatab Experimental School, Obour City, Cairo, Egypt. Instruments of the study were a pre/post EFL fluency test and a rubric designed by the researcher. Then the researcher developed the proposed program. she. The participants were submitted to a pre- and post-test, and results were analyzed using SPSS v27 to calculate the correlation coefficient and the effect size factor. Then, the scores were analyzed both qualitatively and quantitatively, describing students' performance during the research program and the pre- and post-tests. The results showed that the AI-based program effectively enhanced first-grade secondary stage students' EFL fluency.

**Keywords**: *Artificial Intelligence Sites, EFL fluency*

## Introduction

In this digital age people rely on technology to find answers. Twenty years ago, learners might have gone to an encyclopedia for answers; now they can simply ask their smartphones or type the question into an AI Assistant to get responces. The digital age introduced a new term to explain how internet technologies have

created opportunities for people to learn and share information through World Wide Web and among learners themselves.

Language fluency is one of the most important challenges forr effective learning of the English language. It is a basic aspect of language acquisition, ules it must be developed to achieve effective communication in classrooms and society. Fluency in English language is seen as an integrated whole in which the ability to use language is essential; It refers to the ability to speak, read, write, think, understand, communicate, and interact through the use of the language effectively. Students do not learn the language in order to memorize words and rules; however, they learn it to increase their mental abilities and think about wharthey learn. Fluency helps learners communicate effectively in English; it is essential for academic success and future career opportunities.

## Literature review and related studies

English language is used all over the world as a lingua franca among people from different cultural, ethnic, and social backgrounds. Language is a tool for expressing feelings and thoughts among people. Fluency in English as a Foreign Language (EFL) has begun to come out as a branch of teaching and learning. It ensures the ability to communicate effectively and express thoughts and ideas clearly.

According to Alisaari and Heikkola (2016), if language learners can use their second language smoothly and naturally,

they are usually regarded as fluent users of the language. This denotes that fluency focuses on automaticity and the communication of language in aط rapid and productive way, rather than focusing on language forms. That is why its activities depend on producing messages rather than language correction, since correction will slow down fluency. According to Shahini and Shahamirian (2017), one of the major characteristics of communicative competence is fluency. Fluency is defined by (Rupp and Leighton, 2017) as the ability to produce a great number of ideas that are the features that give language the qualities of being natural and produce written or oral language with ease.

According to Connectivism, learning is more than the internal construction of knowledge. Rather, it can be reached in external networks. From this theory, two terms—nodes and links—have been commonly used to describe how to gain information in a network. In Connectivism, learners are seen as “nodes” in a network. A node refers to any object that can be connected to another object, like a book, webpage, person, etc. Connectivism is based on the idea that learners learn when they make connections, or “links,” between various "nodes" of information, and continue to make and maintain connections to form knowledge.

Teaching and learning EFL fluency in the 21st century face a lot of challenges and novelties. Today’s world is completely and continuously changing. Classrooms are not traditional ones that learners have been accustomed to. Consequently, today’s students

have changed. Their relationships with their mates and teachers are no longer the same as usual, too; they have different learning styles that need to be regarded. They belong to their world, and they need to have convenient learning methods for their age. They must be regarded as active participants in the process of learning rather than considering them as passive recipients of it (Nissim et al. 2016).

Learners today face a world where the requirements of social, economic, and working lives become highly complicated every day. Learners ought to develop exceptional abilities to be effective in an evolving and complicated world. 21st century instructions should fulfill the prerequisites of a future controlled by non-stop modernity and progress (Pearson, 2015). Teaching students who learn English as a foreign language in the 21st century encounters many challenges and prospects (Ashraf et al.,2017). Nissim et al. (2016) stated that the 21st century learning environment might be "a process-supporting system" that builds up a setting where learners learn more productively. Ashraf, Motallebzadeh, and Arabshahi (2018) in their endeavor planned and approved a survey that could be utilized to assess EFL students in an EFL context in the 21st-century skills.

**Components of EFL language fluency.**

Intermediate learners need to practice using the language in order to be able to analyze, visualize, interpret, think critically,

reflect on thoughts, and interpret thoughts. In addition, EFL fluency is a one-piece that students need as a whole for language use and acquisition. Due to reviewing previous research and literature, and the demands of 21st -century learning styles for current learners. They are divided into six main categories: Accuracy of oral and written discourse, Prior knowledge, Oral and written smooth transition, Visualization, Using AI to achieve the learning outcomes, and Reflection.

- **Accuracy of oral and written discourse:**

  Accuracy is an essential component of fluency. While fluency focuses on the ability to communicate smoothly and confidently, accuracy ensures that the language used is grammatically correct and appropriate for the given context. Akki & Larouz (2020) stated that accurate grammar usage and a wide vocabulary range enable learners to construct grammatically correct sentences and express themselves precisely. Correct verb tenses, subject-verb agreement, and word choice contribute to the overall accuracy of oral discourse. In addition, accurate pronunciation and intonation help convey meaning accurately and enhance overall comprehensibility. Proper stress, rhythm, and intonation patterns aid in conveying the intended message and avoiding misunderstandings. Accuracy also includes using appropriate language in different contexts. This involves using formal or informal language, appropriate registers, and understanding

cultural nuances to communicate effectively and respectfully in oral and written discourse.

- **Prior knowledge**

English as a Foreign Language (EFL) learners face various challenges in acquiring fluency. One crucial factor that significantly impacts language development is prior knowledge. Buccella (2022) confirmed that prior knowledge refers to the existing knowledge and experiences that learners bring to the language-learning process. It includes knowledge of their native language, cultural background, personal experiences, and academic knowledge. It facilitates vocabulary acquisition by enabling learners to make connections between known words in their native language and English equivalents. Prior knowledge of grammar structures and language patterns in the native language helps learners understand and apply similar structures in English. For instance, learners who are familiar with subject-verb-object word order in their native language can transfer this knowledge to construct grammatically correct English sentences.

- **Oral and written smooth transition**

Suzuki & Révész (2023) confirmed that smooth transitions refer to the seamless flow of ideas and information in both oral and written English. They involve using appropriate words, phrases, and techniques to connect

thoughts, sentences, and paragraphs, ensuring coherence and clarity. Smooth transitions play a crucial role in achieving fluency in English for the following reasons:

- Coherence: They help listeners or readers follow the logical progression of ideas, making the message easier to understand.
- Clarity: Smooth transitions ensure that the intended meaning is conveyed effectively, reducing confusion or misunderstandings.
- Engagement: Well-connected ideas capture the attention of listeners or readers, making the communication more engaging.

- **Visualization**

There are many reasons for using pictures in language teaching. It is a fact that they provide a sense of context to a language and give specific reference points or stimuli. Based on these findings, Namaziandost and Nasri (2019) asserted that teaching EFL fluency through pictures was found to be more effective than traditional aids. One reason for this may be the attractiveness of pictures for young learners, while others found that pictures have a more permanent effect on learners.

- **Using AI to achieve the learning outcomes**

Al-Shammari & Al-Enezi (2024) asserted that AI sites can be able to tailor the learning content to students' individual proficiency levels. The platform's personalized approach offers them a customized learning pathway that focuses on their specific needs. This tailored instruction enables them to address their challenges more effectively and capitalize on their strengths. This personalized learning experience contributes to students' sense of autonomy and confidence in their language learning journey. AI sites can recognize students' learning styles and preferences, creating an environment where they control their progress.

- **Reflection**

Ying & Ubukata (2023) confirmed that reflection of knowledge is an important aspect of any learning process, including the development of English as a foreign language fluency. Reflecting on the knowledge and skills learned allows learners to analyze their strengths and weaknesses, set goals, and adjust their learning strategies accordingly. By regularly reflecting on EFL learning, learners can enhance their fluency by identifying areas that need improvement and committing to focused practice in those areas. Additionally, reflection promotes self-awareness, metacognition, and reflection on experiences. It helps students interact to describe, realize, and

create new contexts. All of which are essential components of successful language learning.

Based on the previously mentioned illustration of the term fluency, the researcher considered designing a program that incorporates artificial intelligence tools with a dedicated component to assess the fluency of first-stage students.

## Challenges Encountered by EFL Secondary-stage Students

Related to the importance of mastering EFL fluency, however, students tend to face many challenges in oral and written interaction. Shen and Chiu (2019) in their study reported that challenges in oral and writing English faced by students were psychological problems (e.g. nervousness, fear of making mistakes, and lack of confidence), linguistic problems (e.g. insufficient vocabulary, grammar, expressions, insufficient sentence organization, etc), and environmental problems (e.g. lack of learning context for English conversation).

## Artificial Intelligence Features

The word “artificial” is something that is not real, or simulated, but not completely false regarding being a fraud. While “Intelligence” is something that can replace genuine items because the former has better qualities in a certain context. Intelligence is a very complex term. It includes different forms, such as reasoning, self-knowledge, understanding, emotional awareness, preparation, consciousness, and creativity. As stated by Joshi

(2019, p. 4), AI may not mean designing an incredibly smart computer that solves all problems, but rather building a machine that is capable of human-like action.

The purpose of AI is to build computer software or hardware systems that demonstrate human-like thought or display features traditionally associated with human intelligence (Campesato, 2020). AI, as a computer system theory, can perform tasks normally involving human intelligence. Speech understanding, language awareness, decision-making, and visual perception are aspects of human intelligence that can be understood by artificial intelligence. AI offers tireless, individualized training, providing learners the large volume of feedback and scaffolding activities needed to achieve fluency, all within a low-stakes atmosphere (learners are more likely to take chances and make mistakes).

Kaur & Gill (2019) stated that AI's big promise is that it will shorten the time it takes to develop abilities. AI is a digital attempt to achieve human-level intelligence by using different computations of machines. It is a series of advanced technologies that allow humans to feel, comprehend, function, and learn from machines. It can be said that AI is a branch of computer science that emphasizes the ability to think and act like humans. It helped machines find solutions to complex problems in a more human-like fashion (Sridhar, 2018). This requires borrowing human intelligence traits and then incorporating them in a computer-

friendly way. Human actions such as learning, planning, making decisions, and knowing a language can be done by AI.

## Rationale for using AI for developing EFL fluency

In the current research, the concept of AI is restricted to the educational context. AIEd implementations are divided into three groups by Baker and Smith (2019): learner-oriented AIEd, instructor-oriented AIEd, and institutional system-oriented AIEd. Students may research a topic using a learner-oriented AI, often known as an adaptive or customized learning management system. An instructor-oriented tool can automate administrative processes, reviews, plagiarism detection, and feedback provision. These systems may also aid instructors in keeping track of their students' progress so that proactive intervention can be given. With improvements such as personalized support systems becoming more sophisticated (Heffernan & Heffernan, 2014), and "Instructor bots," AIEd has demonstrated its ability to help learners recognize knowledge gaps and obtain personalized support, freeing instructors from everyday menial tasks and allowing them to respond to students more effectively (Bayne, 2015).

Ribeiro (2020) stated that AI in English Language Teaching (ELT) is the most realistic way English language teachers can use it. English is one of the common world languages which has a systematic grammatical structure. Therefore, Wang (2019) referred that learning English has always been substantially

difficult for ESL/EFL (English as a Second/Foreign Language) students. Thus, the reform of English teaching and learning can be effectively promoted through AI, machine learning, intelligent search, and natural language processing.

In all areas of language learning content, the meaning of AI-powered language learning has been increasingly growing; however, this study focuses solely on the application of AI to foreign language learning. Today's AI has major applications for language studies in general and foreign language learning in particular. Kannan & Munday (2018) stated that the transition from Computer Assisted Language Learning CALL to ICALL (Intelligent CALL) was unavoidable, and it resulted in a significant improvement in the level of student-computer interaction for several benefits including learner-controlled progress, immediate feedback as a powerful motivator; individualized repetition of topics and highlighting tasks where a learner has performed poorly; fast and realistic evaluation of a learner's progress; and a clearer understanding of the learner's learning preferences and strategies.

Concludingly, the rationale behind using AI sites in EFL (English as a Foreign Language) instruction is multifaceted. Firstly, AI sites provide learners with instant access to a vast amount of authentic and up-to-date language resources, such as articles, videos, and interactive exercises. This exposure to real-world English helps learners develop their language skills and

cultural awareness. Additionally, AI sites often incorporate adaptive learning technologies, which personalize the learning experience and cater to individual learners' needs. The interactive nature of AI sites also enhances learner engagement and motivation, making the language learning process more enjoyable. Overall, AI sites offer a convenient, effective, and learner-centered approach to EFL instruction.

### 2.3.2. Advantages and Disadvantages of using AI

Yadav (2024) stated that one of the major benefits of utilizing AI in English language learning is the ability to provide a personalized learning experience. By analyzing data on student performance, AI can identify areas for improvement and provide targeted support to enhance their language skills. This customized approach allows learners to focus on their specific weaknesses and progress at their own pace. Moreover, AI tools offer learners the advantage of receiving instant feedback on their progress. Unlike traditional learning methods. This real-time feedback enables learners to identify and correct mistakes quickly, leading to more efficient language acquisition. Additionally, AI tools often include progress-tracking features, allowing learners to monitor their improvement over time and stay motivated.

While AI can greatly enhance the language learning experience, there are also some challenges to consider. Vernersson (2024) confirmed that one of the main challenges of using AI in English language learning is its limited contextual understanding. AI tools

may struggle with idiomatic expressions, slang, and cultural references, which are essential aspects of mastering a language. Additionally, AI Sites typically rely on pre-recorded or pre-programmed responses, which may not provide real-time feedback on interactive abilities. While AI can offer valuable feedback on grammar, vocabulary, and pronunciation, it may not capture the subtleties and complexities of language usage. Learners may miss out on the immediate correction and guidance that a human teacher can provide.

## Criteria for using AI in EFL

When considering the use of AI tools to enhance English fluency among secondary-stage students, two main criteria come into play: academic and technical criteria.

### Academic criteria:

Age-appropriate tools play a crucial role when integrating AI tools into EFL instruction. Students at different age levels have varying cognitive abilities and learning styles. EFL students' language proficiency varies based on their age and exposure to English. Jiang (2022) asserted that age-appropriate AI tools enhance student motivation and engagement. In addition, the pedagogical aspect plays a crucial role when integrating AI tools into English as a Foreign Language (EFL) instruction. Effective pedagogical strategies ensure that AI tools align with educational goals. Tailored approaches based on students' age, proficiency, and

learning styles enhance language acquisition. Age-appropriate criteria guide the selection and design of AI tools to optimize learning outcomes. Briesmaster, & Molina (2017) AI Sites that incorporate engaging activities, interactive content, and gamification enhance student motivation. Furthermore, constructivist approaches are essential when integrating AI tools into English as a Foreign Language (EFL) instruction. Constructivism emphasizes active learning, collaboration, and knowledge construction. AI tools should align with these principles by promoting student engagement, exploration, and critical **Technical criteria:**

Ethical Considerations in education refer to the thoughtful examination of moral principles and values when making decisions related to teaching, learning, and educational policies. These considerations guide educators, policymakers, and other stakeholders in ensuring responsible and equitable practices within educational settings. Boudreau (2020) asserted on some key aspects of ethical considerations in education:

- Equity and Fairness: Educators must strive for fairness and equal opportunities for all students, regardless of their background, abilities, or circumstances.
- Privacy and Confidentiality: Respecting students' privacy is crucial. Educators should handle student information confidentially and only share it when necessary for

educational purposes. Ethical use of technology and data collection should prioritize student privacy.

t**. Suggested AI sites used for developing EFL secondary-stage students' fluency**

**Chat GPT**

ChatGPT is a large language model developed by OpenAI, a leading AI research and development company. Wei (2023) stated that it is a type of sophisticated chatbot that can interact with human participants in natural language, understand their requests, and respond with relevant information. ChatGPT has been trained on a vast amount of text data and can handle a wide range of tasks, including answering questions, providing recommendations, and even writing stories.

**Gemini**

Gemini AI is an artificial intelligence writing tool that uses machine learning to generate human-like content. Morris (2023) argued that it can be used to create various types of content, such as blog posts, social media posts, product descriptions, and more. The tool uses natural language processing and deep learning algorithms to understand and mimic human writing styles. Gemini AI can help participants save time and effort in creating content, as it can generate high-quality and engaging text in a matter of seconds.

**Get Pronounce**

GetPronounce.com is a website that offers free speech-synthesis technology for text-to-speech conversion. It can read aloud words, phrases, and sentences in multiple voices, accents, and languages. It is also an excellent tool for language learners and teachers to practice their pronunciation skills. Get Pronounce is a website that offers various features to enhance spoken English skills with the help of an AI speech coach. t can also be used to brainstorm ideas, improve writing skills, and increase productivity.

**ESL Discussions**

ESL (English for Speakers of Other Languages) is a website dedicated to providing resources, materials, and community support for non-native English speakers who are looking to improve their English language skills. Campos (2023) stated that the ESL discussion website is a valuable resource for anyone looking to improve their English language abilities. It offers a variety of conversation questions related to various topics for English language learners. The website is designed to facilitate conversation and discussion among students and provide a platform for learning and improving English language skills.

**Quill Bot**

Quill Bot is a website that offers AI-powered writing assistance and paraphrasing tools. It offers a variety of features to

help participants create and manage their chatbots. Hamid (2024) stated some of the features of the Quill Bot website, including:

- Paraphrasing tool: Quill Bot can help participants rephrase sentences and paragraphs to avoid plagiarism and improve the flow and clarity of their writing.
- Grammar and spelling check: The website can identify and correct grammatical errors and spelling mistakes in the user's text.
- Word suggestions: Quill Bot can provide alternative word choices to improve the user's writing style and vocabulary.

**Pop AI**

Pop AI is an artificial intelligence site that was created to assist with presentations. It provides a range of features that help participants improve their presentations, including speech enhancement, slow-motion video, and text-to-speech conversion. The site is designed to be user-friendly and accessible to people of all skill levels. Pop AI is available as a website, mobile app, and desktop application. Morris (2023) stated that it can be integrated with various presentation software, including PowerPoint, SlideShare, and Gemini Slides. Participants can also create their own presentations with the help of Pop AI's built-in templates and design tools.

**Write and Improve**

A website is an AI-powered language model developed by the University of Cambridge that helps participants generate and improve written content. Wei (2023) stated that it can also help participants with tasks such as proofreading, rephrasing, and creating outlines. Additionally, it can help participants identify grammatical errors and provide explanations.

**Elsa Speak**

A mobile app designed to help participants improve their English pronunciation and speaking abilities. Morris (2023) argued that it uses speech recognition technology to provide personalized feedback and exercises to help participants speak more clearly and confidently.

**Speak and Improve**

An AI-powered language model developed by the University of Cambridge. It provides personalized lessons based on the results of the assessment, which include pronunciation, vocabulary, grammar, and conversational abilities.

**Talk English**

An online website that offers a variety of resources and tools to help participants improve their English abilities. Campos (2023) stated that the site includes articles, videos, podcasts, and interactive exercises that cover a range of topics, including grammar, vocabulary, pronunciation, and conversation abilities.

## Context of the problem:

Through the researcher's experience as a secondary-stage teacher of EFL, it was found that there is a clear deficiency in their language fluency. The researcher conducted a screening test, which included oral and written items, to measure language fluency among a random group of first-grade secondary students at Omar Ibn Al-Khattab Experimental School in Obour City, Qalyubia Governorate.

Based on these results, they showed a decline in oral and written language fluency among first-grade secondary students and in their ability to think, construct meaning, interact in a logical order, and ease of oral and written expression. This may be due to the shortcomings of some educational systems, which support the use of a traditional curriculum and do not include current audio-visual technological aids that support artificial intelligence. There was an urgent need to investigate the relationship between the use of AI sites by first-grade secondary-stage students and enhancing their fluency.

## Statement of the Problem:

Secondary-stage students have some problems with their English language fluency. This may be due to the application of traditional teaching and learning strategies. So, this study is an attempt to investigate and analyze the effect of using some AI sites

as teaching and learning resources to develop these students' English language fluency.

**Research Questions:**

In order to investigate the problem, the present study will attempt to answer the following main question:

- What is the effect of a program based on using AI sites on first-grade secondary-stage students' EFL language fluency?

Consequently, the researcher attempted to find answers to the following sub-questions:

1. What are the required components of the first-grade secondary-stage students' EFL language fluency?
2. What are the criteria for using AI sites in the learning process and their effect on EFL language fluency of the first-grade secondary-stage students?
3. What is a program based on AI for developing first-grade secondary-stage students' EFL language fluency?
4. How can a program based on using AI sites affect first-grade secondary-stage students' EFL language fluency?

**Delimitations:**

The research was delimited to the following:

- Some artificial intelligence sites and applications such as Chat GPT, Poe, Quill Bot, Write and Improve, Speak and Improve, Get Pronounce, and Elsa Speak.
- A group of first-grade secondary stage students at Omar Ibn Al-Khattab Experimental School in Obour City, Qalyubia Governorate (n 5).
- The fluency components: Accuracy of oral and written discourse, Prior knowledge, Oral and written smooth transition, Visualization, Using AI to achieve the learning outcomes, and Reflection.

## Definition of terms

### 1. EFL language fluency

Jones (2020) defined language fluency as the ability to interact comfortably and easily in another language, participate naturally in conversations, and work effectively in the language. It is also a term related to production or proficiency in the language.

**Operationally,**

In the current study, fluency is the ability of the first-stage secondary students to express themselves fluently and sustain an understandable and continuing interactional process. It also refers to the ability to effectively and accurately express ideas, thoughts, and information through written and oral interaction.

## 2. Artificial Intelligence Sites

Sieja (2022) stated that Artificial Intelligence (AI) sites are sites that use machine learning algorithms, data analytics, and other AI technologies to provide personalized and dynamic content for their participants. These sites can affect the target student's fluency, preferences, and other data.

**Operationally,**

Artificial intelligence sites are the technological sites and apps that are used to enhance experience, automate tasks, and provide better interaction for 1st -year secondary stage students. These sites may use techniques like natural language processing, machine learning, computer vision, and robotics to analyze data and provide decision-making capabilities to enhance oral and written English language fluency for 1st-year secondary stage students.

## Research Methodology

### Participants

The participants were five first-grade secondary-stage participants (N 5). Their language levels ranged from intermediate to upper intermediate, and that was according to the conducted placement test. They were enrolled in a case study. Online learning sessions were held through the course using the Zoom Meeting context.

## Instruments of the Study

### A List of Language Fluency Components (Appendix A)

### Purpose

In addition to the instruments, a list of language fluency components was prepared in order to determine the fluency components that were both appropriate and required to be mastered by the 1st year secondary stage students. The list was also helpful in designing the instruments used in the study, including the language fluency rubric and the pre-post language fluency test. Based on the list, the program's activities were prepared with the aim of enhancing the language use components predetermined in the list.

### Structure of the List

The list of language fluency components included six components that were accompanied by a brief description of each component. These components were as follows:

- Accuracy of oral and written discourse,
- Prior knowledge,
- Oral and written smooth transition (flow),
- Visualization,
- Using AI to produce fluent discourse, and
- Reflection.

**A pre-/post-test oral test (Appendix B)**

**Purpose:** The pre-/post-oral test was prepared by the researcher to measure the participants' oral fluency. The test was conducted to determine the participants' entry level before applying for the program, and after experimentation, to determine their level after the application of the program.

**Description.** The pre-post oral fluency test was constructed in the light of the following procedures:

- Reviewing previous studies and literature that are concerned with language tests, especially pre-post language fluency tests and assessments.
- Determining the components assessed by the test based on the list of language fluency components.
- Reviewing language fluency tests for 1st year secondary stage students included in the previous studies.
- Examining 1st year secondary stage students' English course.

To identify the language fluency components that were suitable for the 1st year secondary students and the relative weight for each component, the researcher conducted a careful content analysis of secondary course books. The result of this content analysis appears in Table 1:

**Table (1) Language fluency components and their relative weight**

| Language Fluency Components | Relative weight |
|---|---|
| Accuracy of oral and written discourse | 33% |
| Prior knowledge | 8% |
| Oral and written smooth transition (flow) | 17% |
| Visualization | 8.5% |
| Using AI to produce fluent discourse | 25% |
| Reflection | 8.5% |
| Total | 100% |

The version of the test (Appendix B) consisted of seven different question types. The test was timed and computerized. The test was conducted on campus in an in-person session. The examiners were the researcher and a referee teacher, Mr. Mohamed Salah.

The first question was "Introduce yourself." The participants were asked to answer this question to measure their accuracy and ability to perform accurate and clear pronunciation throughout all the contexts, with correct inflections, number of syllables, and other correct nuances of pronunciation.

The second question was, "What do you like to do after school?" The participants were asked to answer the questions to

measure their smooth transition of oral discourse and their ability to interact confidently and naturally without hesitation.

The third question was "What do you know about athletes' routines?" The participants were asked to answer this question to measure their prior knowledge. And how far they can generate ideas and smoothly express ideas in oral situations, which results in fluent discourse.

The fourth question was "Describe the photo." The participants were asked to answer this question to measure their visualization and how they can brainstorm, organize their thoughts, and think of diversified lexical phrases besides complex structure expressions to be embedded in the oral production.

The fifth question was "Describe the photo considering some of the challenges athletes with disabilities might face when training or competing." The participants were asked to answer this question to measure their reflection on ideas precisely, clearly, and thoughtfully, and produce fluent discourse with a flow in oral situations.

The sixth question was "Do you think it takes more or less skill and determination to be a successful athlete with a disability? Explain your answer." The participants were asked to answer this question to measure their smooth transition and how far they can use a variety of transitional words to connect ideas in both oral and written discourse and move smoothly among ideas.

The seventh question was "Imagine a conversation between two people working in two different jobs, talking about the advantages and disadvantages of their jobs and giving reasons. (You can use AI tools.)" This type of question measured the participants' use of AI to produce fluent discourse and reflection. Also, using appropriate search prompts for AI sites. The overall score of the test was 36.

**Piloting the test:**

The test was piloted to a random sample consisting of 15 students of the first secondary grade on Saturday, 13 July, at Omar ben Alkhatab School, Obour Administration, Qaliobia Governorate. This was to:

a) **Determine the test time:** The test time was calculated by piloting the test through recording the time it took for each student to answer the test, then calculating the average time for all of the students and finding the test time (**90** minutes).

b) **Structural honesty of the test:** To verify the truthfulness of the structural consistency of the oral fluency test, the correlation coefficients between the score of each component and the overall score of the test were calculated, and the following table shows the correlation coefficients:

**Table (2)**

**Values of correlation coefficients between thscores component of each of the oral fluency test**

| Component | Correlation |
|---|---|
| Accuracy of oral discourse | **0.68**** |
| Prior knowledge | **0.71**** |
| Oral smooth transition (flow). | **0.69**** |
| Visualization | **0.74**** |
| Using AI to produce fluent discourse | **0.70**** |
| Reflection | **0.72**** |

**** D at significance level 0.01, where n = 15, t ≥ 0.63**

From the previous table, it was clear that all test components were statistically significantly related to the total score of the test to which they belong, indicating that the structural consistency of the test has been achieved.

c) **Internal consistency of test vocabulary:** To ensure the internal consistency of the vocabulary of the oral fluency test, the correlation coefficients between the score of each item and the total score of the test were calculated, and the following table shows the correlation coefficients:

**Table (3)**

**Values of correlation coefficients between the score of each individual the oral fluency test and the overall score**

| Item | Correlation |
|---|---|
| 1 | 0. 69** |
| 2 | 0.67** |
| 3 | 0.69** |
| 4 | 0.66** |
| 5 | 0. 66** |
| 6 | 0.69** |

**** D at significance level 0.01, where n = 15, t ≥ 0.63**

From the previous table, it was clear that all vocabulary was statistically significantly related to the overall score, indicating the internal consistency of the test vocabulary.

**d) Calculation of the stability of the total test:** The overall test stability was calculated by:

- **Cronbach's alpha-Cronbach coefficient:**

Cronbach's alpha coefficient was calculated for the test, and its value was 0.88, which was an acceptable and high value and generally indicated the accuracy and stability of the test as a means of measurement and therefore reliable.

- **By refereeing another referee:**

The test was re-corrected by another corrector 1 The coefficient correlation between the scores of the two corrections was calculated, and it was found that the correlation coefficient was equal to 0.97, which was a high value indicating a very strong correlation, which confirmed the accuracy and stability of the test and reliance on it as a means of measurement.

**A pre-/post-written test (Appendix C)**

**Purpose:** The pre-/post-test was prepared by the researcher to measure the participants' fluency. The test was conducted to determine the participants' entry level before applying the program, and after experimentation, to determine their level after the application of the program.

**Description.** The final version of the test (Appendix C) consisted of four different question types. The test was timed and computerized. The test was designed on Google Forms. The link was sent to the participants in an in-person session.

The first question was " What do you know about modern inventions? ". The participants were asked to answer this question to measure their prior knowledge and their ability to generate ideas and smoothly express ideas in written situations, which results in fluent discourse.

[1] Referee Name: Mr. Mohamed Salah Function: First teacher. His degree: A* The number of years of experience: 32 years.

The second question was " Watch the following video titled 'Inventions' and answer the questions.". The participants were asked to watch the video and think about the questions to measure their accuracy of written discourse and visualization.

The third question was "Look at cartoon photos titled 'Hard work is the key to success' and visualize the photos and write a story of your own." The participants were asked to answer this question to measure their accuracy of written discourse and written smooth transition (flow). The participants have been taught how to brainstorm, organize their thoughts, and think of diversified lexical phrases besides complex structure expressions to be embedded in the written production.

The fourth question was "Watch the following video: An Interview with Sophia, an Artificial Super Intelligent Robot. Then, write using AI tools. Do you share that vision of Sophia, the artificial super-intelligent robot, about a future planet? Why/Why not? (You can use AI tools.) Insert screenshots." This type of question measured the participants' use of AI to produce fluent discourse and reflection.

**Piloting the test:**

The test was piloted to a random sample consisting of 15 students of the first secondary grade on Saturday, 13 July, at Omar ben Alkhatab School, Obour Administration, Qaliobia Governorate. This was to:

**a) Determine the test time:**

The test time was calculated by piloting the test through recording the time it took for each student to answer the test, then calculating the average time for the whole sample, thus finding the test time (120) minutes.

**b) Structural honesty of the test:**

To verify the truthfulness of the structural consistency of the written fluency test, the correlation coefficients between the score of each component and the overall score of the test were calculated, and the following table shows the correlation coefficients:

**Table (4)**

**Values of correlation coefficients between the scores of each component of the written fluency test.**

| Component | Correlation |
|---|---|
| Accuracy of written discourse | **0.74**** |
| Prior knowledge | **0.72**** |
| written smooth transition (flow). | **0.75**** |
| Visualization | **0.70**** |
| Using AI to produce fluent discourse | **0.71**** |
| Reflection | **0.73**** |

**** D at significance level 0.01, where n = 15, t ≥ 0.63**

From the previous table, it was clear that all components of the test were statistically significantly related to the total score of the test to which they belong, indicating that the structural consistency of the test has been achieved.

### c) Internal consistency of test vocabulary:

To ensure the internal consistency of the vocabulary of the written fluency test, the correlation coefficients between the score of each item and the overall score of the test were calculated, and the following table shows the correlation coefficients:

**Table (5)**

**Values of correlation coefficients between the score of each item and the overall score of the written fluency test.**

| Item | Correlation |
|---|---|
| 1 | 0. 76** |
| 2 | 0.72** |
| 3 | 0.75** |
| 4 | 0.69** |

**** D at significance level 0.01, where n = 15, t ≥ 0.63**

From the previous table, it was clear that all vocabulary was statistically significantly related to the overall score, indicating the internal consistency of the test vocabulary.

**d) Calculation of the stability of the total test:**

The overall test stability was calculated by:

- **Cronbach's alpha-Cronbach coefficient:**

The Cronbach alpha coefficient was calculated for the test, and its value was 0.90, which was an acceptable and high value and generally indicated the accuracy and stability of the test as a means of measurement and therefore reliable.

- **By refereeing another referee:**

The test was re-corrected by another corrector 2, and the correlation coefficient between the scores of the two corrections was calculated, and it was found that the correlation coefficient was equal to 0.99, which was a high value indicating a very strong correlation, which confirmed the accuracy and stability of the test and reliance on it as a means of measurement.

**The EFL Fluency Rubric (Appendix D)**

**Purpose:** The EFL fluency rubric was analytically designed to evaluate participants' performances in their responses. The purpose of this rubric was to capture most of what the participants in this training course may achieve or develop in EFL fluency, before and after the application of the program.

[2] Referee Name: Mr. Mohamed Salah Function: First teacher. His degree: A* The number of years of experience: 32 years.

**Description:** The researcher acknowledges that no rubric can capture every manner or dimension during the usage of AI sites. Measuring oral fluency is very complex. EFL oral fluency ability was categorized according to (Badr, 2008; Romero, 2006; Smith, 2003; and Zhang, 2009), as interacting at a normal pace without much hesitation, conveying the student's message in an easy, clear, and understandable approach, using a simple language that suits the listener's level, producing comprehensible sentences with not many complications, arguing persuasively, exposing ideas calmly and spontaneously, organizing the oral production both cognitively and physically, manifesting a certain number of hesitations, pauses, backtracking, and corrections, and using gap-fillers correctly. Moreover, written fluency is important to teachers interested in facilitating students' written text production and in assessing writing. In the current study, the researcher chose six components to be used in assessing the participants' fluency during the study program.

The researcher analyzed the fluency components and constructed the fluency rubric into six main categories (Accuracy of oral and written discourse, Prior knowledge, Oral and written smooth transition (flow), Visualization, Using AI to produce fluent discourse, and Reflection). To determine the degree to which a participant's performance met the criteria of the task. Three levels of descriptors that differentiate several levels of performance (i.e., Emerging, Intermediate, and Advanced) were specified and

described in qualitative manners and were also compared to the CEFR (Appendix D).

The first main category was "Accuracy of oral and written discourse." At the emerging level, the participant performs inaccurate and unclear pronunciation throughout the context, with incorrect inflections, number of syllables, and other nuances of pronunciation. The participant uses inaccurate/ irrelevant vocabulary in oral and written contexts. Also, he uses insufficient and inadequate grammatical structures that are listed in the curriculum in spoken and written discourse, precisely. In addition, the participant writes an incomplete text missing the appropriate writing conventions (e.g., spelling and punctuation). In the intermediate levels, the participant performs partially accurate and clear pronunciation in most contexts, with correct inflections, numbers of syllables, and other correct nuances of pronunciation, and uses quite suitable vocabulary in most oral and written contexts. Moreover, the participant uses some grammatical structures that are listed in the curriculum in spoken and written discourse precisely, and also writes a text using most writing conventions (e.g., spelling and punctuation). At the advanced level, the participant performs accurate and clear pronunciation throughout all the contexts, with correct inflections, numbers of syllables, and other correct nuances of pronunciation, and uses accurate/ relevant vocabulary in all oral and written contexts. In addition, the participant uses a variety of grammatical structures that are listed in the curriculum in spoken and written discourse,

precisely. Also, he writes a complete text using all the appropriate writing conventions (e.g., spelling and punctuation).

The second main category was "Prior knowledge." In the emerging level, the student uses limited/ or no background knowledge (vocabulary, grammar, and content) to generate ideas and smoothly express ideas in both oral and written situations. In the intermediate and upper intermediate levels, the student uses a partial background to generate ideas and smoothly express ideas in some oral and written situations, resulting in some fluent discourse. At the advanced level, the student uses background knowledge to generate ideas and smoothly express ideas in all oral and written situations, which results in fluent discourse.

The third main category was "Oral and written smooth transition (flow)". At the emerging level, the student speaks less confidently and with a lot of hesitation. Moreover, there is very limited/or no use of transitional words to connect ideas in both oral and written discourse. But in the intermediate-upper intermediate level, the student speaks quite naturally with some hesitation and uses some transitional words to connect ideas in both oral and written discourse and move smoothly among ideas. At the advanced level, the student speaks confidently and naturally without hesitation and uses a variety of transitional words to connect ideas in both oral and written discourse and move smoothly among ideas.

The fourth main category was "Visualization". At the emerging level, the student demonstrates a limited understanding of the visualized items to express ideas and understands little or no English. However, at the intermediate level, the student demonstrates some conscious understanding of the visualized items to generate vocabulary and express ideas. At the advanced level, the student fully demonstrates a conscious and thoughtful understanding of the visualized items to generate ideas, invoke relevant vocabulary, and express ideas fluently.

The fifth main category was “Using AI to produce fluent discourse”. At the emerging level, the student uses very limited/ or no AI tools in writing and editing (e.g., translators, electronic dictionaries, spell and grammar checks). In addition, using very limited/ or no AI tools to enhance pronunciation and grammar in oral fluency, and using inappropriate search prompts for AI sites. At the intermediate level, students use AI tools for writing and editing, and utilize AI tools to improve pronunciation and grammar in oral fluency. Also, the student uses quite appropriate search prompts for AI sites. At the advanced level, the student uses all available AI tools in writing and editing. Moreover, he/she uses all available AI tools to enhance pronunciation and grammar in oral fluency and uses appropriate search prompts for AI sites.

The sixth main category was “Reflection”. At the emerging level, the student reflects on very limited/ or no ideas to produce fluent discourse in oral and written situations. At the intermediate

level, the student reflects on some ideas to produce fluent discourse with the flow in oral and written situations. However, at the advanced level, the student reflects on ideas precisely, clearly, and thoughtfully to produce fluent discourse with a smooth flow in oral and written situations.

**Rating the rubric:** The rubric consisted of six fluency components. Each of the fluency components is rated according to CEFR besides a rating scale ranging from the Al level to C2 on the CEFR score or an equivalent scale that ranges from the emerging level to the advanced level Thus, participants could achieve a score starting from Al or (10-20), which is equivalent to the emerging level (indicating the lowest performance), to C2 or (32-36), which is equivalent to the fluent level (indicating the highest performance).

**Validity:** The content validity of the fluency rubric was established by assuring that the rubric truly measures and represents fluency components, in addition to some of the components of fluency that were elicited from prior studies, as indicated in the theoretical framework.

**The AI site-based Program (Appendix E)**

**Aim of the Program:** The AI-based program aimed to develop oral and written fluency components of five first-secondary-stage participants enrolled in a case study to enhance their fluency.

## Performance Objectives

The study program introduced a special focus on the following language fluency components: accuracy of oral and written discourse, prior knowledge, oral and written transition, visualization, using AI to achieve the learning outcomes, and reflection for oral and written fluency. By the end of the program, participants were expected to:

- Perform accurate and clear pronunciation throughout the context, with correct inflections, number of syllables, and other correct nuances of pronunciation.
- Use accurate/ relevant vocabulary in different oral & written contexts.
- Use a variety of grammatical structures that are listed in the curriculum in spoken and written discourse precisely.
- Write a complete text using the appropriate writing conventions (e.g., spelling and punctuation).
- Use background knowledge (vocabulary, grammar, and content) to generate ideas and smoothly express ideas in both oral and written situations, which results in fluent discourse.
- Speak confidently and naturally without hesitation.
- Use transitional words to connect ideas in both oral and written discourse and move smoothly among ideas.

- Demonstrate a conscious and thoughtful understanding of the visualized items to generate ideas, invoke relevant vocabulary, and express ideas fluently.
- Use AI tools in writing and editing (e.g., translators, electronic dictionaries, spell and grammar checks).
- Use AI tools to enhance pronunciation and grammar in oral discourse.
- Use accurate search prompts for AI sites.
- Reflect on ideas precisely, clearly, and thoughtfully, to produce fluent discourse with the flow in oral and written situations.

**Description of The Program**

The program was reflected in twenty-five sessions, including one orientation session. These sessions aimed at enhancing the English language fluency of the 1st year secondary stage students. The first session of the program was an orientation session during which the researcher tried to explain the program components to the participants. By the end of this session, the participants were supposed to have an overall idea about the program and the different roles that they were expected to play. The main point was to make the concept of AI-based programs clear in the participants' minds, to pave the way, and to involve them in the application.

Concerning the other 25 sessions, five different real-life AI-based tasks, whose individual implementation took approximately

four to six online sessions, were introduced to urge EFL participants to use the language and reflect on their learning. Furthermore, the targeted language use components were identified during the application of the tasks' activities. These tasks' activities involved various AI language sites such as Chat GPT, Gemini, Get Pronounce, ESL Discussion, Quill Bot, Pop AI, Write and Improve, Speak and Improve, Talk English, and Elsa Speak. which the researcher used to elaborate and enhance the language use components. The tasks were selected precisely to cover various aspects of the participants' interests.

The program contains five authentic tasks. The materials used were all authentic and derived from real-world contexts. Participants practiced speaking and writing genuine language drawn from different sources, including audio/visual materials and written by AI (e.g., Chat GPT, Gemini, and Talk English). Through these materials, the natural use of the language was introduced to the participants, and they were positively motivated to use the language. The researcher organized AI-mediated tasks for the use of these materials. Each task contained more than one teaching material appropriate to the topic. The topics discussed were:

1. Robots
2. Good Education
3. What is your job?
4. Amazing people
5. Hard work

The tasks and materials were chosen according to the participants' interests and demands after studying specific criteria. The materials, videos, and activities were selected from different sources designed to enhance language fluency. In addition, other activities included in the program were prepared and designed by the researcher using the suggested AI platforms

**Learning and Teaching Strategies and Techniques**

Active learning is the main strategy that is used to achieve the target of the program and to facilitate the researcher's mission of creating a fun and active learning environment. It is helpful as it creates a learner-driven and engaging environment. They listen, visualize, write critically, speak, reflect, and discuss. They were engaged in problem-solving and collaborative activities. They cooperated to achieve predetermined goals. Role-playing activities and interviews were included in the program. Participants took on different roles in a given situation, while other participants tried to observe and listen carefully to be able to reflect on their ideas and performance. Moreover, participants were asked to prepare and design tasks and discuss a different topic for each task. They were also asked to express their viewpoints and ideas and to share personal experiences.

Pair work, group work, and individual work were used to encourage the participants to use the language. Participants' collaboration was reinforced in various interactive techniques in

peer work (e.g. peer editing, interviews), in groups (small group discussions, oral presentations), or the entire group (discussion, debates). Open-ended questioning was used in ways to provoke the participants' thinking and visualization abilities, and consequently, allow for detailed group discussions. The researcher was just a facilitator.

Some more techniques were used to deepen the participants' use of language and to support their progress as follows:

- Paraphrasing participants' responses, validating individual views, demonstrating language use, reinforcing a range of ideas, and making connections across content areas, along with prior knowledge to formulate deeper meaning.
- Facilitating participants' discussions and encouraging scaffolding of observations, reflections, and interpretations.
- Urging participants to support opinions with evidence, listen and share ideas and experiences, to construct meanings together.
- Helping participants to increase their visualization and reflections using some interactive sites such as Talk English, Elsa Speak, and Speak and Improve.
- Making group oral presentations about the proposed tasks supported by the use of tech devices and visualization programs.

## Duration of the Program

The administration of the program lasted for two months, in the summer of 2024. Sixteen sessions were conducted by the researcher in eight weeks. Two periods of 150 minutes were allocated to the participants per week. In addition, there were assignments of almost 60 minutes after every session. The total number of hours for teaching the program was about 56 hours.

## Assessment

The formative and summative assessments were used in the present study. A pre-posttest and its rubric were developed by the researcher and used for assessing the participants' progress in language fluency and providing feedback on their overall performance during the treatment through analyzing the participants' answers.

The researcher used the analytic rubric to assess the participants' progress throughout the program and to assess their performance accurately in the pre-post language fluency test. The rubric consisted of five EFL fluency components, namely: accuracy of oral and written discourse, prior knowledge, oral and written transition, visualization, using AI to achieve the learning outcomes, and reflection.

Summative assessment included the administration of the EFL fluency posttest at the end of the treatment to assess the participants' progress throughout the program and to investigate

the effect of using a technological AI task-based approach on enhancing the 1st secondary stage students' fluency.

## Guidelines for the Application of the Program

Based on the pilot administration of the program and the theoretical background that the researcher included in chapter two, in addition to some views gleaned from experts and practitioners in the field of language instruction, the following guidelines were reached:

- At the beginning of the treatment, a description of the program should be presented to the participants. This description was to include both a general introduction to the program tasks and their intended outcomes, and the components decided to be enhanced, as well as specific anticipated tasks.
- A summary of the technological AI-based activities should be presented to the participants at the beginning of the treatment as a stimulus for them to talk, learn, and involve themselves in different activities.
- Participants should know that learning how to use the English language as a whole was the primary aim of this program. This would be done through writing and speaking activities to assess their progress and language fluency.
- Oral activities were self-home recorded and transcribed for better analysis.

- Continuous assessment should give both the teacher and participants a clear practical idea of how the participants progressed, and which tasks would be of most use in the participants' assessment.

## Findings

SPSS v27, Statistical Package for the Social Sciences, was used to calculate the following:

- Calculating the correlation coefficient between the score of each subcomponent and the overall score of both the oral fluency test and the written fluency test in order to find out the validity of the structural consistency of the two tests.
- Calculate the correlation coefficient between the score of each question and the total score of both the oral fluency test and the written fluency test, in order to determine the validity of the internal consistency of the two tests.
- Calculating the correlation coefficient between the scores of the correctors (the researcher and another corrector) to know the total stability of both the oral fluency test and the written fluency test.
- Calculating the value of the Cronbach alpha coefficient to find out the total stability of both the oral fluency test and the written fluency test.

- Calculating the difference between the average scores of the pre- and post-application applications of the research group students for both the oral fluency test and the written fluency test as a total score and sub-dimensions, using the Wilcoxon Test.
- Calculating the size of the impact of the proposed program based on the use of artificial intelligence sites using the ETA box, to ensure the impact of the proposed program in the development of language fluency, as a total degree and sub-skills for first-year secondary students.
- Calculating the effectiveness of the proposed program based on the use of artificial intelligence sites in the development of language fluency, as a total degree and sub-skills for the first grade of secondary school, using the adjusted earnings ratio for Ezzat.

**Results of the study**

**1) Testing the validity of the first hypothesis:**

The first hypothesis states that "**There is a statistically significant difference between the average ranks of the research group students' grades in the two pre-dimensional applications of the language fluency test (oral and written) as a total score and sub-components separately, in favor of the post-application**". To verify the validity of this hypothesis, the averages of the ranks of the study group's scores before the

application of the proposed program (pre-test of EFL fluency) were compared with the averages of the ranks of the scores of the same group after the application of the program (post-test) as a total score and sub-skills separately. The Wilcoxon Test was used to detect the significance of the differences between the two applications. The following table illustrates the findings:

**Table (6)**

**D ifferences between the averagesof the ranks of the experimental group scores inthe pre- and ,post-applications of the language fluency test where (n = 5 and degrees of freedom =4)**

| Components | Ranks | Number (N) | Mean Rank | Sum of Ranks | mean | | Std. Deviation | | Z - value | Mr. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PRE | POST | PRE | POST | | |
| Accuracy of oral and written discourse | Positive Ranks | 6 | 3.0 | 15.0 | 6 | 22.2 | 0.1 | 0.84 | 2.041 | 0.041 |
| | Negative Ranks | 0 | 0.00 | 0.00 | | | | | | |
| Prior knowledge | Positive Ranks | 6 | 3.0 | 15.0 | 2 | 5.6 | 0 | 0.55 | 2.070 | 0.038 |
| | Negative Ranks | 0 | 0.00 | 0.00 | | | | | | |
| Oral and written smooth transition .(flow) | Positive Ranks | 6 | 3.0 | 15.0 | 4 | 10.6 | 0.1 | 1.14 | 2.032 | 0.042 |
| | Negative Ranks | 0 | 0.00 | 0.00 | | | | | | |
| Visualization | Positive Ranks | 6 | 3.0 | 15.0 | 2 | 5.9 | 0 | 0.02 | 2.036 | 0.025 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Negative Ranks** | **0** | **0.00** | **0.00** | | | | | | |
| Using AI to produce fluent discourse | **Positive Ranks** | **6** | **3.0** | **15.0** | **6** | **17** | **0** | **0.71** | **2.060** | **0.039** |
| | **Negative Ranks** | **0** | **0.00** | **0.00** | | | | | | |
| Reflection | **Positive Ranks** | **6** | **3.0** | **15.0** | **2** | **5.2** | **0.12** | **1.10** | **2.070** | **0.038** |
| | **Negative Ranks** | **0** | **0.00** | **0.00** | | | | | | |
| Overall of the of Fluency | **Positive Ranks** | **6** | **3.0** | **15.0** | **22** | **66** | **0** | **1.87** | **2.032** | **0.042** |
| | **Negative Ranks** | **0** | **0.00** | **0.00** | | | | | | |

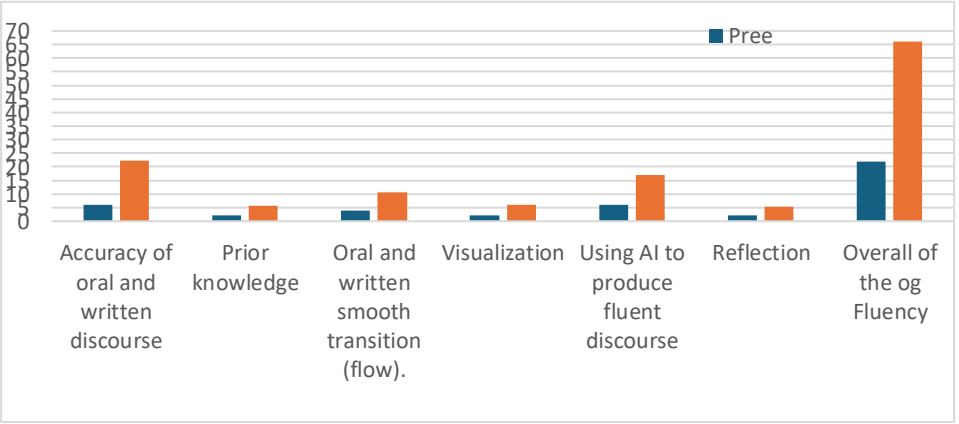
In Table (6), it was clear that the average of the research group students' scores in the post-application of the language fluency test (oral and written fluency together) was higher than the average of the pre-application, which was due to the program based on using AI sites. The standard deviation in the post application was less than the standard deviation of the pre application which indicated the convergence of the levels of the research group students in language fluency after the application of the program, and the results of language fluency (oral and written together) as a total degree and sub-components were as follows: positive ranks 5, equivalent ranks 0 and negative ranks zero, and this indicates that the scores of 5 students (all the research group students) increased in the application, and there are

no students whose grades equalized or decreased in both pre- and post-applications.

Also, the significance (Sig) in language fluency was higher than 0.01 and less than 0.05, and this indicated that there were differences between the pre- and post-applications in the language fluency test at the level of significance 0.05. Thus, the first hypothesis, "**There is a statistically significant difference between the average grades of the research group students in the two pre-post applications of the language fluency test (oral and written fluency) as a total score and sub-components separately, in favor of the post-application,**" was accepted

The following graph shows the difference between the average scores of the research group students in the pre- and post-applications of language fluency:

**Figure (1) The difference between the average scores of the research group students in the pre- and post-applications of language fluency**



## 2) Testing the validity of the second hypothesis:

The second hypothesis stated that "**There is a statistically significant difference between the average grades of the research group students in the two pre-post applications of the oral fluency test as a total score, in favor of the post-application** ". To verify the validity of this hypothesis, the average ranks of the research group's grades before the application of the proposed program were compared with the averages of the ranks of the same group after the application of the proposed program. On the oral fluency test as the total score. The Wilcoxon Test was used to detect the significance of the differences between the two applications. The following table illustrates the findings:

**Table (7)**

**D ifferences between the average ranks of the experimental group scores in the pre-and ,post-applications of the oral fluency test where )n = 5 and degrees of=freedom 4)**

| Components | Ranks | Number (N) | Mean Rank | Sum of Ranks | mean | | Std. Deviation | | Z - value | Mr. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PRE | POST | PREE | POST | | |
| Overall of the Oral Fluency | Positive Ranks | 6 | 3.0 | 15.0 | 11 | 31.6 | 0.1 | 1.52 | 2.032 | 0.042 |
| | Negative Ranks | 0 | 0.00 | 0.00 | | | | | | |

In Table (7), it was clear that the average of the scores of the research group students in the post-application of **the oral fluency**

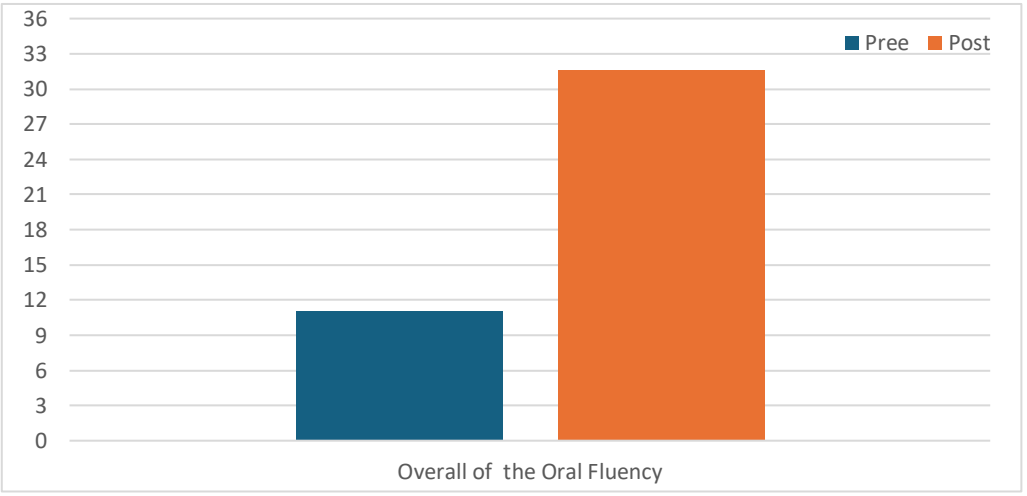
**test** was higher than the average of the pre-application, which was due to the program based on AI sites in teaching English. Moreover, the standard deviation in the post-application was less than the standard deviation of the pre-application, and this indicates the convergence of the levels of the research group students in oral fluency after the application. The results of oral fluency came as follows: Positive ranks 5, neutral ranks 0, and negative ranks Zero, and this indicated that the scores of 5 students (all students of the research group) increased in the post-application from the pre-application, and there were no students whose grades equalized or decreased in the pre-and post-application of **the oral fluency** test.

The Sig. in oral fluency as a total score was also higher than 0.01 and less than 0.05, and this indicated that there were differences between the pre-and post-applications in the oral fluency test as a total score at the level of significance **0.05**; Thus, the second hypothesis "**There is a statistically significant difference between the average grades of the research group students in the two pre-post applications of the oral fluency test as a total score, in favor of the post-application** " was accepted.

The following graph shows the difference between the average scores of the research group students in the pre- and post-applications of oral fluency:

**Figure (2)**

**The difference between the average scores of the research group students in the pre- and post-applications of oral fluency**




**3)Testing the validity of the third hypothesis:**

The third hypothesis stated, "**There is a statistically significant difference between the average ranks of the degrees of the research group students in the two pre- and post-applications of the oral fluency test as sub-components separately, in favor of the post-application**". To verify the validity of this hypothesis, the averages of the ranks of the research group scores before the application of the proposed program were compared with the averages of the same group after the application of the proposed program on oral fluency test as subcomponents separately, and the Wilcoxon Test was used to detect the

significance of differences between the two applications. The following table illustrates the findings in this regard:

**Table (8)**

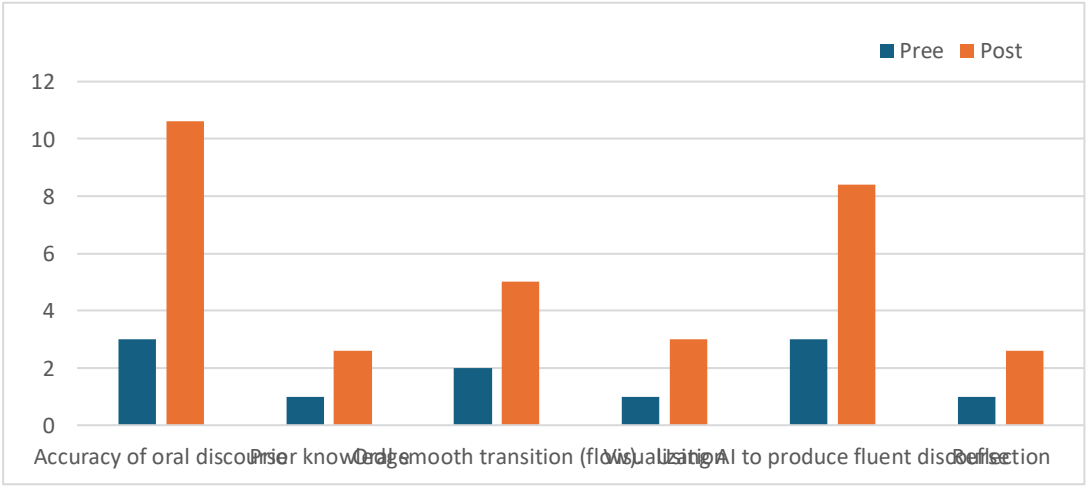
**D ifferences between the average ranksof the experimental group scores in the pre- andpost-applications of the oral fluency test as sub-components, where (n = 5 and degrees of freedom= 4)**

| Components | Ranks | Number (N) | Mean Rank | Sum of Ranks | mean | | Std. Deviation | | Z - value | Mr. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PREE | POST | PREE | POST | | |
| Accuracy of oral discourse | Positive Ranks | 6 | 3.0 | 15.0 | 3 | 10.6 | 0.1 | 0.55 | 2.070 | 0.038 |
| | Negative Ranks | 0 | 0.00 | 0.00 | | | | | | |
| Prior knowledge | Positive Ranks | 6 | 3.0 | 15.0 | 1 | 6.2 | 0 | 0.57 | 2.070 | 0.038 |
| | Negative Ranks | 0 | 0.00 | 0.00 | | | | | | |
| Oral smooth transition .(flow) | Positive Ranks | 6 | 3.0 | 15.0 | 2 | 5 | 0.13 | 0.57 | 2.060 | 0.039 |
| | Negative Ranks | 0 | 0.00 | 0.00 | | | | | | |
| Visualization | Positive Ranks | 6 | 3.0 | 15.0 | 1 | 3 | 0.11 | 0.08 | 2.236 | 0.025 |
| | Negative Ranks | 0 | 0.00 | 0.00 | | | | | | |
| Using AI to produce fluent discourse | Positive Ranks | 6 | 3.0 | 15.0 | 3 | 8.4 | 0 | 0.55 | 2.070 | 0.038 |
| | Negative Ranks | 0 | 0.00 | 0.00 | | | | | | |
| Reflection | Positive Ranks | 6 | 3.0 | 15.0 | 1 | 2.6 | 0.02 | 0.55 | 2.070 | 0.038 |
| | Negative Ranks | 0 | 0.00 | 0.00 | | | | | | |

In Table (8) it was clear that the average of the scores of the students of the research group in the post-application of the oral

fluency test as sub-components is higher than the average of the pre-application, which was due to the program based on the use of AI sites in teaching English, and the results of all components of oral fluency were as follows: positive ranks 5, equivalent ranks 0 and negative ranks zero, and this indicates that the scores of 5 students (all students of the research group) increased in the application after the application of the pre-application, and there were no students whose grades equalized or decreased in the pre- and post-applications of the test Oral fluency as subcomponents.

The Sig. in oral fluency as subcomponents was higher than 0.01 and less than 0.05, and this indicated that there were differences between the pre-and post-applications in the oral fluency test as subcomponents at the level of significance 0.05; Therefore, the hypothesis that stated that "**there is a statistically significant difference between the average grades of the research group students in the two pre-post applications of the oral fluency**



**test as sub-components separately, in favor of the dimensional application**" was accepted.

The following graph shows the difference between the average scores of the research group students in the pre- and post-applications of oral fluency as subcomponents:

**Figure (3) The difference between the average scores of the research group students in the pre- and post-applications of oral fluency as subcomponents**

**4) Testing the validity of the fourth hypothesis:**

The first hypothesis stated, "**There is a statistically significant difference between the average ranks of the degrees of the research group students in the two pre-dimensional applications of the written fluency test as a total score, in favor of the post-application**". To verify the validity of this hypothesis, the averages of the ranks of the research group's scores before the application of the proposed program were compared with the averages of the ranks of the scores of the same group after the application of the proposed program on the written fluency test as a total score. The Wilcoxon Test was used to reveal the significance of differences between the two applications. The following table illustrates the findings in this regard:

**Table (9)**

**D ifferences between the average ranks of the experimental group scores inthe pre-and post-applications of the written fluencytest ,where )n = 5 and degrees of=freedom 4)**

| Components | Ranks | Number (N) | Mean Rank | Sum of Ranks | mean | | Std. Deviation | | Z - value | Mr. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PREE | POST | PREE | POST | | |
| Overall of the Writing Fluency | Positive Ranks | 6 | 3.0 | 15.0 | 11 | 34.4 | 0.15 | 0.55 | 2.070 | 0.38 |
| | Negative Ranks | 0 | 0.00 | 0.00 | | | | | | |

In Table (9), it was clear that the average of the scores of the research group students in the post-application of the oral fluency test and written fluency as a total score is higher than the pre-application average. which was due to the program based on the use of AI sites in teaching English. The standard deviation in the post-application was less than the standard deviation of the tribal application, and this indicated the convergence of the levels of the research group students in writing fluency after teaching them using the proposal based on the use of AI sites, and the results of written fluency as a total degree were as follows: Positive ranks 5, neutral ranks 0 and negative ranks Zero, and this indicated that the scores of 5 students (all students of the research group) increased in the application after the application of the pre-application, and there were no students whose grades equalized or decreased in the pre- and post-applications of the written fluency test.

The Sig. in oral fluency as a total score was higher than 0.01 and less than 0.05, and this indicated that there were differences between the pre-and post-applications in the written fluency test as a total score at the level of significance 0.05; Therefore, the hypothesis that stated that "**There is a statistically significant difference between the average ranks of the degrees of the research group students in the two pre-dimensional applications of the written fluency test as a total score, in favor of the post-application**" was accepted.

The following graph shows the difference between the average scores of the research group students in the pre- and post-applications of writing fluency

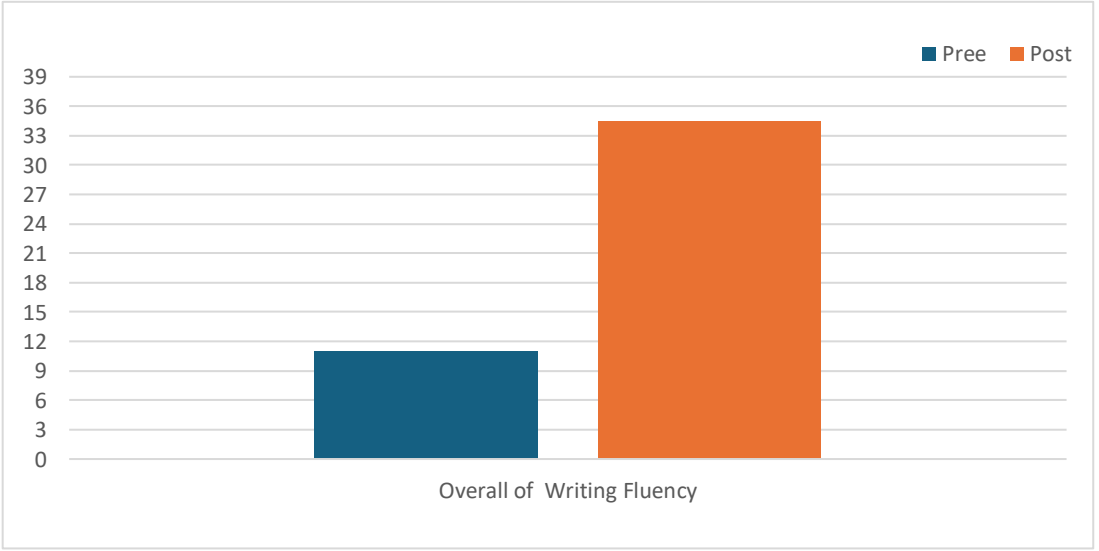


**Figure (4) The difference between the average scores of research group students in the pre-and post-applications of writing fluency**

## 5) Testing the validity of the fifth hypothesis:

The fifth hypothesis stated that "**there is a statistically significant difference between the average grades of the research group students in the two pre-post applications of the written fluency test as sub-components separately, in favor of the post-application** ", and to verify the validity of this hypothesis, the averages of the ranks of the research group scores before the application of the proposed program were compared with the averages of the ranks of the same group after the application of the proposed program, and that on the written fluency test as a sub-component individually. The Wilcoxon Test was used to detect the significance of the differences between the two applications. The following table illustrates the findings in this regard:

**Table (10)**

**D ifferences between the average ranks of the experimental group scores in thepre- and post-applications of the written fluency test as subcomponents**

**where (n = 5 and degrees of freedom= 4)**

| Components | Ranks | Number (N) | Mean Rank | Sum of Ranks | mean | | Std. Deviation | | Z - value | Mr. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PREE | POST | PREE | POST | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Accuracy of written discourse | **Positive Ranks** | **6** | **3.0** | **15.0** | **3** | **11.6** | **0.0** | **0.55** | **2.070** | **0.038** |
| | **Negative Ranks** | **0** | **0.00** | **0.00** | | | | | | |
| Prior knowledge | **Positive Ranks** | **6** | **3.0** | **15.0** | **1** | **3** | **0.11** | **0.0** | **2.236** | **0.025** |
| | **Negative Ranks** | **0** | **0.00** | **0.00** | | | | | | |
| written smooth transition .(flow) | **Positive Ranks** | **6** | **3.0** | **15.0** | **2** | **5.6** | **0.02** | **0.55** | **2.070** | **0.038** |
| | **Negative Ranks** | **0** | **0.00** | **0.00** | | | | | | |
| Visualization | **Positive Ranks** | **6** | **3.0** | **15.0** | **1** | **3** | **0.11** | **0.0** | **2.236** | **0.025** |
| | **Negative Ranks** | **0** | **0.00** | **0.00** | | | | | | |
| Using AI to produce fluent discourse | **Positive Ranks** | **6** | **3.0** | **15.0** | **3** | **8.6** | **0.0** | **0.55** | **2.070** | **0.038** |
| | **Negative Ranks** | **0** | **0.00** | **0.00** | | | | | | |
| Reflection | **Positive Ranks** | **6** | **3.0** | **15.0** | **1** | **2.6** | **0.11** | **0.55** | **2.070** | **0.038** |
| | **Negative Ranks** | **0** | **0.00** | **0.00** | | | | | | |

In Table (10), it was clear that the average of the scores of the research group students in the post-application of the written fluency test as subcomponents was higher than the average of the pre-application, which was due to the program based on the use of AI sites in teaching English. The results of all components of

written fluency were as follows: positive ranks 5, neutral ranks 0, and negative ranks zero. This indicated that the scores of 5 students (all students of the research group) increased in the application away from the application of pre-application, and there were no students whose grades equalized or decreased in the pre- and post-applications of the written fluency test as subcomponents.

The Sig. in oral fluency as subcomponents was higher than 0.01 and less than 0.05, and this indicated that there were differences between the pre-and post-applications in the written fluency test as subcomponents at the level of significance 0.05; Therefore, the hypothesis that stated that "**There is a statistically significant difference between the average grades of the research group students in the two pre-post applications of the written fluency test as sub-components separately, in favor of the post-application.**" was accepted.

The following graph shows the difference between the average scores of the research group students in the pre- and post-applications of writing fluency as subcomponents:

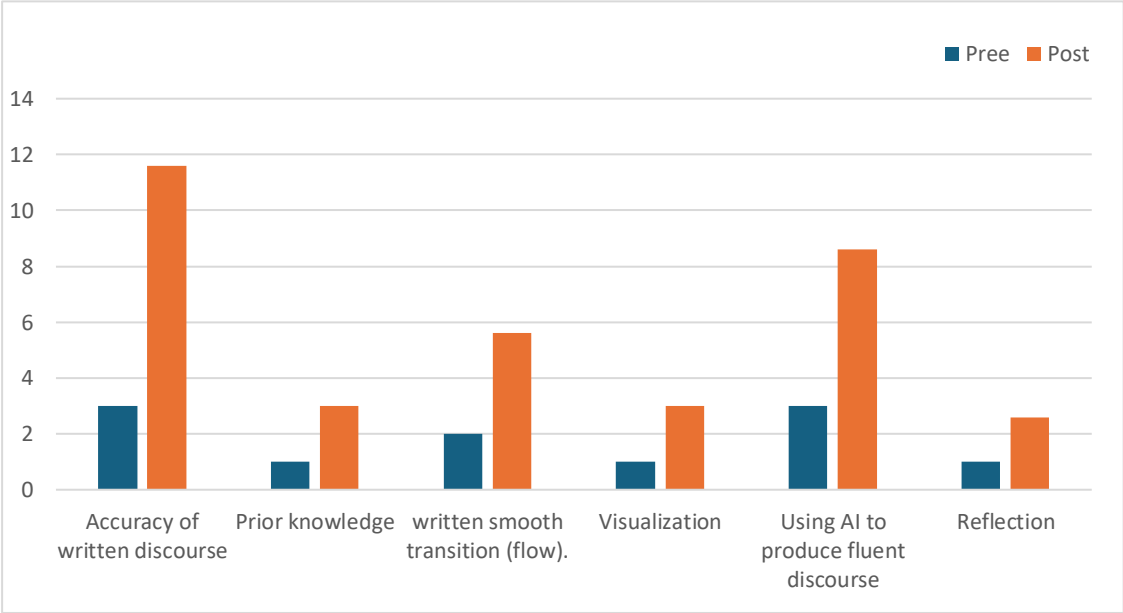



**Figure (5) The difference between the average scores of research group students in the pre-and post-applications of writing fluency as subcomponents**

## 6) Measuring the effectiveness of the proposed program in developing language fluency:

Although the size of the impact was very large in the tables, this indicated that the use of the proposed program based on the use of AI sites helped to develop the skill of all language fluency in general and both oral fluency and written fluency in particular

as a college degree and sub-skills among first-year secondary students, but the effectiveness of the proposed program based on the use of AI sites was confirmed from During the calculation of Ezzat's corrected gain ratio (Ezzat Abdel Hamid, 2013, 28), **it is given by the relation of:**

$$CEG_{ratio} = \frac{M_2 - M_1}{P - M_1} + \frac{M_2 - M_1}{P} + \frac{M_2 - M_1}{M_2}$$

**CEG ratio = Adjusted Gain Ratio**

**M1 = Average of Tribal Measurement**

**M2 = Average telemetry**

**P = Maximum score for the test**

**<u>This refers to:</u>**

If the corrected gain ratio was less than 1.5, the program is inactive

If the corrected gain ratio was higher than or equal to 1.5 and less than 1.8, the program is average effective.

If the corrected gain ratio was higher than or equal to 1.8, the program is acceptable or effective.

The following table shows the corrected gain ratio values for Ezzat:

**Table (11)**

**The averages of the scores of the students of the research group in the pre- and post-applications of the functional writing test, and the corrected earnings ratio for Ezzat.**

| Significance | Corrected earnings ratio For Ezzat | Arithmetic mean | | Grade Great Britain | audition |
|---|---|---|---|---|---|
| | | Go away | southern | | |
| **Effective** | **2.04** | **31.6** | **22.20** | **36** | Oral fluency |
| **Effective** | **2.27** | **34.4** | **11** | **36** | Writing fluency |
| **Effective** | **2.16** | **66** | **11** | **72** | Language fluency |

In Table (11) all the values of the percentage of gain corrected for Ezzat in the development of all language fluency in general and both oral fluency and written fluency in particular, among first-year secondary students "research group" higher than 1.8, which was due to the program based on the use of AI sites was effective in the development of language fluency in general and the development of both oral fluency and written fluency in particular, among first-year secondary students, and thus the answer to The fourth question of the research, which stated**: "What is the effectiveness of a program based on the use of artificial intelligence sites on the fluency of English as a foreign language among first-year secondary students?"** was declared.

In order to evaluate the participants' performance accurately, an analytic EFL fluency rubric was needed. Therefore, the researcher developed an EFL fluency rubric of three rating items used in assessing the 1st year secondary stage students' EFL fluency components in the pre/posttest. Using rubrics also helped the participants to improve themselves and to identify the

quantitative and qualitative progress in their scores in the EFL fluency components.

The production of five participants before and after the treatment was presented. The rubric items were adopted to analyze critically their production in the EFL fluency pre/posttest to find the differences.

After applying the treatment, the researcher made an analysis of the pre/posttest data to see to what extent the participants made benefit from the AI-based program. The results of the rubric confirmed the results of the pre/posttest. A descriptive statistical analysis of the participants' scores in each component in the pre/posttest revealed that, on a general level, there was a clear enhancement of the participants' EFL fluency components. Participants considered the integration of technological devices, practicing AI-based tasks in the language classroom, as effective. The following is a critical analysis of three participants' production through adopting the rubric items:

The analysis of participants' results in the EFL fluency pre/posttest, indicated the participants' progress in each component. There were critical differences between the production before and after the treatment. The analysis of participants' answers in the pre-test revealed that they:

- Perform inaccurate and unclear pronunciation throughout the context, with incorrect inflections, number of syllables, and other nuances of pronunciation.

- Use inaccurate/ irrelevant vocabulary in different oral & written contexts.
- Less or inadequate use of grammatical structures that are listed in the curriculum in spoken and written discourse, precisely.
- Write an incomplete text using the appropriate writing conventions (e.g., spelling, and punctuation).
- Limited or cannot use background knowledge (vocabulary, grammar, and content) to express ideas and understanding in both oral and written discourse.
- . Limited use of transitional words to connect ideas in both oral and written discourse and move smoothly among ideas.
- Limited or cannot publish or provide purposeful presentations for a variety of authentic audiences.
- Limited or cannot reflect on individual learning artifacts and demonstrate an unconscious and thoughtless understanding of the visualized items as well as their process of learning.
- Limited or no use of AI tools in writing and editing (e.g., translators, electronic dictionaries, spell and grammar checks).
- Limited or cannot use AI tools to enhance pronunciation and grammar in oral fluency.
- Limited or cannot use search prompts for AI sites.

- Reflect on ideas imprecisely, unclearly, and thoughtlessly or demonstrate significant depth of self-reflection on the topic using prior knowledge.

While analyzing the answers of the participants in the post-test revealed that they:

- Perform accurate and clear pronunciation throughout the context, with correct inflections, number of syllables, and other correct nuances of pronunciation.
- Use accurate/ relevant vocabulary in different oral & written contexts.
- Use a variety of grammatical structures that are listed in the curriculum in spoken and written discourse precisely.
- Write a text using the appropriate writing conventions (e.g., spelling and punctuation).
- Use background knowledge (vocabulary, grammar, and content) to generate ideas and smoothly express ideas in both oral and written situations.
- Use transitional words to connect ideas in both oral and written discourse and move smoothly among ideas.
- Publish and provide purposeful presentations for a variety of authentic audiences.

- Reflect on individual learning artifacts and demonstrate a conscious and thoughtful understanding of the visualized items as well as their process of learning.
- Use AI tools in writing and editing (e.g., translators, electronic dictionaries, spell and grammar checks).
- Use AI tools to enhance pronunciation and grammar in oral discourse.
- Use accurate search prompts for AI sites.
- Reflect on ideas precisely, clearly, and thoughtfully, and demonstrate significant depth of self-reflection on the topic using prior knowledge.

This improvement can be due to the influence of the AI-based program that included the varied activities through group work, brainstorming, taking turns, discussion, and role play. These different activities helped the students improve their EFL fluency and encouraged them to interact fluently without fear, successfully talk coherently. At the beginning, they found difficulty being a fluent speaker. After the treatment, the participants' EFL fluency was improved. This was obvious in their ability to interact in English spontaneously without hesitation or interlocutors.

Furthermore, each session contained a fruitful discussion about a given topic to write a script about. Thus, they were asked to express their own beliefs, experiences, and prior knowledge

regarding the given topic. They also exchanged their ideas with each other. Consequently, it can be included that using the AI-based program was effective in developing EFL 1st year secondary stage students' fluency.

## Recommendations

Based on the previous results and findings, the following recommendations were suggested:

- Instructors should apply the AI-based approach to encourage and enhance learners' fluency.
- Instructors should implement the use of technology in learning languages, relying on the widespread usage of smartphones to access information.
- Instructors should associate their teaching and learning with current technological tools.
- More attention should be paid to EFL teaching approaches, as implementing new applications to facilitate the learning process leads to a positive impact on enhancing learning outcomes.
- Educators should encourage learners to integrate language components to enhance students' understanding and language production. Using AI apps increases both learners' pronunciation and lexical acquisition and the implicit enhancement of their fluency.

- Educators should encourage learners to use AI apps, which would have a positive impact on not only modifying but also acquiring various new vocabulary.
- Instructors should teach grammar rules implicitly through AI apps, which is more effective than teaching them explicitly. Teaching grammar implicitly through context helps learners master the grammar rules without facing the burdens of memorizing the construction of the grammar rule itself. This helps in acquiring the application of grammar rules without wasting effort or time on recalling the rule, which leads to enhancing learners' oral fluency.
- EFL educators should teach EFL oral writing fluency more interactively.
- Researchers and instructors should continue developing their acquired abilities and knowledge through enrolling in workshops, in-service courses, and extension courses provided by specialized universities. Such courses could improve the instructors' approach to instruction in lecture halls.

**Suggestions for Further Studies**

Researchers may further explore the effectiveness of applying AI-based approach strategies in EFL learning. The following examples may be taken into consideration:

- Exploring the effectiveness of an AI-based approach in developing English language use.
- Exploring the effectiveness of an AI-based approach in developing EFL fluency for primary learners.
- Exploring the effect of other AI sites on developing EFL fluency.
- Investigating the effectiveness of an AI-based approach on developing writing fluency.
- Designing a training program to train instructors on using AI-based approaches and modern teaching aids.
- A critical review of using AI-based approaches for developing EFL fluency.

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