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Using Reciprocal Teaching to Develop Academic Writing Skills and Learning Independence among University Students

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Abstract

This study aimed at investigating the effectiveness of reciprocal teaching strategy on developing academic writing skills and learning independence among university students. The researcher adopted the quasi-experimental design. The Participants of the study were 100 second year students from faculty of management students at Sadat Academy for Management Sciences. The participants were divided into two groups experimental and control one. A checklist was designed to identify the required EFL academic writing skills for second year students. An EFL academic writing skills test was designed by the researcher and used as a pre-posttest for the two groups. The researcher used some academic writing activities which were used in teaching the experimental group, while the regular method was used in teaching the control one in the academic year (2023-2024). The data were analyzed statistically by SPSS. Results of the study revealed a positive effect on developing experimental group's academic writing skills and enhancing learning independence.

Keywords: Reciprocal Teaching, Academic Writing Skills, Learning Independence, University Students.

المستخلص

هدفت هذه الدراسة إلى معرفة مدى فاعلية التدريس التبادلي في تنمية مهارات الكتابة الأكاديمية واستقلالية التعلم لدى طلاب الجامعة. ولهذا الغرض تم اختيار مجموعتين عشوائياً وتقسيمهما إلى مجموعة تجريبية ومجموعة ضابطة بواقع خمسين طالباً في كل مجموعة من طلاب الفرقة الثانية بأكاديمية السادات للعلوم الإدارية خلال الفصل الدراسي الأول من العام الدراسي ٢٠٢٣-٢٠٢٤، واستخدم الباحث التصميم شبه التجريبي . قام الباحث بإعداد قائمة بمهارات الكتابة الأكاديمية للغة الإنجليزية المطلوبة لطلاب الفرقة الثانية شعبة إدارة أعمال دولية بكلية العلوم الإدارية بأكاديمية السادات للعلوم الإدارية وقائمة مرجعية لاستقلالية التعلم واختبار الكتابة الأكاديمية للغة الإنجليزية كلغة أجنبية. تم اختبار الطلاب في كلا المجموعتين قبلياً باستخدام اختبار الكتابة باللغة الإنجليزية كلغة أجنبية. وبعد ذلك استخدم الباحث نموذج التدريس التبادلي لتنمية مهارات الكتابة الأكاديمية لتدريس المجموعة التجريبية، في حين تلقت المجموعة الضابطة التعليم بالطريقة التقليدية. وأخيراً، تمت إعادة اختبار الكتابة الأكاديمية للغة الإنجليزية كلغة أجنبية بعدياً على كلا المجموعتين. تم تحليل البيانات التي تم الحصول عليها إحصائياً. وقد أشارت النتائج إلى وجود فرق ذو دلالة إحصائية بين متوسطى درجات طلاب المجموعة التجريبية والضابطة لصالح طلاب المجموعة التجريبية فى التطبيق البعدى لإختبار الكتابة الأكاديمية. وهكذا أثبت نموذج التدريس التبادلي أن له أثراً كبيراً في تنمية مهارات الكتابة الأكاديمية لدى طلاب الجامعة واستقلاليتهم في التعلم. وفي ضوء النتائج تم تقديم مجموعة من التوصيات والأبحاث المستقبلية.

الكلمات المفتاحية: التدريس التبادلي، مهارات الكتابة الأكاديمية، استقلالية التعلم، طلاب الجامعة.



Introduction

English is the most extensively used language for communication worldwide. It is utilized in a variety of fields, including education. The four essential competences of English are listening, speaking, reading, and writing. Accurate writing enables effective concept communication and goal achievement in both personal and professional life.

Given that writing is among the most crucial prerequisites for teaching and learning a language. It is a language ability that pupils need to succeed academically and as a means of communicating their ideas and emotions. Students can demonstrate their inventiveness in language and thought through writing (Chen, et al., 2017: 433–440).

Proficiency in a variety of areas, including writing organisation, coherence, grammar, and vocabulary, is essential for academic writing, which is crucial for the language development of English language learners (Campbell, 2019). Strong writing abilities enable students to express themselves clearly, convey ideas, and succeed academically in a variety of professional contexts (Yoon, 2011).

According to Chauhan (2022), academic writing provides a range of formats for thought exploration. In a research paper, you might analyse a challenging subject; in an essay, you might present a convincing case; or in a literature review, you might examine previous studies. While case studies provide in-depth analyses of certain circumstances, lab reports describe scientific investigations in detail. There is an academic writing style that fit almost every scientific endeavour, from proposals describing a research strategy to reflective pieces examining personal growth.



Therefore, when creating academic writing courses, educators must keep in mind that students need to learn how to produce different kinds of texts for different purposes at different levels and in different learning contexts. Additionally, because of their prior education and writing experiences, students may have developed specific writing habits, which are often determined culturally (Johnson, 2016).

In order to execute the qualities of outstanding writing, Al-Zu'be (2006) created the reciprocal technique, which was useful for teaching writing composition. They were sure that the scaffold discussion method known as reciprocal teaching was built upon the four writing strategies used by effective authors. Four well-chosen supporting strategies—making predictions, formulating questions, defining problems, and summarizing—are each employed to achieve one or more particular objectives. Students need to practise what they have learned in order to predict by creating expectations for the text's next section in their writing. Questions help students focus on the main ideas while also gauging how well they understand the text they are reading. In order to assist students understand and make sense of unclear or confusing texts, they must actively participate in the reading process. Furthermore, when summarising, students must focus on the key ideas of the selection and choose which details are important and which are not.

Shared accountability between the instructor and students, constructivism through the creation of constructivism, effectiveness through all students participating in the activities, and modelling through the teacher's initial creation of sub-strategies before progressively passing the baton to the students (Ardiya, 2019:102). Given the importance of reciprocal teaching, a lot of studies on the teaching and learning of language skills have been carried out; however, not all of these studies concentrate on developing critical reading abilities through the application of the reciprocal teaching technique.



Research has shown that reciprocal teaching is an effective paradigm for teaching a variety of writing techniques (Cárdenas & López-Pinzón, 2019). After students have witnessed extensive modelling of reciprocal teaching and have mastered the four supporting reading skills, teachers should utilise reciprocal teaching to teach writing. The four methods have a key role in the writing process during the prewriting and authoring stages. One of the best instructional strategies for improving students' writing skills is the reciprocal teaching approach.

According to SUARI (2022), gaining independence is a process of empowerment and self-discovery. It entails being self-reliant, taking initiative, and efficiently managing your time in order to solve difficulties. Even though you'll make mistakes along the road, you'll gain confidence in your skills via trial and error. You may now traverse the world with more self-reliance thanks to your newfound freedom, which promotes a sense of accomplishment and opens the door to lifetime learning.

Based on the foregoing explanation, the researcher tried to examine the effectiveness of reciprocal teaching on developing academic writing skills and learning independence among university students.

Statement of the problem

Since written communication is so important in academic settings, many linguistically and pedagogically oriented studies that assess the performance of native and non-native writers in terms of genre, cross-cultural variation, and disciplinary area have made teaching and learning academic writing skills in English a central concern (Starfield & Ravelli, 2014).

Writing in general and academic writing in particular, according to Povolná (2016), can be difficult for students and teachers because it's a highly complex productive skill that involves a number of complementary and overlapping elements, including knowledge of language structures and written work content, awareness of text functions, writing process stages, the interactive



nature of written discourse, in addition to genre and disciplinary norms. Because of disparities in academic literacy traditions and writing standards between their mother tongue and English, as well as variances in linguistic proficiency, non-native English writers confront more and different obstacles than native speakers (Hinkel, 2003).

Due to their lack of academic English proficiency and lower degree of English fluency, non-native authors frequently face linguistic disadvantages. Due to their lack of familiarity with disciplinary and genre conventions in academic writing, the ambiguity surrounding current conventions in academic writing style, and the variations in literacy traditions associated with socially and culturally determined genre practices within the specific discourse community they are a part of, they are also at a disadvantage both rhetorically and interpersonally.

The researcher found that most EFL university students lacked confidence while writing in any language and were unable to articulate themselves in precise, understandable English. Despite receiving early English instruction, Egyptian university students still have difficulty with academic writing in the language.

As a result, this research aimed to investigate the effectiveness of reciprocal teaching on developing academic writing skills and learning independence among university students.

Research Questions:

The Research problem could be stated in the following main question:

- What is the effectiveness of reciprocal teaching on developing academic writing skills and learning independence among university students?

The following questions were derived from the main question:

- What are the academic writing skills required for university students?
- What are the learning independence skills required for university students?
- Does using Reciprocal Teaching improve the academic writing skills of university students?
- Does Reciprocal Teaching promote learning independence among university students?
- How do university students perceive the effectiveness of Reciprocal Teaching in developing their academic writing skills and learning independence?

Aims of the Research:

The aim of the current research is to:

- Determine the academic writing skills required for university students.
- Identify the learning independence skills required for university students.
- Identify the effectiveness of Reciprocal Teaching in developing their academic writing skills and learning independence.

Hypotheses of the research:

The current study verified the following hypotheses:

1. There was a statistically significant difference between the mean scores of the experimental and control groups at ($\alpha \leq 0.01$) level of significance in the post administration of academic writing skills test in favor of the experimental group.
2. There was a statistically significant difference between the mean scores of the pre – post administrations of the experimental group at ($\alpha \leq 0.01$) level of significance on academic writing skills test in favor of the post-administration.
3. There was a statistically significant difference between the mean scores of the experimental and control groups at ($\alpha \leq 0.01$) level of significance in the post application of learning independence skills checklist in favor of the experimental group.
4. There was a statistically significant difference between the mean scores of the pre and post-application of the experimental group at ($\alpha \leq 0.01$) level of significance on learning independence skills checklist in favor of the post-application.

Significance of the research

The present research might help:

1. **Students** -as it helps them in improving their academic writing skills through reciprocal teaching model. It helps them work cooperatively.
2. **Instructors**-as it helps them in recognizing and using Reciprocal teaching model in teaching and learning in general, and in teaching academic writing in particular.

3. **Curriculum designers-** as it directs their attention to reciprocal teaching strategy and incorporate some of the methods, techniques and activities based on the reciprocal teaching model.
4. **Researchers-** as it provides them with new avenues of research in reciprocal teaching strategy and how it can be used to teach students at the various stages of education.

Delimitations of the Research

The current research was delimited to:

- 1- A group of second year university students (N=100) from Sadat Academy for Management Sciences.
- 2- Some EFL academic writing skills including (Critical Thinking and Analysis - Research Skills - Writing Skills - Citation and Referencing).
- 3- Some learning independence skills including (Critical Thinking and Analysis - Information Literacy and Research Skills - Critical Thinking and Problem-Solving - Motivation and Self-Discipline- Communication and Collaboration).
- 4- The first semester of the academic year 2023-2024.
- 5- Reciprocal teaching model.

Definition of terms

Reciprocal teaching:

Reciprocal teaching is a comprehension strategy in which students and teachers collaborate to develop their own interpretations of the text through the application of four tactics (Oo Magyar et al., 2021).

Reciprocal teaching, in its operational definition, is a model or approach to teaching academic writing that facilitates university students to share ideas and experiences in order to debate their viewpoints on the subject they are writing about.



Academic writing (AW)

Ferris (2018) characterised it as follows: AW writes in formal, concise, straightforward, and basic written English. It is also rational, well-organized, brief, objective, and impersonal.

Operationally, the researcher defined it as the writing produced for college and university writing courses.

Learning independence

Learning independence, according to Nagpal & Leena (2013), is a process, a method, and an educational philosophy in which a student gains knowledge on his own and grows in his ability to critically think and assess information.

According to the researcher's operational definition, it's a procedure where students take charge of their own education and learning objectives.

Theoretical framework

Academic Writing definition

Writing utilised in college and university writing courses is referred to as academic writing (AW) (Johnson, 2016). As a result, AW has emerged as the main means of communication for academic subjects and disciplines within higher education (Greene & Lidinsky, 2015). AW writes in formal, concise, clear, and straightforward English. It is also rational, well-organized, brief, objective, and impersonal. Academic writers need to adhere to stylistic norms and expectations unique to their genre (Ferris, 2018; Osmond, 2016; Starkey, 2015). Context, task, purpose, and audience are all particular to AW (Ferris, 2018; Starkey, 2015).

"The distinct purpose, audience, and context of communication result in clear differences in terms of language use in the selection of words, formality, sentence construction, and discourse patterns," according to Gottlieb and Ernst-Slavit (2013), who expressed similar concepts in parallel (p. 2).

Academic Writing features

Based on its qualities, researchers have differing opinions about AW. Osmond (2016), for instance, made the case that AW projects writers' in-depth knowledge, analytical abilities, and critical thinking abilities while studying various academic subjects within



their majors and disciplines. Because authors can learn about their values, beliefs, writing strengths, and areas for improvement, it is also viewed as an inquiry (Starkey, 2015).

Ferris (2018: 75) has summed up the characteristics of effective academic writers and the writing standards applied in academic and professional contexts as, echoing similar themes.[s] A wide range of sophisticated abilities and knowledge bases are necessary for successful writing in academic and professional contexts. Writers need to have a minimum of a passing understanding of the subject matter they are writing about. They need to be aware of the rhetorical context, which includes the writing's goal as well as the knowledge and expectations of their readership. .. Advanced command of the linguistic (vocabulary, spelling, grammar, cohesive ties) and extra-linguistic (punctuation, capitalization, formatting) elements necessary for the text's genre, substance, and intended readership is required of authors.

Johnson (2016) added that AW has three main characteristics. AW “is an art, a science and a craft” (Johnson, 2016, p. xi).

Types of Academic Writing

Students in colleges and universities are required to produce many kinds of AW. Notation, letter, resume, summary, annotated bibliography, paragraph, report, essay, research paper, thesis, and dissertation are among the most popular forms of AW, according to Bailey (2015). The duration, purpose, and style of each sort of AW are determined by the academic programme and disciplines. Students must follow different formats and citation styles in their academic works depending on the department and school they are in.

To compose a single academic paper, various forms of academic writing are integrated. For instance, when writing a research paper, the author employs a variety of genres. Thus, four sorts of AW are employed in the context of higher education, based on linguistic features and goals.

Descriptive or Expository Writing

Among AW, descriptive writing is the most fundamental kind. Providing information about a certain topic or issue through description, explanation, and delivery is its main goal (Johnson, 2016). Kirszner and Mandell (2015) state that descriptive writers employ language that "creates a vivid impression of what has been seen, heard, smelled, tasted, or touched" (p. 70) in order to help their readers visualise what they are writing about. They go on to say that more descriptive writing will result from writers including as many details as possible.

Analytical Writing

Analytical writing predominates in academic settings in higher education. Analytical writing demonstrates the connections between different informational elements. In particular, analytical writing is employed to critically assess, analyse, and contrast various ideas, models, methodologies, procedures, and empirical study findings (University of Sydney, 2019).

Persuasive Writing

Persuasive writing serves a deeper aim than analytical writing. When writing persuasively, the author presents a cogent case or discusses at least one viewpoint on a subject and backs it up with specifics (University of Sydney, 2019). According to Kirszner and Mandell (2015), the goal of persuasive writing is persuading readers to act or think a certain way. Research proposals, argumentative papers, and research papers all use this style of writing.

Critical Writing

In a critical writing assignment, the writer must take into account at least two points of view, including their own (University of Sydney, 2019). Writing critically involves three steps. The author starts off by summarising the entire or a portion of the research paper. Subsequently, the writer presents their viewpoint on the author's thesis in the piece, emphasising both its advantages and disadvantages. Lastly, the author offers their viewpoint, which is bolstered by pertinent evidence (University of Sydney, 2019).

Inquiry Writing

Inquiry writing is sometimes referred to as research writing since it is based on research. Johnson (2016) states that "to describe all phases of the inquiry process" (p. 4) is the main goal of this kind of writing. This kind of writing addresses a common problem or provides an answer to a query by compiling information from secondary and primary sources, including peer-reviewed research papers, encyclopaedias, and influential books, as well as observations, interviews, and surveys (Lerych & Criswell, 2016; Johnson, 2016).

Elements of academic writing

Here's a breakdown of the core elements that make up strong academic writing (Chauhan, 2022):

Content and Ideas:

- **Focus:** A clear and defined topic or research question that guides your writing.
- **Depth:** Well-developed arguments supported by credible evidence and analysis.
- **Originality:** Your unique perspective or interpretation of the topic, even when referencing existing research.
- **Accuracy:** Factual information and reliable sources to ensure the credibility of your arguments.

Structure and Organization:

- **Logical Flow:** Ideas presented in a clear and organized manner, typically using an introduction, body paragraphs, and conclusion.
- **Thesis Statement:** A concise statement in the introduction that summarizes your main argument or interpretation.
- **Signposting:** Transitions, headings, and subheadings that guide the reader through your arguments.

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- **Paragraph Unity:** Each body paragraph focusing on a single point with supporting evidence.

Style and Language:

- **Formality:** Maintaining a formal tone throughout, avoiding slang, contractions, and informality.
- **Objectivity:** Strive for a neutral and objective perspective, minimizing personal opinions or biases.
- **Clarity and Concision:** Expressing ideas precisely and avoiding unnecessary words or jargon.
- **Academic Vocabulary:** Using precise and specific terms relevant to your field of study.
- **Sentence Structure:** Varying sentence structure for a dynamic and engaging flow.

Source Integration and Citation:

- **Credibility:** Using reputable sources like scholarly journals, books, and data to support your claims.
- **Paraphrasing and Synthesis:** Integrating information from your research seamlessly, avoiding excessive quoting.
- **Proper Citations:** Following a specific style guide (MLA, APA, etc.) to acknowledge your sources and avoid plagiarism.

Basic Conventions of Academic Writing

AW is "formal, precise, purposeful, and objective," according to Johnson (2016) (p. 35). According to Johnson (2016), AW should also adhere to a few other fundamental guidelines, such as (1) using a 12-point Times or Times New Roman font, (2) leaving a one-inch margin on the top, bottom, and sides, (3) double spacing lines and paragraphs, (4) aligning the paper only to the left, and (5) indenting all paragraphs in a research paper except the abstract. AW should adhere to the following fundamental rules in addition to these formatting guidelines.

Objectivity

AW shouldn't be based on opinion. Rather, as objective writing is more persuasive than subjective writing, it should be formal, impersonal, and objective (Bailey, 2018; Johnson, 2016; Osmond, 2016). Osmond (2016) asserts that establishing a deliberate distance between the writers and the subject matter they write about is essential to creating objectivity in AW.

Using Formal Language or Style

In the sense that it refrains from using casual or colloquial terminology, AW is formal. When it comes to the "message being conveyed and the audience," AW should be formal. The author can further establish objectivity by using formal language (Bailey, 2018; Osmond, 2016). AW can be formal by utilising academic vocabulary, academic language (rather than informal), and word and phrase abbreviations.

Simplicity, Clarity, and Conciseness

According to Johnson (2016) and Osmond (2016), AW should be clear (using only the words essential to make it easy to comprehend), simple (direct), precise (correct), and succinct (using as few words as feasible to communicate the point briefly).

Avoiding Biased Language

Johnson (2016) states that AW must refrain from using terminology that discriminates against people on the basis of their location, exceptionality, race, ethnicity, gender, sexual orientation, culture, power, or religion.

Using Abbreviations

According to Osmond (2016), on page 11, abbreviations are "words grouped together, then referred to by their first letters." In AW, abbreviations are used in a certain way. When authors use such technique, they spell words first and then list the relevant abbreviations in brackets (Osmond, 2016).



Genre Awareness

Hyland (2019) claims that the genre is a socially structured method of utilising language for a certain objective. According to Starkey (2015), a genre is a category or kind of writing that is employed in a certain field.

Plagiarism

Plagiarism is an unethical writing practice in which the author uses another person's words or ideas without giving them credit.

Academic theft or criminal activity is the perception (Bailey, 2018; Johnson, 2016; Starkey, 2015).

Core aspects of academic writing

Here's a deeper dive into the core aspects of academic writing (Camusso, & Ziraldo, 2015):

1. Focus on Objectivity:

- Strive to present a balanced view, acknowledging different perspectives on the topic.
- Avoid stating opinions as facts. Use phrases like "it can be argued" or "some researchers suggest" to introduce viewpoints.
- Focus on data, research, and logical reasoning to build your arguments.

2. Evidence and Support:

- Don't make claims in a vacuum. Back them up with credible sources like scholarly journals, reputable books, and data analysis.
- Integrate evidence seamlessly into your writing, explaining its relevance to your argument.
- Use proper citation methods (MLA, APA, etc.) to acknowledge your sources and avoid plagiarism.

3. Structure and Organization:

- Academic writing follows a clear and logical structure, typically:
 - **Introduction:** Outlines the subject, historical context, and research issue.
 - **Body Paragraphs:** Every paragraph concentrates on a particular idea and provides evidence to back it up.
 - **Conclusion:** Provides a summary of the main ideas and any lingering ideas or consequences.
- Make use of headers and subheadings to direct readers and keep the ideas flowing naturally.

4. Formal Language and Tone:

- Maintain a formal tone throughout your writing.
- Avoid slang, contractions, and overly informal language.
- Use precise and specific vocabulary relevant to your field of study.
- Strive for a neutral and objective tone, even when discussing complex or controversial subjects.

5. Clarity and Conciseness:

- Write in a clear and concise manner that is easy for your audience to understand.
- Avoid ambiguity and jargon that may confuse your reader.
- Proofread for clarity and ensure your sentences are well-constructed.

6. Careful Use of Sources:

- Integrate sources smoothly into your writing, avoiding excessive quoting.
- Paraphrase and synthesize information from different sources to demonstrate your own understanding.
- Use quotes strategically to highlight key points or to showcase the views of opposing viewpoints.

Mastering these core aspects will help you produce strong academic writing that effectively communicates your ideas and arguments within your field of study.

Definition of Reciprocal teaching

Reading comprehension is the main goal of the teaching method known as reciprocal teaching. The scaffolded discussion technique known as the reciprocal teaching technique is built around the four reading comprehension strategies of anticipating, asking questions, requesting clarification, and summarising (Yawisah et al., 2017). As part of a reciprocal teaching method, which is a comprehension strategy, the teacher and students collaborate to build their interpretations of the text using four tactics (Oo Magyar et al., 2021).

A fun way to improve students' comprehension and help them form meta-knowledge behaviors—which are characterised as reflecting on and admitting one's own ignorance as well as their own knowledge—is through reciprocal teaching (Mafarja & Fadzil, 2022). The four mutual teaching pillars—predicting, elaborating, questioning, and summarizing—are used to bring learning difficulties to life (Oczkus, 2013).

A method called reciprocal teaching aims to improve students' reading comprehension by using four strategies that foster and monitor comprehension: (1) the student's own questions about the text; (2) the student's own word-for-word summary; (3) the student's own explanation of the parts of the text that the student does not

understand; and (4) the student's own prediction of the text's next events. It's not just the discussions that take place in small groups when students receive wide, reciprocal instruction that counts.

Ostovar-Namaghi and Shahhosseini (2011) contend that the teacher should lead by example by organizing and participating in groups as well as modeling appropriate behavior for each role during the learning process. Through questioning, explaining, summing, and forecasting, the author drew emphasis to the responsibilities placed on the students in the reciprocal teaching method.

When a student is at the questioning stage, they are "questioning" when they take the paper's key terms, ideas, and details and formulate original questions in their own language. According to Rodli and Prastyo (2017), these questions should lay a solid foundation for understanding both the new terms and the full book. Understanding new terminology, responding to inquiries resulting from reading comprehension challenges, and expanding on the text's meaning are all included in the "clarifying" stage. This is something that every student ought to do. If the meaning is clear to students, they will understand the material as a whole, which will aid them in subsequent tasks like summarizing and forecasting.

Furthermore, Stricklin (2011) suggested that as they worked through this process, students make use of other resources (such a lexicon or thesaurus). The process of choosing the most important details or ideas from the book and arranging them logically in the students' own words is known as summarising. Included in this concise synopsis should be all the important information from a text or chapter. According to Williams (2010), students should select these concepts from the material and summarise them briefly in a book or on an assignment. During the final step, predicting, students compare what they already know about the book to the new information they have learned from it.

Before stating any more claims, they make a comparison between the most recent discoveries and the body of previously known knowledge. Students' projections of future events are called "predictions" at this period. The teacher provides additional feedback to student groups as needed in order to promote the

students' efficient and engaged involvement in the reading comprehension process (Ghorbani et al., 2013).

Procedures of implementing reciprocal teaching

Dokur (2017) and Spörer et al. (2009) provide the following description of the reciprocal teaching technique:

- The teacher assigns each student's reading assignment.
- Both the teacher and the pupils consider simply the title when speculating about the text's content. The instructor is now trying to make use of the students' past knowledge by asking them to recall any past knowledge they may have of the subject matter of the proposed text.
- The pupils read aloud the opening sentence of the text.
- The teacher provides examples of how to summarise and highlight the main point of the paragraph, how to make unclear sections clear, how to infer the topic of the next paragraph, and how to ask questions about confusing passages.
- The instructor may repeat modelling at the following stages because it may take some time for youngsters to feel comfortable taking on responsibilities.
- The teacher must wait politely and keep an eye on the clock. A student leader will oversee the same process and invite the group to read the passage aloud first. The speaker then poses a leading question regarding any passages that are unclear or ambiguous, encouraging the class to raise more questions.
- Any topics that are unclear—such as words that are confusing or grammatical constructs that are imprecise and hinder students' understanding—are clarified or questioned by the facilitator.
- The passage's major theme is identified, and its key aspects are summarised, by the leader.
- The leader then asks a volunteer student to take the lead after making some educated guesses about what will be covered in the next paragraph.



The Effect of Reciprocal Teaching on Students' Academic Writing Skills

The potential of the reciprocal teaching model to enhance students' reading comprehension abilities has been investigated. Research, however, also indicates that it might be a useful tool for improving academic writing abilities. The possible advantages are broken down as follows (Ghorbani & Alavi, 2013): Techniques like summarising, questioning, elaborating, and forecasting are all part of reciprocal teaching. With the help of these techniques, students are more likely to actively interact with the text and get a deeper comprehension of the arguments, organisation, and supporting details found in academic writing. Students learn to think critically by raising questions about the text and pointing out confusing portions. In academic writing, the capacity to assess and analyse data is essential for developing arguments that are firmly supported. During reciprocal teaching sessions, students are exposed to new vocabulary and their previous knowledge is reinforced through discussions of texts and their main points. Their capacity to write succinctly and clearly about complicated issues is strengthened by this larger language base. Students get an understanding of how material is arranged and presented logically when they summarise important points and outline the main arguments of a text via reciprocal teaching exercises. This ability relates to organising their own writing so that the introductions, body paragraphs, and conclusions are all clearly defined. Students can acquire the skills necessary to successfully incorporate citations and supporting evidence into their own academic writing by identifying and debating the supporting evidence utilised in the text during reciprocal teaching. Students that participate in reciprocal teaching frequently collaborate, share their interpretations, and offer comments. This cooperative setting helps students develop the communication and clear explanation of complicated concepts that are necessary for academic writing.

Overall, the reciprocal teaching model shows promise as a strategy to enhance students' academic writing skills by promoting deeper text analysis, critical thinking, and effective organization.

Independence of learning definitions

According to Ananda (2019), learning independence is the process by which pupils direct their own education and determine its goals. In order to realise accountability as a student in overcoming learning obstacles, independence of learning is the action of students' consciousness of wanting to learn without compulsion from the surrounding environment. Gaining independence is linked to continuous learning activities that are more motivated by one's own volition, autonomy, and sense of personal accountability for one's education. It is also associated with the forces that propel rigorous, focused, and innovative learning experiences.

The notions of independence and learning are united to form independence of learning. When someone is independent, they are capable of making decisions and taking initiative to solve problems, they have self-confidence in their ability to complete tasks, and they take responsibility for their actions (Egok, 2016).

A person who is independent is able to support himself without the help of others, interact with others, go about their daily business independently, make their own decisions, and show empathy for others. Additionally, according to Seifert and Hoffnung (cited by Egok, 2016), autonomy or independence is the capacity to freely manage one's own ideas, feelings, and behaviours and attempt to overcome feelings of shame and doubt.

Importance of Learning Independence

Independence is crucial because it's a necessary component of the mindset that each and every person needs. Learning independent students, according to SUARI (2022), have been shown to learn more effectively, be able to effectively monitor, assess, and manage their learning, save time, be able to direct and control their own thoughts and behaviours, and not feel emotionally dependent on others. Because they have the independence of student learning,

students can work independently or in groups, analyse complicated situations, and dare to share their opinions. Since teachers cannot just impart knowledge to children during the school day, constructionism theory holds that every student must truly embrace their independence in learning.

The research aims to: 1) find differences in student learning outcomes using inquiry-based learning and discovery learning models; 2) find differences in student learning independence with regard to enhancing student learning outcomes with inquiry-based learning and discovery learning models; 3) identify the relationships that exist between student learning outcomes' independence, inquiry learning, and discovery learning models.

Characteristic of Learning Independence

The six traits of students' learning independence include, according to Hidayati and Listyani (2010), self-control, self-assurance, independence from others, discipline, and a sense of responsibility.²⁶ Hendriana and Sumarmo (2018) have identified nine attributes that define learning independence. These include self-motivation and initiative, diagnosing learning needs, defining learning goals or targets, monitoring, organising, and controlling learning, viewing adversity as a challenge, using and searching for pertinent sources, selecting and putting into practice learning strategies, assessing the learning process and results, and self-efficacy.

Improvement in Students' Learning Independence

The ability of pupils to practise self-control, self-observation, and self-evaluation of their cognitive processes is known as learning independence (Schunk, 2012). Developing independence can be seen as an internalised awareness of the need to take in information, organise it, and make connections between different pieces of knowledge.

The independence of students' learning is a crucial factor in promoting the efficacy of learning activities. Teachers would benefit from student participation in the ways that students could—namely, by individually organising, directing, and monitoring their cognition (Lee, 2010). This indicates that students' active engagement in the learning process is demonstrated by their capacity to expand their knowledge under the guidance of the teacher, facilitating the smooth transfer of knowledge.

In order to help pupils become independent learners, teachers can also play a part. He or she could develop a schedule of learning activities including homework assignments and educational material to help students become more independent learners (Winters et al., 2008). Technology-based learning is one type of education that has the potential to increase learning independence. With computer-based learning, students have a great deal of flexibility in how they organise, schedule, and manage their coursework.

When preparing kids for learning independence, there are a number of crucial factors that must be taken into consideration. According to Younie and Burden (2014), these elements are access, analysis, creation, reflection, and action. These elements could serve as the foundation for using computer-based learning to teach kids how to learn independently. Planning, responsibility, initiative, self-confidence, discipline, and self-evaluation are some of the traits associated with students' learning independence, according to some of the theories that have already been mentioned.

The effect of reciprocal teaching on learning independence

According to Mulyono & Nuriah (2018), research on the difficult topic of reciprocal teaching's impact on independent learning is still ongoing. There are some possible benefits to this approach. What is known is broken down as follows: Activities like summarising, posing queries, providing clarification, and forecasting are all part of reciprocal teaching. With the use of these techniques, students can develop the critical thinking, key point identification, and autonomous text analysis skills that are necessary for self-directed learning. Students gain metacognition—the awareness of their own learning—during reciprocal teaching sessions when they

talk about their thought processes and learning practices. Their ability to recognise themselves can help students become more self-reliant learners who can assess their own development and modify their approach as necessary. Collaborative learning is a common feature of reciprocal teaching. The capacity to communicate effectively and properly explain complicated concepts is fostered in this collaborative atmosphere, which can help students feel more comfortable taking on assignments on their own.

By providing techniques and encouraging metacognition, reciprocal teaching has the potential to assist students in becoming more independent learners. It works best, though, probably in concert with other tactics that empower students to take responsibility for their education and use their knowledge on their own.

Method

Research Design

This research depended on the quasi-experimental pretest-posttest design. An experimental group and another control one was administered the academic writing skills Test and learning independence skills checklist, before and after the implementation of the suggested program.

Participants

Participants were 100 university students. Participants were divided randomly into two equal groups: control (n=50) and experimental (n=50). The t-test for independent samples was used to define differences between the mean scores of the control and experimental groups on the pre-administration of the academic writing skills Test and learning independence skills checklist.

Homogeneity of the groups:

First: Homogeneity of the groups Pre-administration of the academic writing skills test: The aim of the prior administration of the academic writing skills test was to ensure the mastery of the two groups in academic writing skills before treatment. The prior administration of the test was administrated on the students of the

experimental and control groups. The results were monitored and statistically processed using the (t) test for two independent samples.

The value of (t) was calculated for two independent groups and their significance for the difference between the mean scores of the experimental and the control group students in the skills and the overall score of the academic writing skills test. As shown in the following table (1):

Table (1)
"t" test value and the level of significance difference between experimental and control groups' students for the mean scores in pre-test of the academic writing skills test.

skills	Groups	N	Mean	Std. Deviation	Df.	t - value	Sig.
Critical Thinking and Analysis	Experimental	50	9.16	1.800	98	0.343	(0.732) not significant
	Control	50	9.02	2.254			
Research Skills	Experimental	50	7.08	1.243	98	- 0.662	(0.510) not significant
	Control	50	7.26	1.468			
Writing Skills	Experimental	50	11.50	1.972	98	- 0.970	(0.334) not significant
	Control	50	11.88	1.945			
Citation and Referencing	Experimental	50	4.30	0.974	98	- 0.421	(0.674) not significant
	Control	50	4.38	0.923			
Overall academic writing skills	Experimental	50	32.04	3.232	98	- 0.652	(0.516) not significant
	Control	50	32.54	4.353			

It is shown from the previous table that both groups (experimental & control) were homogenous in their entry level of overall and each of academic writing skills.



Second: Homogeneity of the groups Pre-application of the learning independence skills checklist: The aim of the prior application of the learning independence skills checklist was to ensure the mastery of the two groups in learning independence skills before treatment. The prior application of the checklist was applied on the students of the experimental and control groups. The results were monitored and statistically processed using the (t) test for two independent samples.

The value of (t) was calculated for two independent groups and their significance for the difference between the mean scores of the experimental and the control group students in the skills and the overall score of the learning independence skills checklist. As shown in the following table (2):

Table (2)

"t" test value and the level of significance for the difference between experimental and control groups' students mean scores in pre-test of the learning independence skills test.

skills	Groups	N	Mean	Std. Deviation	Df.	t - value	Sig.
Critical Thinking and Analysis	Experimental	50	6.46	1.432	98	0.292	(0.771) not significant
	Control	50	6.38	1.308			
Information Literacy and Research Skills	Experimental	50	6.66	1.465	98	- 0.716	(0.476) not significant
	Control	50	6.86	1.325			
Critical Thinking and Problem-Solving	Experimental	50	6.04	1.029	98	- 0.736	(0.464) not significant
	Control	50	6.20	1.143			
Motivation and Self-Discipline	Experimental	50	6.42	1.197	98	0.223	(0.824) not significant
	Control	50	6.36	1.481			
Communication and Collaboration	Experimental	50	6.28	1.161	98	1.021	(0.310) not significant
	Control	50	6.00	1.552			
Overall learning independence skills	Experimental	50	31.86	4.061	98	0.069	(0.945) not significant
	Control	50	31.80	4.576			

It is shown from the previous table that both groups (experimental & control) were homogenous in their entry level of overall and each of learning independence skills.

Instrumentation:

To achieve the aim of this study, the researcher prepared and used the following instruments:

- Academic writing skills test.
- Learning independence skills observation checklist.
- The suggested program based on reciprocal teaching.

Data collection and Procedures:

A) The Academic Writing Skills Test (Appendix 1)

1) Aim of the Test. It aims to measure the effectiveness of reciprocal teaching model on the academic writing skills.

2) Description of the Test.

The Test included (4) main skills they are: Critical Thinking and Analysis (4 items), Research Skills (3 items), Writing Skills (5 items), Citation and Referencing (2 items).

Validity of the test

In this study, the researcher relied on the validity of the jury members as well as the internal consistency. The following is an explanation for this:

Validity by the Jury:

The researcher presented the test in its initial form to 7 professors in the field of curriculum and methods of teaching EFL to express their opinions on the appropriateness of the test and its suitability for the students' level. Based on the viewpoints of the jury members the researcher made modifications agreed upon by the jury (1) (80% and more). Cooper's equation was used to calculate the percentage of agreement among the jury members. The rate of agreement among the jurors on validation dimensions of test ranged between (80% - 100%), as the percentage of agreement on the test as a whole reached (90 %), which is a high percentage. This indicates the validity of the test, after making the modifications approved by the jury members.

Internal consistency of the test:

Internal consistency was calculated through the administration of the test to a group of (60) students as shown in the following table:

A. Calculation of the correlation coefficients among the test items and the overall score of skills and whole test:

Table (3)

Pearson Correlation coefficient between scores on items of academic writing Skills test and scores of skills and overall test.

Skill	items	Correlation Coefficient with the skill	Correlation Coefficient with the overall test
Critical Thinking and Analysis	1	0.728**	0.567**
	2	0.684**	0.596**
	3	0.805**	0.701**
	4	0.807**	0.673**
Research Skills	5	0.777**	0.498**
	6	0.823**	0.789**
	7	0.809**	0.585**
Writing Skills	8	0.583**	0.609**
	9	0.826**	0.707**
	10	0.846**	0.804**
	11	0.791**	0.728**
	12	0.844**	0.783**
Citation and Referencing	13	0.912**	0.646**
	14	0.923**	0.779**

**** Correlation is significant at the at level (0.01)**

The previous table (3) shows the correlation coefficient between scores of items and the overall scores of skills, and the test have ranged between (0.498**) and (0.923**), all of which are statistically significant at the level of (0.01). This indicates the correlation and coherence of the skills, and the test as a whole, which indicates that the test has internal consistency.

B. Calculation of the correlation coefficients among the whole test and the overall score of skills:

Table (4)

Pearson Correlation coefficient between scores on skills of academic writing and overall test.

Test and its skills	Critical Thinking and Analysis	Research Skills	Writing Skills	Citation and Referencing	Total academic writing test
Critical Thinking and Analysis	1	0.575**	0.666**	0.546**	0.838**
Research Skills	0.575**	1	0.636**	0.463**	0.781**
Writing Skills	0.666**	0.636**	1	0.700**	0.930**
Citation and Referencing	0.546**	0.463**	0.700**	1	0.779**
Total academic writing test	0.838**	0.781**	0.930**	0.779**	1

**** Correlation is significant at the at level (0.01)**

The previous table (4) shows the correlation coefficient between the test skills and the overall scores of the test have ranged between (0.463**) and (0.930**), all of which are statistically significant at the level of (0.01). This indicates that the test has internal consistency.

Reliability of the test:

The reliability of the test was calculated using Cronbach's Alpha, Split-Half, and the test-retest methods, as follows:

A. Cronbach's Alpha: The researcher used this method to calculate the reliability of the test by administering it to a group of (60) students. The Cronbach's Alpha coefficient was (0.910). as shown in the following table:

Table (5)
Reliability values of overall as well as each academic writing Skills test (by Cronbach's Alpha)

Test and its skills	Items	Cronbach's alpha Coefficient
Critical Thinking and Analysis	4	0.752
Research Skills	3	0.725
Writing Skills	5	0.841
Citation and Referencing	2	0.812
Total academic writing test	14	0.910

These values shown in table (5) indicate that the test has an appropriate degree of reliability, and These values greater than (0.60).

B. Split-Half Method: The researcher used this method to calculate the reliability of the test by administering it to a group of (60) students. The results were shown in the following table:

Table (6)
Reliability values of overall as well as each academic writing Skills test (by Split-Half Method)

Test and its skills	Items	Correlation Between Forms	Spearman-Brown Coefficient	Guttman Split-Half Coefficient
Critical Thinking and Analysis	4	0.571	0.727	0.718
Research Skills	3	0.565	0.740	0.655
Writing Skills	5	0.705	0.832	0.809
Citation and Referencing	2	0.684	0.813	0.812
Total academic writing test	14	0.733	0.846	0.834

These values shown in table (6) indicate that the test has an appropriate degree of reliability.

C. Test re-test: The reliability of the test was calculated by the method of administration and re-administration of the test using the Pearson correlation coefficient, where the researcher re-administered the test to the same number of students. The value of the reliability coefficient was (0.939**) at the level (0.01) indicating that the test is reliable. The results were shown in the following table:

Table (7)

Reliability values of overall as well as each academic writing Skills test (by Test-Retest Method)

Test and its skills	Items	Correlation Between two administrations
Critical Thinking and Analysis	4	0.769**
Research Skills	3	0.874**
Writing Skills	5	0.907**
Citation and Referencing	2	0.817**
Total academic writing test	14	0.939**

** Correlation is significant at the at level (0.01)

These values shown in table (7) indicate that the test has an appropriate degree of reliability, and These values greater than (0.60).

B) The learning independence Skills Observation Sheet (Appendix 2)

1) Aim of the Observation Sheet : It aims to provide a structured and objective way to gather information about learning independence Skills among university students.

2) Description of the Observation checklist.

The observation checklist consisted of five main skills (Critical Thinking and Analysis, Information Literacy and Research Skills, Critical Thinking and Problem-Solving, Motivation and Self-Discipline, Communication and Collaboration) each one was of three sub skills to observe university students' learning independence skills before and after the treatment.



Validity of the Observation Sheet

In this study, the researcher relied on the validity of the jury members as well as the internal consistency. The following is an explanation for this:

Validity by the Jury:

The researcher presented the Observation checklist in its initial form to 7 professors in the field of curriculum and Methods of teaching EFL to express their opinions on the appropriateness of the Observation checklist and its suitability for the students' level. Based on the viewpoints of the jury members the researcher made modifications agreed upon by the jury (1) (80% and more). Cooper's equation was used to calculate the percentage of agreement among the jury members. The rate of agreement among the jurors on validation dimensions of Observation checklist ranged between (80% - 100%), as the percentage of agreement on the Observation checklist as a whole reached (90 %), which is a high percentage. This indicates the validity of the Observation checklist, after making the modifications approved by the jury members.

Internal consistency of the Observation checklist:

Internal consistency was calculated through the administration of the Observation checklist to a group of (60) students as shown in the following table:

A. Calculation of the correlation coefficients among the Observation checklist items and the overall score of skills and whole Observation checklist:

Table (8)

Pearson Correlation coefficient between scores on items of learning independence Skills Observation checklist and scores of skills and overall Observation checklist.

Skill	items	Correlation Coefficient with the skill	Correlation Coefficient with the overall Observation checklist
Critical Thinking and Analysis	1	0.857**	0.814**
	2	0.893**	0.816**
	3	0.888**	0.824**
Information Literacy and Research Skills	4	0.893**	0.786**
	5	0.844**	0.798**
	6	0.872**	0.750**
Critical Thinking and Problem-Solving	7	0.818**	0.726**
	8	0.894**	0.790**
	9	0.842**	0.709**
Motivation and Self-Discipline	10	0.722**	0.479**
	11	0.813**	0.732**
	12	0.732**	0.708**
Communication and Collaboration	13	0.851**	0.571**
	14	0.871**	0.770**
	15	0.838**	0.808**

**** Correlation is significant at the at level (0.01)**

The previous table (8) shows the correlation coefficient between scores of items and the overall scores of skills, and the Observation checklist have ranged between (0.479**) and (0.894**), all of which are statistically significant at the level of (0.01). This indicates the correlation and coherence of the skills, and the Observation checklist as a whole, which indicates that the Observation checklist has internal consistency.

B. Calculation of the correlation coefficients among the whole Observation checklist and the overall score of skills:

Table (9)

Pearson Correlation coefficient between the overall score for each main skill of learning independence Skills Observation Checklist and the overall score of the Observation checklist

Observation checklist and its skills	Critical Thinking and Analysis	Information Literacy and Research Skills	Critical Thinking and Problem-Solving	Motivation and Self-Discipline	Communication and Collaboration	Total learning independence Observation checklist
Critical Thinking and Analysis	1	0.788**	0.748**	0.741**	0.793**	0.930**
Information Literacy and Research Skills	0.788**	1	0.823**	0.697**	0.607**	0.896**
Critical Thinking and Problem-Solving	0.748**	0.823**	1	0.655**	0.586**	0.872**
Motivation and Self-Discipline	0.741**	0.697**	0.655**	1	0.678**	0.851**
Communication and Collaboration	0.793**	0.607**	0.586**	0.678**	1	0.836**
Total learning independence Observation checklist	0.930**	0.896**	0.872**	0.851**	0.836**	1

** Correlation is significant at the at level (0.01)

The previous table (9) shows the correlation coefficient between the Observation checklist skills and the overall scores of the Observation checklist have ranged between (0.586**) and (0.930**), all of which are statistically significant at the level of

(0.01). This indicates that the Observation checklist has internal consistency.

Reliability of the Observation checklist:

The reliability of the Observation checklist was calculated using Cronbach's Alpha, Split-Half, and the test-retest methods, as follows:

D. Cronbach's Alpha: The researcher used this method to calculate the reliability of the Observation checklist by administering it to a group of (60) students. The Cronbach's Alpha coefficient was (0.941) as shown in the following table:

*Table (10)
Reliability values of overall as well as each learning independence
Skills Observation checklist (by Cronbach's Alpha)*

Observation checklist and its skills	Items	Cronbach's alpha Coefficient
Critical Thinking and Analysis	3	0.853
Information Literacy and Research Skills	3	0.837
Critical Thinking and Problem-Solving	3	0.808
Motivation and Self-Discipline	3	0.627
Communication and Collaboration	3	0.813
Total learning independence Observation checklist	15	0.941

These values shown in table (10) indicate that the Observation checklist has an appropriate degree of reliability, and These values greater than (0.60).

E. Split-Half Method: The researcher used this method to calculate the reliability of the Observation checklist by administering it to a group of (60) students. The results were shown in the following table:

Table (11)
Reliability values of overall as well as each learning independence
Skills Observation checklist (by Split-Half Method)

Observation checklist and its skills	Items	Correlation Between Forms	Spearman-Brown Coefficient	Guttman Split-Half Coefficient
Critical Thinking and Analysis	3	0.749	0.869	0.764
Information Literacy and Research Skills	3	0.718	0.849	0.741
Critical Thinking and Problem-Solving	3	0.657	0.809	0.699
Motivation and Self-Discipline	3	0.395	0.587	0.515
Communication and Collaboration	3	0.641	0.797	0.696
Total learning independence Observation checklist	15	0.845	0.916	0.896

These values shown in table (11) indicate that the Observation checklist has an appropriate degree of reliability.

F. Test re-test: The reliability of the Observation checklist was calculated by the method of administration and re-administration of the Observation checklist using the Pearson correlation coefficient, where the researcher re-administered the Observation checklist to the same number of students. The value of the reliability coefficient was (0.819**) at the level (0.01) indicating that the Observation checklist is reliable. The results were shown in the following table:

Table (12)
Reliability values of overall as well as each learning independence
Skills Observation checklist (by Test-Retest Method)

Observation checklist and its skills	Items	Correlation Between two administrations
Critical Thinking and Analysis	3	0.794**
Information Literacy and Research Skills	3	0.900**
Critical Thinking and Problem-Solving	3	0.888**
Motivation and Self-Discipline	3	0.771**
Communication and Collaboration	3	0.730**
Total learning independence Observation checklist	15	0.819**

**** Correlation is significant at the at level (0.01)**

These values shown in table (12) indicate that the Observation checklist has an appropriate degree of reliability, and These values greater than (0.60).

Duration of the experiment:

The experiment lasted for three months, one session per week.

C. The Suggested Program Based on reciprocal teaching.

The Aim: It aimed at developing targeted academic writing skills and learning independence for university students at Sadat academy for management sciences.

Content of the Reciprocal Teaching Strategy:

The researcher presented an introductory sessions to introduce reciprocal teaching strategy to the experimental group students.

Methods and procedures:

Stages of Reciprocal Teaching Strategy:

- Prediction Stage

The researcher used RT strategy as a new teaching strategy for developing students' academic writing skills. The first stage of (R T) is prediction which gave the students the opportunity to predict the meaning and the feautres of academic writing. In another activity, students were asked to read an academic essay and skim the topic in order to predict the main feautres of academic writing.

Being allowed to read authentic materials and academic essays before predicting increased students' ability to differentiate between traditional writing and academic one . This step not only focus on writing skills but also it made an integration between reading and writing skills. This integration might have supported developing the academicing and learning independancy.

- Generating questions

In this stage students were asked to read the academic essays for comprehension and ask their colloeagues some questions about main features and diferences between traditional and academic writing. The researcher taught the students the rules of oraganizing ideas logically and how to choose academic words instead of common words.

This stage helped the students differentiate between academic words and nonacadis words . It also helped students in composing correct introductory paragraph. Students used this stage in an interactive way by asking and answering each others' inquiries.

- Clarifying Stage :

In this stage, each student asked his partner in the group about the meaning of words, expressions, idioms, or the meaning of sentences. This kind of questions led to fruitful discussions in the goup .Those discussions encouraged students to correct each others' mistakes and exchaging ideas. Students were able to form good academic paragraph.

Summarizing Stage:

Students were able to use academic vocabulary and academic puntaution rules in their writing. In this stage, writing and speaking were integreted together in order to enhance the students' academic wriitng skills.

Finally, it can be said that the four language skills were practiced throughout the RTS stages. That can be attributed to the use of varied witten for RT activities. Moreover, students were obviously exposed to authentic material either before or during the activities. Thus, it can be safely said that students benefited from the support of listening, reading and writing practiced during the RT



strategy implementation to develop students' academic writing skills and their learning independence.

Duration of the experiment

The experiment lasted for three months, one section per a week. It started on 21st Oct 2023, and continued to 9th Dec 2023 . It is worth noting that the pre administration of the test and the application of the scale were on 18th Oct 2023 while the post administration of the test and the application of the scale were on 11th Dec 2023. The instruments of the study were used before and after the experiment.

The Teaching Procedures:

Suggested framework

Reciprocal Teaching was used in each lesson through the following steps:

Warm up

In this step teacher asked students some questions about the previous lesson or about their predictions for the lesson.

Listening to the students' answers (in some lessons)

The researcher asked the students to evaluate their colleagues' answers about academic writing features and correct their writing through peer review

Generating questions

Students read some academic essays, after that they asked and answered questions as many as they could about what they had read.

Clarification

In this step, students asked each other, or asked the teacher about the meaning of difficult words, expressions, or sentences. The researcher clarified the main idea of the lesson.

Summarizing

In this step, the researcher asked students to summarize the whole topic in their own style academically.

Evaluation

The researcher employed both formative and summative assessments in the following way:

Formative evaluation was conducted for assessing students' gradual progress in the target academic writing skills. During formative evaluation, students' academic writing skills were evaluated by the researcher through the implementation of RTS .The researcher used the following:

- Distributing worksheets containing some academic essays and asked them to study them at home and explain it in the following sessions.
- Asking students to write about certain event and share their writings with their colleagues.

Summative evaluation was conducted at the end of the suggested strategy implementation .This was done through the administration of EFL academic writing skills test after the experiment .The test aimed at investigating the effect of reciprocal teaching on developing university students' necessary writing skills.

Results:

Results were based on hypotheses testing as follows:

Verifying the First Hypothesis

The first hypothesis stated that " There was a statistically significant difference between the mean scores of the experimental and control groups at ($\alpha \leq 0.01$) level of significance in the post administration of academic writing skills test in favor of the experimental group ". To verify this hypothesis, A (t) test was employed to two independent groups (the experimental and control groups) in post-administration of the overall scores of academic writing skills test. The results are shown in the following table (13):

Table (13)

T- Test Results of the Experimental and Control Groups Students' Overall Performance on the post- administration of the academic writing Skills Test

skills	Groups	N	Mean	Std. Deviation	Df.	t - value	Sig.
Critical Thinking and Analysis	Experimental	50	16.76	2.326	98	18.083	Significant at 0.001
	Control	50	8.36	2.319			
Research Skills	Experimental	50	12.54	1.832	98	16.200	Significant at 0.001
	Control	50	6.74	1.747			
Writing Skills	Experimental	50	20.86	2.416	98	22.654	Significant at 0.001
	Control	50	10.54	2.131			
Citation and Referencing	Experimental	50	8.10	0.839	98	21.875	Significant at 0.001
	Control	50	4.22	0.932			
Overall academic writing skills	Experimental	50	58.26	5.924	98	24.883	Significant at 0.001
	Control	50	29.86	5.481			

It is shown from the previous table (13) that there were statistically significant differences at ($\alpha \leq 0.001$) level of significance between the mean scores of the experimental and control groups in the post administration of academic writing skills (Critical Thinking and Analysis, Research Skills, Writing Skills, Citation and Referencing) and overall test in favor of the experimental group, where the calculated values of T-Test (t) were reached (18.083, 16.200, 22.654, 21.875, and 24.883), and these values was more than the tabulated "t" values (), and the significance level is (0.000) which is lower than the level of significance (0.05). The mean scores of the experimental group was (58.26) with a standard deviation (5.924), While the mean scores of the control group was (29.86) with a standard deviation (5.481).

This means that the mean scores of experimental group was higher than the mean scores of control group.

To calculate the effect size for the reciprocal teaching on the academic writing skills, Eta square (η^2) was calculated using t value for the differences between the mean scores as displayed in this table:

Table (14)

The Effect Size for the reciprocal teaching on academic writing skills.

skills	t-values	T2	Df.	Eta Squared (η^2)	The Effect Size
Critical Thinking and Analysis	18.083	326.9949	98	0.769	(%76.9) large
Research Skills	16.200	262.440	98	0.728	(%72.8) large
Writing Skills	22.654	513.2037	98	0.840	(%84) large
Citation and Referencing	21.875	478.5156	98	0.830	(%83) large
Overall academic writing skills	24.883	619.1637	98	0.863	(%86.3) large

The previous table (14) shows the effect sizes of Using reciprocal teaching on developing each skill of academic writing skills and the overall Test were large. The effect sizes were (0.769, 0.728, 0.840, 0.830, and 0.863) for (Critical Thinking and Analysis, Research Skills, Writing Skills, Citation and Referencing) and overall test respectively.

This means verifying the first hypothesis of the study, and this indicates that There was a statistically significant difference between the mean scores of the experimental and control groups at ($\alpha \leq 0.01$) level of significance in the post administration of academic writing skills test in favor of the experimental group.

Verifying the second Hypothesis:

The second hypothesis stated that " There was a statistically significant difference between the mean scores of the pre-post administrations of the experimental group at ($\alpha \leq 0.01$) level of significance on academic writing skills test in favor of the post-administration ". To verify this hypothesis, one-sample t-test was employed to measure the students' mean scores in the pre and post administrations in the academic writing skills of the experimental group. The results are shown in the following table (15):

Table (15)
"T- Test Results of the Experimental Group Students' Overall Performance on the Pre and Post administration of the academic writing Skills Test.

skills	Test	N	Mean	Std. Deviation	Mean paired differences	Std. Deviation paired differences	Df.	t - value	Sig.
Critical Thinking and Analysis	Pre	50	9.16	1.800	-7.600	2.857	49	-18.809	Significant at 0.001
	Post	50	16.76	2.326					
Research Skills	Pre	50	7.08	1.243	-5.460	2.224	49	-17.358	Significant at 0.001
	Post	50	12.54	1.832					
Writing Skills	Pre	50	11.50	1.972	-9.360	3.002	49	-22.049	Significant at 0.001
	Post	50	20.86	2.416					
Citation and Referencing	Pre	50	4.30	0.974	-3.800	1.245	49	-21.575	Significant at 0.001
	Post	50	8.10	0.839					
Overall academic writing skills	Pre	50	32.04	3.232	-26.220	6.504	49	-28.508	Significant at 0.001
	Post	50	58.26	5.924					



It is shown from the previous table (15) that there were statistically significant differences at ($\alpha \leq 0.001$) level of significance between the mean scores of the experimental group's pre-post administration of academic writing skills (Critical Thinking and Analysis, Research Skills, Writing Skills, Citation and Referencing) and overall test in favor of the post- administration, where the calculated values of T-Test (t) were reached (-18.809, -17.358, -22.049, -21.575, and -28.508), and these values was more than the tabulated “t” values (), and the significance level is (0.000) which is lower than the level of significance (0.05). The mean scores of the experimental group's post administration was (58.26) with a standard deviation (5.924), While the mean scores of the experimental group's pre administration was (32.04) with a standard deviation (3.232). This means that the mean scores of experimental group's post administration was higher than the mean scores of experimental group's pre administration.

To calculate the effect size for the reciprocal teaching on the academic writing skills, Cohen’s (d) was calculated using t-value for the differences between the mean scores as displayed in this table:

Table (16)
The Effect Size for the reciprocal teaching on academic writing skills.

SKILLS	T-VALUES	MEAN PAIRED DIFFERENCES	STD. DEVIATION PAIRED DIFFERENCES	COHEN'S D	THE EFFECT SIZE
CRITICAL THINKING AND ANALYSIS	-18.809	-7.600	2.857	2.660	LARGE
RESEARCH SKILLS	-17.358	-5.460	2.224	2.455	LARGE
WRITING SKILLS	-22.049	-9.360	3.002	3.118	LARGE
CITATION AND REFERENCING	-21.575	-3.800	1.245	3.052	LARGE
OVERALL ACADEMIC WRITING SKILLS	-28.508	-26.220	6.504	4.031	LARGE

The previous table (16) shows the effect sizes of Using reciprocal teaching on developing each skill of academic writing skills and the overall Test were large. The effect sizes were (2.660, 2.455, 3.118, 3.052, and 4.031) for (Critical Thinking and Analysis, Research Skills, Writing Skills, Citation and Referencing) and overall test respectively.

This means verifying the second hypothesis of the study, and this indicates that There was a statistically significant difference between the mean scores of the pre –post administration of the experimental group at ($\alpha \leq 0.01$) level of significance on academic writing skills test in favor of the post- administration.

The effectiveness of the suggested program based on the reciprocal teaching was calculated by applying the modified Blake's gain ratio on the pre-posttest means of the experimental group scores as presented in the following table:

Table (17)
Effectiveness of the reciprocal teaching in Developing academic writing Skills

Skills	Pre-Mean	Post-Mean	Max-Score	Blake's M G R	Effectiveness
Critical Thinking and Analysis	9.16	16.76	20	1.08	Not achieved
Research Skills	7.08	12.54	15	1.05	Not achieved
Writing Skills	11.50	20.86	25	1.07	Not achieved
Citation and Referencing	4.30	8.10	10	1.05	Not achieved
Overall academic writing skills	32.04	58.26	70	1.07	Not achieved

As shown in the previous table, there was low effectiveness of reciprocal teaching in developing academic writing skills. The value of Blake's modified gain ratio for the suggested program showed its effectiveness as it was (1.07) and did not exist in Blake's range of effectiveness ($\geq 1,2$). The suggested program based on reciprocal teaching wasn't effective in developing university students' academic writing skills.

Verifying the third Hypothesis

The third hypothesis stated that " There was a statistically significant difference between the mean scores of the experimental and control groups at ($\alpha \leq 0.01$) level of significance in the post application of learning independence skills checklist in favor of the experimental group ". To verify this hypothesis, A (t) test was employed to two independent groups (the experimental and control groups) in post-application of the overall scores of learning independence skills Observation checklist. The results are shown in the following table (18):

Table (18)

T- Test Results of the Experimental and Control Groups Students' Overall Performance on the post- application of the learning independence skills Observation checklist

SKILLS	GROUPS	N	MEAN	STD. DEVIATION	Df.	T - VALUE	SIG.
CRITICAL THINKING AND ANALYSIS	EXPERIMENTAL	50	12.68	1.058	98	25.414	SIGNIFICANT AT 0.001
	CONTROL	50	6.82	1.240			
INFORMATION LITERACY AND RESEARCH SKILLS	EXPERIMENTAL	50	13.08	1.383	98	23.973	SIGNIFICANT AT 0.001
	CONTROL	50	6.82	1.224			
CRITICAL THINKING AND PROBLEM-SOLVING	EXPERIMENTAL	50	12.46	1.249	98	22.892	SIGNIFICANT AT 0.001
	CONTROL	50	6.56	1.327			
MOTIVATION AND SELF-DISCIPLINE	EXPERIMENTAL	50	12.44	1.264	98	21.397	SIGNIFICANT AT 0.001
	CONTROL	50	6.50	1.502			
COMMUNICATION AND COLLABORATION	EXPERIMENTAL	50	12.64	1.336	98	20.221	SIGNIFICANT AT 0.001
	CONTROL	50	6.88	1.507			
OVERALL OBSERVATION CHECKLIST	EXPERIMENTAL	50	63.30	3.671	98	32.312	SIGNIFICANT AT 0.001
	CONTROL	50	33.58	5.368			

It is shown from the previous table (18) that there were statistically significant differences at ($\alpha \leq 0.001$) level of significance between the mean scores of the experimental and control groups in the post administration of academic writing skills

(Critical Thinking and Analysis, Information Literacy and Research Skills, Critical Thinking and Problem-Solving, Motivation and Self-Discipline, Communication and Collaboration) and overall test in favor of the experimental group, where the calculated values of T-Test (t) were reached (25.414, 23.973, 22.892, 21.397, 20.221, and 32.312), and these values was more than the tabulated “t” values (), and the significance level is (0.000) which is lower than the level of significance (0.05). The mean scores of the experimental group was (63.30) with a standard deviation (3.671), While the mean scores of the control group was (33.58) with a standard deviation (5.368). This means that the mean scores of experimental group was higher than the mean scores of control group.

To calculate the effect size for the reciprocal teaching on the learning independence skills, Eta square (η^2) were calculated using t value for the differences between the mean scores as displayed in this table:

Table (19)

The Effect Size for the reciprocal teaching on learning independence skills.

SKILLS	T-VALUES	T2	Df.	ETA SQUARED (H2)	THE EFFECT SIZE
CRITICAL THINKING AND ANALYSIS	25.414	645.871	98	0.868	(86.8%) LARGE
INFORMATION LITERACY AND RESEARCH SKILLS	23.973	574.705	98	0.854	(85.4%) LARGE
CRITICAL THINKING AND PROBLEM-SOLVING	22.892	524.044	98	0.842	(84.2%) LARGE
MOTIVATION AND SELF-DISCIPLINE	21.397	457.832	98	0.824	(82.4%) LARGE
COMMUNICATION AND COLLABORATION	20.221	408.889	98	0.807	(80.7%) LARGE
OVERALL OBSERVATION CHECKLIST	32.312	1044.065	98	0.914	(91.4%) LARGE

The previous table (19) shows the effect sizes of Using reciprocal teaching on developing each skill of learning independence skills and the overall Test were large. The effect sizes were (0.868, 0.854, 0.842, 0.824, 0.807, and 0.914) for (Critical Thinking and Analysis, Information Literacy and Research Skills, Critical Thinking and Problem-Solving, Motivation and Self-Discipline, Communication and Collaboration) and overall test respectively.

This means verifying the first hypothesis of the study, and this indicates that There was a statistically significant difference between the mean scores of the experimental and control groups at ($\alpha \leq 0.01$) level of significance in the post application of learning independence skills Observation checklist in favor of the experimental group.

Verifying the fourth Hypothesis:

The fourth hypothesis stated that " There was a statistically significant difference between the mean scores of the pre-post applications of the experimental group at ($\alpha \leq 0.01$) level of significance on learning independence skills Observation checklist in favor of the post- application ". To verify this hypothesis, one-sample t-test was employed to measure the students' mean scores in the pre-post applications in the learning independence skills of the experimental group. The results are shown in the following table (20):

Table (20)

“T- Test Results of the Experimental Group Students' Overall Performance on the Pre and Post application of the learning independence skills Observation checklist.

SKILLS	TEST	N	MEAN	STD. DEVIATION	MEAN PAIRED DIFFERENCES	STD. DEVIATION PAIRED DIFFERENCES	DF.	T - VALUE	SIG.
CRITICAL THINKING AND ANALYSIS	PRE	50	6.46	1.432	-6.220	1.920	49	-22.911	SIGNIFICANT AT 0.001
	POST	50	12.68	1.058					
INFORMATION LITERACY AND RESEARCH SKILLS	PRE	50	6.66	1.465	-6.420	2.241	49	-20.253	SIGNIFICANT AT 0.001
	POST	50	13.08	1.383					
CRITICAL THINKING AND PROBLEM-SOLVING	PRE	50	6.04	1.029	-6.420	1.715	49	-26.465	SIGNIFICANT AT 0.001
	POST	50	12.46	1.249					
MOTIVATION AND SELF-DISCIPLINE	PRE	50	6.42	1.197	-6.020	1.767	49	-24.091	SIGNIFICANT AT 0.001
	POST	50	12.44	1.264					
COMMUNICATION AND COLLABORATION	PRE	50	6.28	1.161	-6.360	1.935	49	-23.238	SIGNIFICANT AT 0.001
	POST	50	12.64	1.336					
OVERALL OBSERVATION CHECKLIST	PRE	50	31.86	4.061	-31.440	5.839	49	-38.077	SIGNIFICANT AT 0.001
	POST	50	63.30	3.671					

It is shown from the previous table (20) that there were statistically significant differences at ($\alpha \leq 0.001$) level of significance between the mean scores of the experimental group's pre-post application of learning independence skills (Critical Thinking and Analysis, Information Literacy and Research Skills, Critical Thinking and Problem-Solving, Motivation and Self-Discipline, Communication and Collaboration) and overall test in favor of the post- administration, where the calculated values of T-Test (t) were reached (-22.911, -20.253, -26.465, -24.091, -23.238,

and -38.077), and these values was more than the tabulated “t” values (), and the significance level is (0.000) which is lower than the level of significance (0.05). The mean scores of the experimental group's post administration was (63.30) with a standard deviation (3.671), While the mean scores of the experimental group's pre administration was (31.86) with a standard deviation (4.061). This means that the mean scores of experimental group's post administration was higher than the mean scores of experimental group's pre administration.

To calculate the effect size for the reciprocal teaching on the learning independence skills, Cohen’s (d) were calculated using t value for the differences between the mean scores as displayed in this table:

Table (21)

The Effect Size for the reciprocal teaching on learning independence skills.

SKILLS	T-VALUES	MEAN PAIRED DIFFERENCES	STD. DEVIATION PAIRED DIFFERENCES	COHEN'S D	THE EFFECT SIZE
CRITICAL THINKING AND ANALYSIS	- 22.911	-6.220	1.920	3.240	LARGE
INFORMATION LITERACY AND RESEARCH SKILLS	- 20.253	-6.420	2.241	2.865	LARGE
CRITICAL THINKING AND PROBLEM-SOLVING	- 26.465	-6.420	1.715	3.743	LARGE
MOTIVATION AND SELF-DISCIPLINE	- 24.091	-6.020	1.767	3.407	LARGE
COMMUNICATION AND COLLABORATION	- 23.238	-6.360	1.935	3.287	LARGE
OVERALL LEARNING INDEPENDENCE SKILLS	- 38.077	-31.440	5.839	5.384	LARGE

The previous table (21) shows the effect sizes of Using reciprocal teaching on developing each skill of learning independence skills and the overall Test were large. The effect sizes were (3.240, 2.865, 3.743, 3.407, 3.287, and 5.384) for (Critical Thinking and Analysis, Information Literacy and Research Skills, Critical Thinking and Problem-Solving, Motivation and Self-Discipline, Communication and Collaboration) and overall test respectively.

This means verifying the second hypothesis of the study, and this indicates that There was a statistically significant difference between the mean scores of the pre – post application of the experimental group at ($\alpha \leq 0.01$) level of significance on learning independence skills Observation checklist in favor of the post-application.

The effectiveness of the suggested program based on the reciprocal teaching was calculated by applying the modified Blake's gain ratio on the pre-post test means of the experimental group scores as presented in the following table:

Table (22)
Effectiveness of the reciprocal teaching in Developing learning independence Skills.

SKILLS	PRE-MEAN	POST-MEAN	MAX-SCORE	BLAKE'S MGR	EFFECTIVENESS
CRITICAL THINKING AND ANALYSIS	6.46	12.68	15	1.14	NOT ACHIEVED
INFORMATION LITERACY AND RESEARCH SKILLS	6.66	13.08	15	1.20	ACHIEVED
CRITICAL THINKING AND PROBLEM-SOLVING	6.04	12.46	15	1.14	NOT ACHIEVED
MOTIVATION AND SELF-DISCIPLINE	6.42	12.44	15	1.10	NOT ACHIEVED
COMMUNICATION AND COLLABORATION	6.28	12.64	15	1.15	NOT ACHIEVED
OVERALL LEARNING INDEPENDENCE SKILLS	31.86	63.3	75	1.15	NOT ACHIEVED

As shown in the previous table, there was low effectiveness of reciprocal teaching in developing learning independence skills. The value of Blake's modified gain ratio for the suggested program showed its effectiveness as it was (1.15) and did not exist in Blake's range of effectiveness ($\geq 1,2$). The suggested program based on reciprocal teaching wasn't effective in developing university students' learning independence skills.

Discussion of Results

The students in this research seemed to become accustomed to the reciprocal teaching model, even though the reciprocal teaching model was still seen as a new teaching model in the Egyptian context. A sizable difference in the students' outcomes served as evidence. The control group performed better on the posttest. These findings are consistent with and support earlier studies that applied the reciprocal teaching model in an EFL case and found favourable outcomes (see Cárdenas & López-Pinzón, 2019; Ghorbani, & Alavi, 2013; Al-Zu'be, 2006).

The findings of the study were presented, and they demonstrated the significance of the reciprocal teaching model in the teaching of academic writing as well as its positive impact on the academic writing levels of EFL learners. The reciprocal teaching model can be viewed as a key tool for encouraging complete participation from students in the learning process and helping them achieve better grades with higher levels of critical thinking ability. As a result, educators should use this model when instructing students (Lestari, 2016).

The results of the present study are in line with a number of earlier, related studies' findings. The results, for instance, were in line with Cárdenas & López-Pinzón, 2019, and Ghorbani, & Alavi, 2013. In particular, other studies like (Al-Zu'be, 2006) were in agreement with the current writing sub skills results.

The second-year university students' academic writing skills improved thanks to the reciprocal teaching model. Thus, it can be inferred that the mutual teaching model should be used when instructing students on how to write. The current study made use of

a variety of writing exercises meant to improve students' academic writing skills.

The current study also gave readers a sense of what the mutual teaching model entails and inspired EFL instructors to implement it in their lessons. The reciprocal teaching model can be used to enhance instruction and assist students in overcoming their difficulties with English academic writing.

Findings of the current research might be attributed to the following:

First, The administration of the mutual teaching model fosters the growth of academic writing skills in a safe learning setting with a low-effective filter.

Second, The reciprocal teaching model tries to create an environment where students don't feel threatened. In a less risky setting, learners can also get over their dread of writing mistakes and participate in class.

Third, the reciprocal teaching model's exercises spark students' interest and encourage greater participation in the learning process. Learning consequently has a deeper significance.

Fourth: To encourage participants to believe in their abilities, the researcher used verbal persuasion feedback in the form of encouraging statements before, during, and after they completed the tasks.

Fifth: The teacher is successful because he engages the students in learning by utilising an active learning environment. Students are encouraged to engage in class activities by the active learning teacher. In a low affective classroom, the teacher encourages the students to cooperate and interact with one another.

Conclusion

The findings presented imply that teachers need to be well-prepared before implementing the reciprocal teaching model in their instruction. They must first gain a solid understanding of what reciprocal teaching is, how it is carried out, what challenges are frequently encountered in reciprocal teaching, and how to overcome them. Additionally, teachers must constantly review and revise the actions and tasks used. It is advised that schools be equipped with

the tools needed to implement the reciprocal teaching model in the interim. The facilities that should be provided are computers and excellent access of Internet. Finally, future researchers ought to look into the issue of the instructional resources used more thoroughly. Additionally, in order to provide a broader view on the application of reciprocal teaching in EFL scopes, a study of a similar nature with various learner groups and contexts is required.

Recommendations

The following recommendations could be made based on the previous findings:

1. More time must be spent training academic writing skills in English language classes.
2. The reciprocal teaching approach should be emphasised more, particularly when teaching English to university stage students.
3. To avoid any potential writing issues that students may encounter, teachers should place a strong emphasis on the development of students' writing skills in the early educational stages.
6. Authentic and real learning scenarios should be presented to students so they can hone their academic writing skills.

Suggestions for Further Research

The following suggestions were suggested to be further researched in light of the results of the current study:

1. More research is necessary to determine whether the reciprocal teaching model is successful in fostering the development of other academic writing skills.
2. More research is necessary to determine the efficacy of the reciprocal teaching model in instructing English speaking.
3. More research is necessary to determine the efficacy of the reciprocal teaching model in instructing English listening.
4. More research is necessary to determine the efficacy of the reciprocal teaching model in instructing English reading comprehension.



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5. More research is necessary to investigate the use of the reciprocal teaching model to develop EFL language skills among university students.
 6. Additional study is necessary to determine the impact of the reciprocal teaching model on different EFL academic writing skills at various educational levels.



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