

An e-program based on self-regulated learning for developing EFL writing skills of students at faculty of education

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Abstract

The present study examined the effect of using an e-program based on self-regulated learning for developing second-year university students' EFL writing skills. The design of the study was the quasi-experimental method (pre- post exp./content design). The study sample consisted of 60 second-year students from the English section, Faculty of Education, Benha University, selected during the first term of the 2023/2024 academic year. The sample was divided into two groups: an experimental group (N= 30) that received instruction via an e-program based on self-regulated learning, and a control group (N= 30) that was taught writing skills using conventional teaching methods. The instruments of the study were: an EFL writing skills checklist that included five main skills and 14 subskills, a pre and a post EFL writing skills tests and a rubric for scoring them. A program was developed and implemented in the first semester of the year 2023/2024. The results of the study showed that the experimental group outperformed the control group in the post EFL writing skills test. The results confirmed the effectiveness of the e-program based on self-regulated learning for developing the EFL writing skills of second year students enrolled at English section, Faculty of Education.

Keywords : E-program – Self-regulated learning – EFL writing skill.

برنامج إلكتروني قائم على التعلم المنظم ذاتيا لتنمية مهارات الكتابة باللغة

الإنجليزية كلغة أجنبية لدى طلاب كلية التربية

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ملخص البحث

هدف هذا البحث إلى استخدام برنامج إلكتروني قائم على التعلم المنظم ذاتيًا لتنمية مهارات الكتابة باللغة الانجليزية كلغة أجنبية لدى طلاب الفرقة الثانية شعبة اللغة الانجليزية بكلية التربية جامعة بنها. لقد تم استخدام التصميم التجريبي ذو المجموعتين (قبلي بعدي) و لقد بلغت عينة الدراسة ستين طالبا تم اختيارهم عشوائياً من طلاب الفرقة الثانية المقيدين بشعبة اللغة الإنجليزية بكلية التربية بينه في الفصل الدراسي الأول من العام ٢٠٢٣/٢٠٢٤، و تم تقسيمها إلى مجموعة تجريبية (ن=٣٠) تم تدريسها باستخدام البرنامج الإلكتروني القائم على التعلم المنظم ذاتيًا، ومجموعة ضابطة (ن=٣٠) تم تدريسها باستخدام الطرق التقليدية في تدريس مهارات الكتابة باللغة الإنجليزية كلغة أجنبية. شملت أدوات الدراسة: قائمة بالمهارات اللازمة لهؤلاء الطلاب مقسمة إلى خمس مستويات رئيسية و ١٤ مهارة فرعية و اختبار قبلي واختبار بعدي لقياس مهارات الكتابة لدي العينة. تم اعداد برنامج وتطبيقه في الفصل الدراسي الأول من العام ٢٠٢٣/٢٠٢٤. وأظهرت نتائج الدراسة تفوق المجموعة التجريبية على المجموعة الضابطة في الاختبار البعدي لمهارات الكتابة باللغة الإنجليزية كلغة أجنبية. وأكدت النتائج فعالية البرنامج الإلكتروني القائم على التعلم المنظم ذاتيًا ف تنمية مهارات الكتابة باللغة الإنجليزية كلغة أجنبية لدى طلاب الفرقة الثانية المقيدين بشعبة اللغة الإنجليزية بكلية التربية بنها.

كلمات مفتاحية: برنامج الإلكتروني - التعلم المنظم ذاتيًا - مهارات الكتابة باللغة الإنجليزية كلغة أجنبية.

Introduction

The concept of self - regulated learning (SRL) refers to the methods by which individuals autonomously engage and maintain their cognitive, emotional, and behavioral activities in a manner that is directed towards achieving personal goals (Zimmerman & Schunk, 2011). SRL is the way learners take charge of their own learning, including monitoring, regulating, and assessing their progress. It also involves developing strategies and adopting behaviors that increase the likelihood of achieving desired learning outcomes (Zimmerman, 2015). SRL focuses on a learner's planning for learning, utilization of various strategies, and ongoing efforts to reach their desired goals (Parveen et al. 2023).

Furthermore, there are several SRL models that share some qualities such as Boekaerts', Efklides', Pintrich's, Winne's and Hadwin's, Zimmerman's Model. Boekaerts' model provides a description of the stages in a learning episode, involving the identification and interpretation of conditions that influence the situation, the appraisal of them either automatically or consciously, setting goals, and active participation in the task (Parveen et al. 2023). Efklides' MASRL model is structured into two distinct levels: (1) the Person level also called macro- level. (2) The micro- level, or Task x Person level, delves into the intricate relationship between the specific task requirements and the personal attributes of the student (Efklides, 2011).

On one hand, Pintrich's model consists of four different phases. The initial phase involves forethought, planning, and activation. While, the second one emphasizes monitoring, the third is dedicated to control. The final phase involves reflection and reaction. Each of these phases includes four specific areas that require regulation: cognition, motivation/affect, behavior, and context. This integration of phases and areas provides a comprehensive framework that encompasses numerous SRL processes (Pintrich, 2000).

On the other hand, Winne and Hadwin's model include four open and recursive phases: (a) defining the task requires students to develop a clear understanding of the assignment at hand; (b) setting goals and strategic planning require students to define their objectives and create a systematic plan to achieve them; (c) implementing study strategies involves actions necessary to reach the set goals; and (d) metacognitive adjustment of studying occurs after the completion of primary activities,

during which the student reflects on his/her experience and decides to make lasting changes to his/her beliefs, motivations, and strategies for future academic pursuits (Winne, 2011).

Zimmerman's Model consists of three phases: (1) Forethought phase which includes students analyzing the task, setting goals, creating a strategic plan, and using motivational beliefs to drive learning. (2) Performance phase that involves students completing the assigned task, monitoring their progress and using self-control strategies to stay focused and interested until the task is done. (3) Self-reflection phase where students evaluate their performance on the task, attributing their achievements or shortcomings to various factors (Zimmerman, 2000).

Zimmerman and Martinez-Pons (1986) and Tomak (2017) have identified 14 common strategies used by students in their learning processes. These strategies include self-assessment, organizing and processing information, setting goals and making plans, searching for relevant information, keeping track of progress, creating a conducive learning environment, holding oneself accountable, practicing and memorizing important concepts, seeking assistance from peers and lecturers, requesting support from adults, reviewing tests, reviewing notes, and summarizing the main content of the material.

SRL strategies encompass a range of cognitive and metacognitive processes that contribute to effective learning. These strategies include rehearsing, elaborating, organizing information, regulating time, effort and environment, thinking critically, learning with peers, and seeking assistance (Richardson et al., 2012; Sadi & Uyar, 2013). Other important strategies involve converting information, setting objectives and planning, maintaining records and monitoring progress, seeking relevant information, reviewing records, and engaging in self-evaluation and self-consequences (Latifa, 2016; Zimmerman & Pons, 1986).

Furthermore, Hirt et al. (2021) identified several key components of self-regulated learning (SRL). These components include prior knowledge, self-efficacy, intrinsic and extrinsic motivation, achievement emotion, regulation competencies, self-reported strategy use (such as elaboration, organization, planning, monitoring, evaluation, motivation regulation, emotions regulation, distraction avoidance, and time management), self-reported quality of strategy use, and self-satisfaction.

Smart and mobile technologies allow for personalized learning experiences tailored to individual students' unique styles and needs (Uskov et al., 2017). These technologies shift traditional learning methods to innovative approaches that create a student-centered learning

environment. This environment incorporates various pedagogical strategies, enabling students to actively participate in the learning process, reflect on their progress, and apply their knowledge in formal and informal settings (Singh & Miah, 2020).

E-learning refers to the use of electronic media to facilitate various educational objectives. It encompasses a broad range of applications, ranging from enhancing traditional classroom activities to completely replacing in-person interactions with virtual meetings (Guri-Rosenblit, 2005). It involves the use of information and communications technologies to facilitate both synchronous and asynchronous educational experiences (Jereb & Šmitek, 2006). Moreover, e-learning, characterized by the integration of modern multi-media technologies and Internet connectivity, strives to enhance the quality of educational experience. By allowing access to diverse materials and applications, as well as promoting remote interactions and collaborations, e-learning offers a transformative approach to education (Alonso et al., 2005).

Numerous technologies and methods are employed in e-learning to deliver educational content and facilitate learning through digital platforms. Blended learning, mobile learning, gamification, micro learning, personalized learning, continuous learning, and asynchronous and synchronous modes are among the commonly used delivery technologies and methods in e-learning (Lujara, 2010; Bezhovski & Poorani, 2016; Arthur-Nyarko & Kariuki, 2019).

E-learning in educational contexts has the capacity to support and improve students' SRL processes (Pérez-Álvarez et al., 2018; Singh & Miah, 2020). The rise of e-courses, both within formal and informal educational settings, plays a significant role in equipping individuals with the necessary skills to thrive in contemporary society, thereby fueling interest in SRL (John et al., 2015, Zimmerman, 2015, Schwendimann et al., 2016). Furthermore, SRL concept holds promise for application in e-environments where adult learners are motivated to take responsibility of their own learning experiences (Hernández-Gantes, 2010). Effective SRL among students is particularly vital in the field of e-education, especially in relation to language acquisition (Kulusakli, 2022).

Moreover, SRL plays a vital role in influencing the learning process of students, whereas emerging technologies provide intelligent learning environments that are adaptive, forward-thinking, and sensitive to context (Gambo & Shakir, 2021). Therefore, it is essential to investigate how SRL can assist learners in cultivating cognitive

strategies and fostering metacognitive and motivational aspects to attain their learning objectives (Pérez-Álvarez et al., 2018; Durán-Sánchez et al., 2018; John et al., 2015; Zimmerman, 2002).

Within the context of e-learning, the implementation of SRL strategies is imperative, given that learners are supposed to demonstrate self-management skills while pursuing their academic aspirations. As a result, learners must cultivate self-regulation skills to facilitate effective and successful learning in an online setting (Greene et al., 2018; Kizilcec et al., 2017).

Writing is the only learned skill that is extremely difficult for native speakers, and this difficulty increases when the task is to write in a language that is not their first language (Sahin & Genc, 2015). Writing is a goal-oriented, self-directed cognitive activity that requires careful environmental control, the writer's intent, the limitations of the subject matter, and the techniques, knowledge and skill sets associated with writing (Graham et al., 2013).

According to Brown and Lee (2015), writing requires a different set of skills, such as generating and organizing ideas, employing rhetorical norms and discourse markers, revising and editing writing for clearer meaning and appropriate grammar ultimately leading to a final product. To Jesson et al., (2016), writing is a social and context-sensitive activity that involves making linguistic decisions based on meaning and impact, and which anticipates the reader's reaction.

Shin and Crandall (2019) defined writing as an interactive activity that entails considering the audience for the produced piece as some decisions about what and how to write should be made by them. These decisions include word choice, vocabulary, grammar, and mechanics, in addition to considerations about tone, style, and text type.

Furthermore, writing consist of several aspects such as vocabulary, grammar, content, organization, fluency, and mechanics (Hyland, 2003; 2007, Bratcher & Ryan 2004, Brown, 2001; 2004, Brown & Lee, 2015). Vocabulary/lexis is the selection of lexical items and structure to convey a specific tone in writing. It refers to students' capacity to use the words in a work as much as possible (Brown, 2001; 2004, Brown & Lee, 2015). Grammar/ syntax describes the systematic arrangement of linguistic elements, such as words and phrases, that come together to create meaningful sentences.. The meanings and objectives of these sentences that serve in the broader linguistic system are usually taken into consideration (Richards & Schmidt, 2002; 2010).

Content knowledge refers to the ideas and concepts covered in the text's topic area. To produce cohesive writing, students must be knowledgeable with the themes or concepts they will be writing about (Hyland, 2003). Content is the logical progression of ideas as it contains thesis statement, related ideas, development of ideas, and consistent focus (Brown, 2004, Brown & Lee, 2015). Content consists of authentic information, interpretations, and notions and considers presenting the main idea, using specifics, and the degree to which ideas are addressed in the writing (Bratcher & Ryan, 2004).

Organization/structure of a written work refers to the way sentences, paragraphs, and chapters operate together in conveying meaning. Writing offers a variety of structures such as importance order, haiku, comparison and contrast, beginning–middle–end structures, newspaper editorial, main idea-supporting information structure, chronological order, etc., (Bratcher & Ryan, 2004). A written text should be organized with an effective beginning, a logical progression of ideas, a conclusion, with an adequate length (Brown & Lee, 2015).

Fluency is students' capability to execute tasks or engage in activities with ease, speed, and precision (Brand & Brand, 2006). A writer's fluency is determined by their ability to effortlessly transfer thoughts onto paper, create connections between concepts, arrange ideas logically, employ commonly understood vocabulary, and construct concise and grammatically correct sentences (Atasoy & Temizkan, 2016).

Mechanics is often referred to as conventions, usage, surface structures, or editing concerns. Mechanics can be applied to basic accuracy, complex grammatical and stylistic decisions (Bratcher & Ryan, 2004). It consists of punctuation, spelling, references citation, appearance and neatness (Brown, 2004, Brown & Lee, 2015)

Writing has some common types (Bolton et al., 2006; Deutsch, 2014; Jeffry, 2016; Kane, 2000; Sari, 2021; Abdurashidovna, 2022):

1. Expository writing is the use of facts to explain and provide information about a particular subject, to enlighten or to instruct. In short, it is the presentation of an idea or discussion that helps to explain or analyze information e.g., scientific reports.
2. Narrative writing usually involves a group of characters, and is typically written in the first person perspective, which is when the story is told from the perspective of one character, even though it can be done with more. there are five elements that shape and define any narrative: plot, setting, character, conflict, and theme.

3. Descriptive writing focuses on perceptions, particularly visual ones. Its main goal is to organize what writers perceive into a specific structure. It is a literary technique in which writers use details to paint a picture with words. Writers describe locations, people, things, and events using the appropriate level of detail.
4. Persuasive writing is a written form of an oral debate that asks the writers to provide arguments for and against something to convince the reader of a specific point of view/opinion, belief, idea. Persuasion has three forms; argument, satire, and eloquence e.g., newspaper columns, speeches, advertising campaigns, and reviews.
5. Creative writing has many forms such as fiction or non-fiction for example short stories, fiction, novels, playwriting, and poetry. Its purposes are to raise awareness about a topic, entertain or educate people, or simply express thoughts and feelings.

Teachers play several roles through a writing activity. The demonstrator elucidates the writing norms and limitations of various genres while a motivator convinces students of the task practicality, inspires them, establishes a conducive atmosphere for brainstorming, and spurs them to put in extra effort for optimal results. In addition, the teacher as an audience acknowledges and reacts to the written ideas and perspectives of the students. A supporter not only offers encouragement to the students but also guides them on how to implement their thoughts effectively.

Whereas a resource offers the students the necessary information and language support whenever the situation demands it, an editor assists students in the selection and organization of their written work for publication, whether it be within the classroom or beyond. While an evaluator teacher assesses students' progress and performance, provides feedback on their work, a feedback provider focuses on offering encouragement and reinforcement to students, acknowledging their efforts and achievements in their writing pieces (Harmer, 2004; 2007; 2015).

Context of the Problem

Upon reviewing the National Academic Reference Standards (NARS) (2013), it became evident that a significant emphasis was placed on developing EFL writing skills as fundamental competencies within the framework of EFL Teacher Preparation Program.

Based on the researcher's experience four years as a demonstrator and three years as an assistant lecturer, it has been noted that most EFL second year students at Faculty of Education, Benha University lack sufficient writing experience. Instead of focusing on composing

complete essays, the English writing courses primarily emphasize the development of writing paragraphs. Students have limited exposure to various genres. The lack of explicit instruction on writing techniques hinders their capacity to articulate the main idea and supporting details of a particular topic, structure their essays coherently, and convey their thoughts clearly through written language. As a result, the students struggle with utilizing a diverse vocabulary and applying grammatical rules accurately in their writing. Their essays often contain irrelevant information that does not contribute to the central idea, leading to a disorganized and disjointed essay/text.

Through reviewing previous studies, it was found that EFL university student encounter several problems with writing skills, such as Abdel Rahman (2021), Ahmed (2022), Eid (2020), Hassan (2021), Hussein (2021), Mohamed (2020), Mohammad (2020), Ogtit (2020). These studies revealed a lack in Faculty of Education students' EFL writing skills.

To document the problem of the study, the researcher conducted a pilot study to investigate the level of EFL second year university students in writing. The participants consisted of (30) EFL second-year students at the Faculty of Education, Benha University in the second term of the year 2021/2022. The researcher applied Helwa's (2013) EFL writing test. The writing test consisted of four questions about writing an essay. The results of the test revealed the second year students' low level in EFL writing skills.

Finally, this study aimed to investigate the effects of an e-program based on SRL and whether it might constitute benefits for second-year university students to demonstrate their EFL writing skills development.

Statement of the Problem

Despite the importance of the EFL writing skills and the need for developing them among second year students at Faculty of Education, they seem to lack these skills. So, the following study aimed at examining the effect of e-program based on SRL for developing EFL writing skills among second year students at the Faculty of Education, Benha University.

Questions of the Study

1. What are the EFL writing skills required of second year students at the Faculty of Education, Benha University?

2. How can an e-program based on SRL be used for developing EFL writing skills among second year students at Benha University Faculty of Education?
3. What is the effect of e-program based on SRL in developing EFL writing skills among second year students at the Faculty of Education, Benha University?

Delimitations of the Study

1. Second year students (n=60) enrolled at English Section at Benha Faculty of Education divided into two groups, control (n=30) and experimental group (n=30).
2. Five main EFL writing skills (accuracy, content, organization, fluency, and mechanics) and they included fourteen subskills required of second year students enrolled at English Section at Benha Faculty of Education.

Method

Design of the study

This study employed the quasi-experimental method (two groups: pre-test posttest design) for developing EFL writing skills among second year university students by using an e-program based on SRL.

Participants of the study

Participants of this study were 60 second year students enrolled at the English section at the Faculty of Education at Benha University. They were assigned to experimental group (n=30), taught using the e-program based on SRL, and a control group (n=30), taught using regular method in the first semester of 2023/2024 academic year.

Instruments and materials of the study

The EFL Writing Skills Checklist

Purpose

The researcher prepared the EFL writing skills checklist to identify the required writing skills of EFL second - year students at the Faculty of Education, Benha University.

Description

The EFL writing skills checklist consisted of five main skills.: accuracy (5 subskills), content (3 subskills), organization (3 subskills), fluency (1 subskills) and mechanics (2 subskills). The total number is 14 subskills

Sources

The researchers reviewed related studies, literature, some IELTS books, National Academic Reference Standards (NARS), besides Specification of the English Language Teacher Preparation Program to

determine the EFL writing skills, main and subskills, required for the participants.

The EFL Writing Skills Tests

Purpose of the Tests

The main purpose of the pre EFL writing skills test was to determine the level of second-year students enrolled at English Language Section at Benha Faculty of Education in the EFL writing skills. Conversely, the post EFL writing skills test was to determine the effect of the e-program based on SRL in developing EFL writing skills.

Description of the tests

Each EFL writing skills test consisted of three questions. The first question required students to compose a descriptive essay, the second question, they were asked to write an argumentative essay. Finally, the third question was to write an expository essay. The tests were scored according to the rubric that consists of five main skills (accuracy – content– organization – fluency – mechanics). Each writing sub-skill is scored on a four points Likert scale ranging from "4" to "1" where "4" indicates the highest performance level, while "1" indicates the lowest performance

The Validity of the Tests

To validate the EFL writing skills tests, they were submitted to number jury members specialized in curricula and methods of teaching English. They were requested to judge whether the tests items were clear and appropriate to the study sample and whether the tests items measure the EFL writing skills that they are supposed to measure. They indicated the suitability of the tests to their main objectives and the consistency of questions to the tests' objectives. The jury members suggested some modifications concerning rephrasing some directions and the researcher has taken them into consideration to get the final form of the tests.

Reliability of the Tests

Two different methods were used to estimate the reliability of The EFL writing skills tests: Alpha Cronbach method and Test re-test method. Alpha Cronbach's correlation coefficient obtained a high value of (0.94). Likewise, the test-retest method's correlation coefficient was high (0.95), further confirming the strong reliability of the tests.

The E-program based on SRL for developing EFL Writing Skills

The researcher integrated a range of e-learning applications, tools, and SRL strategies to improve second-year university students' EFL writing skills. The researcher created an educational framework that

demonstrated how to apply the e-program based on SRL for developing EFL writing skills.

The e-program based SRL was comprised of fourteen sessions created by the researcher and made available on the course site (<https://canvas.instructure.com/courses/2389305>). The duration of the program extended over a period of seven weeks, consisting of two sessions per week, with each session lasting between 45 and 120 minutes. The initial session served as an orientation, while the subsequent sessions focused on developing EFL writing skills.

The researcher utilized peer, formative, and summative evaluation. Students were responsible for assessing the work of their peers. Formative assessment was employed to monitor the progress of participants in EFL writing skills and to provide immediate and delayed feedback. The online activities and quizzes supplied the researcher in the current study with ample information regarding the development of participants in EFL writing skills. Summative assessment was conducted at the end of the intervention by administering a post EFL writing skills test to evaluate the participants' achievements.

Data Collection

The Following procedures were conducted in the present study.

Pre-testing

The participants were pre-tested by using the EFL writing skills pre-test to determine their level in EFL writing skills before the implementation of the e-program based on SRL. The participants' answers were evaluated and given a score.

Treatment

After the pre-test, the study included (n = 60) participants divided into two groups: an experimental group (n = 30) who received instruction via the e-program based on SRL, and a control group (n = 30) who were taught using traditional method. The intervention lasted for seven weeks, with two instructional sessions held each week, each targeting particular skills.

Post-testing

The participants were post-tested to explore the effect of the e-program based on SRL .

Findings of the Study

The findings of the study will be presented in relation to the hypotheses of the study.

Findings of the First Hypothesis

The first hypothesis states that “There is a statistically significant difference between the mean scores of participants in the control and experimental groups in the post-application of the overall EFL writing skills test, in favor of the experimental group”.

Table (1): Findings of the t-test between the control and experimental groups (n1= 30 & n2= 30) (DF= 58) in overall EFL writing skills post-test

Skills	Full mark	Groups	Mean	Std. Deviation	t-value	A Sig	η^2
EFL writing Skills	56	Exp.	52.46	2.15	52.23	0.01	0.98
		Control	29.32	1.13			

Table (1) shows the differences between the mean scores of students in the control and experimental groups in the post applications of the overall EFL writing skills test. Moreover, there is a difference of statistical significance at the level ($\alpha \leq 0.01$) between the mean scores of students in the control and experimental groups in the post-application of the overall EFL writing skills test, in favor of the experimental group, proving the first hypothesis of the study.

Findings of the Second Hypothesis

The second hypothesis states that “There is a statistically significant difference between the mean scores of participants in the control and experimental groups in the post-application of the EFL writing skills test on accuracy skills, in favor of the experimental group”.

Table (2): Findings of the t-test between the control and experimental groups (n1= 30 & n2= 30) (DF= 58) in accuracy and its subskills

Main skills	Subskills	Groups	Mean	Std. Deviation	t-value	A Sig	η^2
Grammar	Use different grammatical types of phrases and sentences and verb tenses	Exp.	3.86	0.23	29.09	0.01	0.96
		Control	2.09	1.48			
	Form a variety of well-structured	Exp.	3.82	0.24	28.63	0.01	0.94
		Control	2.12	0.20			

	sentences						
Grammar		Exp.	7.67	0.42	32.69	0.01	0.96
		Control	4.21	0.27			
Vocabulary	Use the appropriate vocabulary to the topic and setting	Exp.	3.72	0.42	21.59	0.01	0.89
		Control	2.02	0.08			
	Use phrasal verbs and idiomatic expressions.	Exp.	3.09	0.26	27.42	0.01	0.86
		Control	1.80	0.27			
	Use the correct forms of words	Exp.	3.65	0.35	24.39	0.01	0.89
		Control	2.04	0.19			
Vocabulary		Exp.	10.46	0.84	29.13	0.01	0.93
		Control	5.87	0.42			
Accuracy		Exp.	18.13	1.13	34.07	0.01	0.96
		Control	10.08	0.50			

Table (2) shows that there is a difference with statistical significance at the level ($\alpha \leq 0.01$) between the mean scores of students in the control and experimental groups in the post-applications of the EFL writing skills test on accuracy skills and its subskills, in favor of the experimental group. Moreover, η^2 values ranged from moderate to high (0.86 & 0.96), which is larger than (0.14), showing the effect of the use of the e-program based on SRL on the accuracy skill as a whole and in its subskills. As a result, the second hypothesis was supported.

Findings of the Third Hypothesis

The third hypothesis states that “There is a statistically significant difference between the mean scores of participants in the control and experimental groups in the post-application the EFL writing skills test on content skills, in favor of the experimental group”.

Table (3): Findings of the t-test between the control and experimental groups ($n_1=30$ & $n_2=30$) ($DF=58$) in content and its subskills

Main skills	Subskills	Groups	Mean	Std. Deviation	t-value	A Sig	η^2
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Content	Produce a topic sentence/main idea	Exp.	3.86	0.17	45.24	0.01	0.97
		Control	2.04	0.14			
	Develop enough and relevant ideas	Exp.	3.87	0.16	38.39	0.01	0.96
		Control	2.09	0.19			
	Write on a variety of topics or situations	Exp.	3.82	0.17	42.49	0.01	0.97
		Control	2.09	0.15			
Content		Exp.	11.55	0.38	58.95	0.01	0.98
		Control	6.22	0.32			

Table (3) indicates that there is a statistically significant difference at ($\alpha \leq 0.01$) level between the mean scores of students in the control and experimental groups in the post-applications of the content skill and its subskills, in favor of the experimental group. In addition, η^2 of the experimental treatment on the content skill and its subskills ranged from moderate to high (0.96 & 0.98), which is a large and appropriate value. This points out that a considerable part of the differences are attributed to the experimental treatment on the content skills. Therefore, the third hypothesis was verified.

Findings of the Fourth Hypothesis

The fourth hypothesis states that “There is a statistically significant difference between the mean scores of participants in the control and experimental groups in the post-application the EFL writing skills test on organization skill, in favor of the experimental group”.

Table (4): Findings of the t-test between the control and experimental groups ($n_1 = 30$ & $n_2 = 30$) ($DF = 58$) in organization and its subskills

Main skills	Subskills	Groups	Mean	Std. Deviation	t-value	A Sig	η^2
Organization	Produce logically coherent sentences	Exp.	3.85	0.17	32.93	0.01	0.95
		Control	2.15	0.23			
	Use cohesive	Exp.	2.87	0.16	40.0	0.01	0.97

	devices appropriately	Control	2.13	0.16	8		
	Organize the written topic in an appropriate way or format	Exp.	3.85	0.17	44.14	0.01	0.97
		Control	2.08	0.14			
Organization		Exp.	11.56	0.49	41.67	0.01	0.97
		Control	6.37	0.47			

Table (4) point out that there is a statistically significant difference at the level of significance ($\alpha \leq 0.01$) between the mean scores of students in the experimental and control groups in the post-applications of the organization skill and its subskills, in favor of the experimental group.. The (η^2) of the experimental treatment on the organization skill as a whole and in its subskills ranged from moderate to high (0.95 & 0.97), which is a large and appropriate value. This indicates that a large proportion of the differences are attributed to the experimental treatment on the organization. Henceforth, the fifth hypothesis was verified

Findings of the Fifth Hypothesis

The fifth hypothesis states that “There is a statistically significant difference between the mean scores of participants in the control and experimental groups in the post-application the EFL writing skills test on fluency skills, in favor of the experimental group”.

Table (5): Findings of the t-test between the control group and experimental group (n1= 30 & n2= 30) (DF= 58) in fluency and its subskills

Main skills	Subskills	Groups	Mean	Std. Deviation	t-value	A Sig	η^2
Fluency	Write an essay of an appropriate length within the time allotted	Exp.	3.55	0.23	30.21	0.01	0.94
		Control	2.08	0.14			

Table (6) illustrates a significant statistical difference ($\alpha \leq 0.01$) between the mean scores of students in the experimental and control groups in the post-applications of the fluency skill, with the experimental group prevailing. Moreover, the (η^2) of the experimental treatment on the fluency skill was (0.94), indicating a substantial and suitable value.

This suggests that a significant proportion of the differences are accredited to the experimental treatment on the fluency skill. The fifth hypothesis was supported.

Findings of the Sixth Hypothesis

The sixth hypothesis states that “There is a statistically significant difference between the mean scores of participants in the control and experimental groups in the post-application the EFL writing skills test on mechanics skills, in favor of the experimental group”.

Table (6): Findings of the t-test between the control and experimental groups (n1= 30 & n2= 30) (DF= 58) in mechanics and its subskills

Main skills	Subskills	Groups	Mean	Std. Deviation	t-value	A Sig	η^2
Mechanics	Use punctuation and capitalization appropriately	Exp.	3.82	0.23	27.78	0.01	0.93
		Control	2.24	0.21			
	Use spelling correctly	Exp.	3.86	0.23	27.83	0.01	0.93
		Control	2.33	0.20			
Mechanics		Exp.	7.68	0.44	31.67	0.01	0.95
		Control	4.58	0.30			

Table (6) shows a statistically significant difference ($\alpha \leq 0.01$) between the mean scores of students in the experimental and control groups in the post-applications of the mechanics skill and its subskills, with the experimental group out-performing the control group. Moreover, (η^2) of the experimental treatment on the mechanics skill and its subskills ranged from moderate to high (0.93 & 0.95), which is a large and suitable value. This implies that a substantial proportion of the differences are attributed to the experimental treatment on the mechanics skill and its subskills. Therefore, the sixth hypothesis was proved.

Discussion of results

The results of this study confirmed the effectiveness of the e-program based on SRL for developing EFL writing skills. Consequently, it can be concluded that the e-program based on SRL has shown both statistical and educational significance in developing the participants' overall EFL writing skills

The improvement could be due to the SRL strategies: self-assessment, organizing information, setting goals and planning, searching for information, keeping record of progress, creating a

conducive learning environment, holding oneself accountable, practicing and memorizing important concepts, seeking help from peers and teachers, reviewing tests, reviewing notes, and summarizing the main content of the material.

Moreover, several factors played a part in developing the participants' EFL writing skills, which encompassed the integration of e-learning with SRL strategies and the specific attributes of the participants. The combination of e-learning methodologies (such as mobile, blended and online learning, gamification, micro-learning, personalized learning, continuous learning, asynchronous, and synchronous modes) with SRL strategies presented a diverse array of valuable learning possibilities.

The combination of e-learning with SRL strategies enables students to define clear objectives for every session, monitor their progress in the EFL writing skills course, and receive guidance from their instructor and peers on making necessary adjustments. By utilizing SRL strategies such as planning and monitoring, students actively participate in discussions on the course's online platform, reflect on their performance, and adapt their strategies accordingly. Furthermore, through peer learning and the application of SRL strategies, students share resources, materials, and work with their peers, engage in collaborative efforts, and offer valuable feedback to assist their peers in enhancing their skills.

The e-program based on SRL enabled students to assume control over their academic journey by equipping them with tools and resources for self-directed, autonomous learning. One participant expressed their satisfaction by stating *"I really appreciated the flexibility of being able to access the materials regardless of time and place. It made me feel more independent."* This e-program based on SRL was tailored to meet individual needs and preferences, thus providing a personalized learning experience. Moreover, it fostered a collaborative learning atmosphere by encouraging feedback and support from both instructors and peers. By engaging in tasks, online discussions, and receiving feedback from peers and researchers, students were able to enhance their learning experience. In essence, the e-program based on SRL offered an interactive and adaptable learning environment that emphasized autonomy and engagement.

Recommendations of the study

In light of the study's findings and results, the following recommendations could be proposed:

1. The e-program based on SRL should supply timely feedback and assessment on students' performance via self-assessment tools, automated quizzes, and feedback from instructors and peers. This mechanism enables students to effectively track their progress.
2. The e-program based on SRL should enhance students' autonomy, engagement, and achievement.
3. The e-program based on SRL should actively support the establishment and monitoring of goals, which are fundamental aspects of SRL. Students should be able to set objectives, develop action plans, and track their progress.
4. The e-program based on SRL should promote collaboration and communication among students, instructors, and peers, thereby fostering social learning, teamwork, and the enhancement of communication skills.
5. The e-program based on SRL should offer a wide range of interactive learning resources, including multimedia presentations, simulations, and interactive exercises, which actively engage students in their learning experiences.

Suggestions for further research:

This study suggests that upcoming research concentrate on the following areas:

1. Investigate the effect of the e-program based on SRL in developing EFL receptive skills of university students.
2. Investigate the effect of the e-program based on SRL in developing EFL productive skills of preparatory, and secondary school students.
3. Investigate the effect of extended reality with SRL for developing receptive and productive skills of different stages

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