A Program based on Integrating Metacognition and Neuro-Linguistic Programming to Enhance Experimental Language Secondary School Students' EFL Critical Reading, Creative Writing Skills and Metalinguistic Awareness

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Abstract

The current study was mainly intended to develop the EFL experimental language secondary students' EFL critical reading, creative writing skills and metalinguistic awareness through a program based on integrating metacognition and neuro-linguistic programming. To fulfill this purpose, it adapted the two-group pre-post quasi-experimental design. Sixty (two classes) EFL second secondary students from Youssef Atwan Formal Language School, Hussainiya Directorate, Sharkia Governorate, Egypt, were assigned into two groups; thirty participants for the experimental group and thirty for the control one. The instruments of the study were EFL critical reading, creative writing, and metalinguistic awareness tests. The instruments were pre-post administered to both groups. The current study was conducted over a period of three months, over twenty-seven sessions for researching, acting, reflecting and practicing EFL critical reading, creative writing skills and metalinguistic awareness, through the first term of the academic year 2024- 2025. Finally, the results of the study revealed that the program based on integrating metacognition and neuro-linguistic programming had a positive effect on developing EFL critical reading, creative writing, and metalinguistic awareness skills of Experimental secondary stage students.

Keywords: Metacognition, Neuro-linguistic Programming, EFL, Critical Reading, Creative Writing, Metalinguistic Awareness, Secondary Education, Egypt.

1. Introduction

Hudson (2007) demonstrated that critical reading skills need to be taught to students to not only know how to convert orthographic symbols to language (word attack skills), use context and knowledge to comprehend what is read (comprehension skills), or see larger sentences as wholes, a process which help students to read fluently (fluency skills). Most students can read but the main concern is whether they could understand the text critically like "reading between the lines" or " reading for deeper meaning" because if they develop critical reading skills, they would definitely have good reading comprehension skills and could be successful in schools.

Cheung et al. (2003) indicated that creative writing courses and degrees are growing in numbers and influence. They are fashionable for students to enroll on, fashionable for institutions to offer. Creative Writing

courses have an established track record in producing successful novelists, bring new challenges in reconciling creativity and provide a useful source of employment for writers who work in higher education and are involved in encouraging students to produce writing, but who are not associated with creative writing classes or modules or departments. Every piece of writing is a learning experience and creative writing. EFL students have to write not only lecture notes and essays, but also contributions to online discussions.

Altman et al. (2018) indicated that metalinguistic awareness is the ability to reflect on and manipulate the structural features of spoken language. The word "spoken" should be removed, since this word narrows the scope of the construct "metalinguistic awareness" too much. Reflecting on or manipulating the order of words in a sentence (i.e., syntactic awareness) is a kind of metalinguistic awareness whether the sentence was written or spoken.

John Flavell (1976) was one of the earliest researchers in metacognition theory and declared that metacognition is any kind of cognitive transaction with the human or non-human environment, a variety of information processing activities may go on. Metacognition refers, among other things, to the active monitoring and consequent regulation and orchestration of these processes in relation to the cognitive objects or data on which they bear, usually in service of some concrete goal or objective". In 1979, Flavell then proposed a formal model of metacognition which included metacognitive strategies as one of its classes in this model.

According to Grinder and Bandler (1976), to achieve communicative language teaching (CLT) goals more effectively, neuro-linguistic programming can be helpful. In fact neuro-linguistic programming is the study of how the interaction of our brain (neuro), our language (linguistic) and body produces patterns of behavior (programming). Furthermore, NLP techniques such as reframing, anchoring, creating rapport can be applied by learners and educators to facilitate learning. By applying these techniques effectively, an educator can communicate better with students, strengthen the learning environment, and develop positive interaction that will increase academic effectiveness.

Dilts & Epstein (1995) clarified that neuro-linguistic programming (NLP), created in the 1970s, has become increasingly familiar in education and teaching. There is little academic work on NLP to date. NLP offers an innovative praxis, underpinned in principle by Bateson's epistemological thinking, which informs a distinctive methodology known as 'modelling'. The credibility of the field relies, in our view, on its ability to address seven critical issues. These form a possible research agenda and a focus for dialogue between NLP practitioner and academic communities.

1.1. Context of the Problem

The problem of the current research has been emphasized in the following ways:

1. The experience of the researcher as a teacher of EFL for more than 18 years.

2. Reviewing the previous studies that tackled critical reading, creative writing and metalinguistic awareness such as Flavell (1979), Paul & Jane (2010), Tong (2009), and Walsh (2010). These studies revealed that there is a weakness in critical reading, and creative writing skills among secondary stage students. They also indicated that most students have low metalinguistic awareness.

3. Conducting a pilot study to diagnose and confirm the problem.

1.2. Statement of the Problem

Based on what was mentioned above, it could be concluded that a considerable number of second secondary stage students do badly at critical reading, creative writing skills, and meta-linguistic awareness. Addressing such a problem, the current research investigates the effect of a program based on metacognition and neurolinguistic programming   on developing EFL critical reading, creative writing skills and meta-linguistic awareness of experimental language secondary school students.

1.3. Questions of the Study

The current study attempts to answer the following main question:

"What is the effect of a program based on metacognition and neurolinguistic programming   on developing EFL critical reading, creative writing skills and meta-linguistic awareness of experimental language secondary school students?"

The following sub questions could be derived from the above mentioned main question:

1. What are the EFL critical reading skills required for the experimental   language second secondary stage students?

2. What are the EFL creative writing skills required for the experimental language second secondary stage students?

3. What are EFL meta-linguistic awareness skills required for the experimental language second secondary stage students?

4. What are the features of a program based on metacognition theory and neurolinguistic programming to develop EFL critical reading, creative writing, and metalinguistic awareness?

1.3. Hypotheses of the Study

The current study aims at testing the following hypotheses:

1. There is a statistically significant difference at (0.05) between the mean scores of the experimental group and the control one in the post-test administration results of the EFL critical reading skills, favoring the experimental group.

2. There is a statistically significant difference at (0.05) between the mean scores of the experimental group and the control one in the post-test administration results of the EFL creative writing skills, favoring the experimental group.

3. There is a statistically significant difference at (0.05) between the mean scores of the experimental group and the control one in the post administration of the overall metalinguistic awareness test, favoring the experimental group.

4. There is a statistically significant difference at (0.05) between the mean scores of the experimental group in the pre-post administration results of the overall EFL critical reading test, favoring the post-administration results.

5. There is a statistically significant difference at (0.05) between the mean scores of the experimental group in the pre-post administration results of the overall EFL creative writing test, favoring the post-administration results.

6. There is a statistically significant difference at (0.05) between the mean scores of the experimental group in the pre-post administration results of the overall EFL metalinguistic awareness test, favoring the post administration results.

7. The program based on integrating metacognition and neuro-linguistic programming has a positive effect on developing the overall EFL critical reading skills of the experimental language second secondary students.
8. The program based on integrating metacognition and neuro-linguistic programming has a positive effect on developing the overall EFL creative writing skills of the experimental language second secondary students.
9. The program based on integrating metacognition and neuro-linguistic programming has a positive effect on the overall EFL metalinguistic awareness skills of the experimental language second secondary students.

1.5. Delimitations of the Study

The current research is delimited to:

1. A group of EFL students enrolled in the second secondary stage, Yossef Atwan Formal Language School, Hussiania Administration, Sharkia Governorate, Egypt.

2. Some EFL critical reading skills suitable for second secondary students, according to the Jury members.

3. Some EFL creative reading skills suitable for second secondary students, according to the Jury members.

4. Some EFL meta-linguistic awareness skills suitable for second secondary students, according to the Jury members.

5. The implementation of the program during the second term of the academic year 2024-2025, at Yossef Atwan Formal Language School, Hussiania, Sharkia, Egypt, where the researcher lives.

2. Literature Review

2.1. Metacognition

Veenman (2015) assured that metacognition refers to the descriptive knowledge of, and the regulatory control over one's cognitive system. The relevance of metacognition for reading has been recognized early on reading not only pertains to studying texts and textbooks, as reading activities are omnipresent in various school tasks. When writing a paper, students have to search for information in the library or on the Internet. Even problem solving in physics or mathematics requires thorough reading of the problem statement. Many students, however, fail to exert adequate metacognitive control while reading. A literature review revealed that metacognition is the most important predictor of learning outcomes, surpassing other cognitive and motivational characteristics of students. Metacognitive skillfulness accounted for 40 percent of learning outcomes. The effect of individual differences in metacognition is also acknowledged in reading research.

Some authors combined metacognitive skills with metacognitive strategies to extract a new model of metacognitive skills, according to Gorrel et al. (2009), metacognitive skills are:

1. Planning which means the appropriate structure is assigned to the task. 2. Monitoring which is considered as the assessment of progress through a particular cognitive task.

3. Evaluation means judging of task progress and success.

4. Meta-memory includes the person's knowledge and awareness of his memory storage and usage.

5. Meta-comprehension involves an awareness of the extent to which a task is understood.

6. Schema training refers to the generation of a cognitive framework to help understand a particular task.

7. Transfer which means the ability to transfer and modify strategies to be suitable for aims, tasks, and outcomes.

2.2. Neuro-Linguistic Programming (NLP)

According to Drigas and Mitsea (2021), NLP refers to a way of organizing and understanding the structure of subjective experience and is concerned with the ways in which people process information (through visual, auditory, or kinesthetic modes). The 6 categories of errors found in the literature include lack of understanding of the concepts of pattern recognition and inadequate control of context, unfamiliarity with NLP as an approach to therapy, lack of familiarity with the NLP meta-model of linguistic communication, failure to consider the role

of stimulus–response associations, inadequate interviewer training and definitions of rapport, and logical mistakes.

Drigas and Mitsea (2021) acclaims NLP a significant tool to bring numerous changes and desired results. NLP is a combination of three significant parts: the first part of neuro indicates the procedure that may activate or trigger the neurological system; the second part of linguistic refers to the way that illustrates the role of language to influences the experience; and the third part of programming helps to code the experience.

Ramaganesh and Paulraj (2015) conducted a study to explore the prospective teacher educators' awareness towards the key components of NLP. The participants were of prospective teacher educators studying at the department of educational technology. The instrument was 'Neuro-Linguistic Programming Awareness Assessment scale'. The findings of the study were: 1) overall awareness of teacher educators towards the key components of NLP was 76%, 2) female teacher educators had higher awareness towards the key components of NLP than the male ones, 3) teacher educators studied language as their discipline was better in their NLP awareness than teacher educators who studied other discipline, 4) the teacher educators did not have adequate awareness on 'flexibility' or in 'rapport creation' with the students, while they were aware of emotional and cognitive booster, and 5) all the five components were found as equally contributing factors of NLP to teaching-learning process.

2.3. EFL Critical Reading Skills

Critical reading is an area which has been the center of attention of critical pedagogues for many years. Several scholars and researchers have made attempts to incorporate, or encourage the inclusion of, critical reading indicators in reading programs (e.g., Freire, 1983; Patching, Kameenui, Carnine, Gersten, & Colvin 1983; Peavey, 1954; Walz;2001Wolf, King, & Huck, 1968), yet the degree to which these attempts have been successful is an uncertain issue upon which we may cast doubt. For this purpose, the present study sought to qualitatively examine whether or not reading textbooks encompass critical reading items.

Souidi (2022) investigated the effect of using critical reading in developing metacognitive thinking for fourth graders of intermediate education. The study participants were eighty-nine. The study relied on the experimental method and the design of one group. The study resulted in the following: 1) there are statistically significant differences between the initial measurement of the degree of metacognitive thinking and the posterior measurement of the degree of metacognitive think in for the fourth graders of intermediate education, and 2) there are no differences due to gender.

2.4. EFL Creative Writing Skills

According to Graham et al. (2005), creative writing is any writing that goes outside the bounds of normal professional, journalistic, academic, or technical forms of literature, typically identified by an emphasis on native craft character development, and the use of literary tropes or with various traditions of poetry and poetics. Creative writing is a more contemporary and process-oriented name for what has been traditionally called literature. Ranging from mechanical control to creativity, with good grammar, knowledge of subject matter, awareness of stylistic conventions and various mysterious factors in between.

Al-Bayati conducted a study in (2017) in Iraq and aimed at "to know the effectiveness of a proposed program according to the theory of serious creativity in developing creative writing skills for fourth-grade literary students." The researcher used the descriptive and experimental method, as well as an experimental design with partial control and a post test, the research sample amounted to (65) female students of the fourth preparatory grade, the researcher prepared a test to measure creative writing skills, consisting of (24) essay and objective test items, the researcher adopted the t-test for two independent samples and the t-test for two related samples as a means of extracting the research results, the results of the research revealed the superiority of the experimental group students over the control group students in the creative writing skills test.

2.5. EFL Metalinguistic Awareness

According to Bialystok (2001), metalinguistic awareness may be defined as the ability to reflect upon and manipulate the structural features of spoken language, treating language itself as an object of thought, as opposed to simply using the 1anguage system to comprehend and produce sentences. To be metalinguistically aware is to begin to appreciate that the stream of speech, beginning with the acoustic signal and ending with the speaker's intended meaning, can be looked at with the mind's eye and taken apart. Although metalinguistic awareness is related in meaning to the term metalanguage, it is important to distinguish between the two. While metalanguage refers to language used to describe language, and includes terms like phoneme, word, phrase, etc., metalinguistic awareness refers to awareness of the instantiations of these terms, but not to knowledge of the terms themselves. Thus, a metalinguistically aware child may perform well on a task invo1ving the manipulation of phonemes without knowing what the term phoneme means.

Candary et al. (2017) directed a think-aloud protocol in which the learners were asked to rate to what degree the form of a novel word fits its meaning. Participants were fifty adult EFL learners. The instruments were a questionnaire, recall test, and a gap-fill task. They found that the more a learner expanded on an unknown L2 word, the better form recall was. The learners also make four different kinds of form-meaning associations: cross-lexical associations, word-form comparisons, sound-symbolic associations, and idiosyncratic associations.

3. Methodology

3.1. Design and Participants

The current study adopted the quasi-experimental design as a method for data collection. It is a two-group, pre-posttest design. The participants of the current study included sixty participants (two classes) of second-secondary at Youssef Atwan Formal Language School, Hussiania Directorate, Sharkia Governorate, Egypt. They were assigned purposefully into a control and experimental groups. It was assumed that the participants formed a similar group. Thus, they were expected to have a lot in common and would not differ much regarding the quality of experience and their age. In order to confirm that the development of students' critical reading, creative writing, and metalinguistic awareness was only due to the effect of the program based on integrating metacognition and neurolinguistic awareness, the researcher controlled some variables: 1) age, as all students ranged from sixteen to seventeen years old, and 2) grade, as all students were second secondary students.

The statistical package for social science program (SPSS Ver.26) was used to calculate the differences between the pre and post administration of the critical reading and creative writing skills test as well as metalinguistic awareness. T-test was used to calculate these differences.

3.2. Instruments of the Study

The following instruments will be designed and used in the current study:

1. Checklists of EFL critical reading, creative writing, and meta-linguistic awareness skills.

2. EFL critical reading, creative writing skills and meta-linguistic awareness pre-posttests.

3. EFL critical reading, creative writing skills, and meta-linguistic awareness pre-posttest rubrics.

3.3. Verifying the Study Hypotheses

3.3.1. The First Hypothesis

The first hypothesis states that," There is a statistically significant difference at (0.05) between the mean scores of the experimental group and the control one in the post-administration results of the EFL critical reading skills test, favoring the experimental group".

To verify this hypothesis, the researcher used the Independent Sample t-test to compare the mean scores of the experimental group students with the control group students, in the post-administration of the EFL critical reading skills test. The results are presented in the following table:

Table (1): T-test results of the experimental group and the control group on the post-administration of the EFL critical reading test

skills	Group	N	Mean	Std. Deviation	t	df	Sig.
Skill_1	experimental	30	1.733	0.961	2.973	58	0.01
	control	30	1.067	1.014			
Skill_2	experimental	30	1.867	0.507	3.862	58	0.01
	control	30	1.060	1.014			
Skill_3	experimental	30	1.800	0.610	4.687	58	0.01
	control	30	0.800	0.996			
Skill_4	experimental	30	1.800	0.610	3.694	58	0.01
	control	30	1.000	1.017			
Skill_5	experimental	30	1.933	0.365	3.785	58	0.01
	control	30	1.200	0.966			
Skill_6	experimental	30	1.733	0.961	2.973	58	0.01
	control	30	1.061	1.014			
Skill_7	experimental	30	1.933	0.365	4.087	58	0.01
	control	30	1.133	1.008			
Skill_8	experimental	30	1.867	0.507	3.862	58	0.01
	control	30	1.067	1.014			
Skill_9	experimental	30	1.867	0.507	4.853	58	0.01
	control	30	0.867	1.008			
Skill_10	experimental	30	1.800	0.610	5.060	58	0.01
	control	30	0.733	0.980			
TOTAL	experimental	30	18.333	1.184	20.169	58	0.01
	control	30	9.467	2.096			

It's clear from table (1) that there is statistically significant difference between the mean scores of the experimental and control group at (0.01) level in favor of experimental group. This means that the program based on integrating metacognition and neuro-linguistic programming is effective in enhancing students' EFL critical reading skills. Thus, the first hypothesis can be confirmed. The researcher attributes these differences to the proposed program.

3.3.2. The Second Hypothesis

The second hypothesis states that, "There is a statistically significant difference at (0.05) between the mean scores of the experimental group and the control one in the post-administration results of the EFL creative writing skills test, favoring the experimental group".

To verify this hypothesis, the researcher used the Independent Sample t-test to compare the mean scores of the experimental group students with the control group students, in the post-administration of the EFL creative writing skills test. The results are presented in the following table (2):

Table (2): T-test results of the experimental group and the control group in the post-administration of the EFL creative writing test

skills	Group	N	Mean	Std. Deviation	t	df	Sig.
Skill_1	experimental	30	9.000	0.643	14.441	58	0.01
	control	30	3.667	1.917			
Skill_2	experimental	30	2.833	0.379	6.758	58	0.01
	control	30	1.700	0.837			
Skill_3	experimental	30	2.800	0.484	8.098	58	0.01
	control	30	1.400	0.813			
Skill_4	experimental	30	3.600	0.498	9.232	58	0.01
	control	30	1.867	0.889			
Skill_5	experimental	30	1.900	0.305	6.483	58	0.01
	control	30	1.133	0.571			
Skill_6	experimental	30	2.700	0.466	6.598	58	0.01
	control	30	1.567	0.817			
Skill_7	experimental	30	2.033	0.319	7.073	58	0.01
	control	30	1.167	0.592			
Skill_8	experimental	30	2.667	0.479	5.920	58	0.01
	control	30	1.157	0.898			
Total	experimental	30	27.367	1.217	12.380	58	0.01
	control	30	14.167	5.712			

As shown in table (2), there is statistically significant difference between the mean scores of the experimental group and the control one at (0.01) level in favor of the experimental group. This means that the program based on integrating metacognition and neuro-linguistic programming is effective in enhancing students' EFL creative writing skills.

This means that the program based on integrating metacognition and neuro-linguistic programming is effective in enhancing students' EFL creative writing skills. The researcher attributes these differences to the proposed program. Thus, the second hypothesis is confirmed.

3.3.3. The Third Hypothesis

The third hypothesis states that, "There is a statistically significant difference at (0.05) between the mean scores of the experimental group and the control one in the post-administration of the overall EFL metalinguistic awareness test, favoring the experimental group".

To verify the hypothesis, the researcher used the independent samples t-test to measure the differences between the mean scores of the experimental group and those of the control group in the post-administration of the EFL metalinguistic awareness test results, using SPSS program (Ver. 26). Table (**3**) shows these results.

Table (3): T-test results of the experimental group and the control group in the post-administration of the metalinguistic test

skills	Group	N	Mean	Std. Deviation	t	df	Sig.
Skill_ 1	experimental	30	3.700	0.466	12.226	58	0.01
	control	30	1.933	0.639			
Skill_ 2	experimental	30	3.667	0.479	14.994	58	0.01
	control	30	1.700	0.534			
Skill_ 3	experimental	30	3.767	0.430	15.401	58	0.01
	control	30	1.700	0.595			
Skill_ 4	experimental	30	4.200	0.664	11.752	58	0.01
	control	30	2.067	0.739			
Skill_ 5	experimental	30	2.500	0.508	8.729	58	0.01
	control	30	1.267	0.583			
Skill_ 6	experimental	30	2.667	0.547	8.515	58	0.01
	control	30	1.333	0.661			
Skill_ 7	experimental	30	1.967	0.182	6.283	58	0.01
	control	30	1.367	0.490			
Total	experimental	30	22.433	0.897	35.888	58	0.01
	Control	30	11.233	1.454			

As shown in table (3), there is a statistically significant difference between the mean scores of the experimental group and the control one at (0.01) level in favor of the experimental group.

This means that the program based on integrating metacognition and neuro-linguistic programming is effective in enhancing students' EFL metalinguistic skills. The researcher attributes these differences to the proposed program. Thus, the third hypothesis can be confirmed.

3.3.4. The Fourth Hypothesis

The fourth hypothesis states that, "There is a statistically significant difference at (0.05) between the mean scores of the experimental group in the pre-post administration results of the overall EFL critical reading test, favoring the post-administration results. ".

To verify the hypothesis, the researcher used the independent samples t-test to measure the differences between the mean scores of the experimental group in the pre/post-administration of the EFL critical reading test results, using SPSS program (Ver. 26). Table (**4**) shows these results.

Table (4): T-test results of the experimental group in EFL critical reading skills in the pre-post administration of the EFL critical reading test

skills	Experimental Group	N	Mean	Std. Deviation	t	df	Sig.
Skill_1	pre	30	0.933	1.015	-3.525	29	0.01
	post	30	1.733	0.961			
Skill_2	pre	30	0.967	0.964	-5.137	29	0.01

					t	df	Sig.
	post	30	1.867	0.507			
Skill_3	pre	30	0.933	1.015	-4.709	29	0.01
	post	30	1.800	0.610			
Skill_4	pre	30	1.067	1.015	-3.612	29	0.01
	post	30	1.800	0.610			
Skill_5	pre	30	1.033	0.999	-4.382	29	0.01
	post	30	1.933	0.365			
Skill_6	pre	30	1.067	1.015	-3.010	29	0.01
	post	30	1.733	0.961			
Skill_7	pre	30	1.200	0.966	-4.097	29	0.01
	post	30	1.933	0.365			
Skill_8	pre	30	0.733	0.980	-6.158	29	0.01
	post	30	1.867	0.507			
Skill_9	pre	30	0.667	0.958	5.835	29	0.01
	post	30	1.867	0.507			
Skill_10	pre	30	0.667	0.958	-6.158	29	0.01
	post	30	1.800	0.610			
Total	pre	30	9.333	0.994	-31.285	29	0.01
	post	30	18.333	1.184			

Table (4) indicates that there is a statistically significant difference at the (0.01) level between the mean scores of the experimental group of the pre and the post administration of the EFL critical reading test in favor of the post-administration.

It's clear from the previous figure that there is a significant difference between the experimental group's pre and post administration of the EFL critical reading test as a whole in favor of the post-administration. This means that the program based on integrating metacognition and neuro-linguistic programming is effective in enhancing students' EFL critical reading skills. The researcher attributes these differences to the proposed program. Thus, the fourth hypothesis is confirmed.

3.3.5. The Fifth Hypothesis

The fifth hypothesis states that "There is a statistically significant difference at (0.05) between the mean scores of the experimental group in the pre-post administration results of the overall EFL creative writing test, favoring the post administration results".

To verify the hypothesis, the researcher used the independent samples t-test to measure the differences between the mean scores of the experimental group in the pre/post-administration of the EFL creative writing test results, using SPSS program (Ver. 26). Table (5) shows these results.

Table (5): T-test results of the experimental group on the pre-post administration of the EFL creative writing test

skills	Group	N	Mean	Std. Deviation	t	df	Sig.
Skill_1	pre	30	3.400	0.498	-35.874	29	0.01
	post	30	9.000	0.643			
Skill_2	pre	30	1.367	0.614	-14.060	29	0.01
	post	30	2.833	0.379			

Skill_3	pre	30	1.100	0.305	-17.405	29	0.01
	post	30	2.800	0.484			
Skill_4	pre	30	1.433	0.504	-25.735	29	0.01
	post	30	3.600	0.498			
Skill_5	pre	30	1.033	0.183	-13.730	29	0.01
	post	30	1.900	0.305			
Skill_6	pre	30	1.200	0.484	-12.042	29	0.01
	post	30	2.700	0.466			
Skill_7	pre	30	0.967	0.182	-23.028	29	0.01
	post	30	2.033	0.319			
Skill_8	pre	30	1.200	0.610	-10.351	29	0.01
	post	30	2.667	0.479			
Total	pre	30	11.700	1.317	-64.919	29	0.01
	post	30	27.367	1.217			

Table (5) indicates that there is a statistically significant difference at the 0.01 level between the mean scores of the experimental group's pre and post administration of the EFL creative writing test in favor of the post-administration.

It's clear from the previous figure that there is a significant difference between the experimental group pre and post administration of the EFL creative writing test as a whole in favor of the post-administration. This was a result of using the program based on metacognition and neuro-linguistic programming to enhance EFL creative writing skills in teaching the experimental group.

This means that the program based on integrating metacognition and neuro-linguistic programming is effective in enhancing students' EFL creative writing skills. The researcher attributes these differences to the proposed program. Thus, the fifth hypothesis is confirmed.

5.3.6. The Sixth Hypothesis

The sixth hypothesis states that "There is a statistically significant difference at (0.05) between the mean scores of the experimental group in the pre-post administration results of the overall EFL metalinguistic awareness test, favoring the post administration results".

To verify the hypothesis, the researcher used the independent samples t-test to measure the differences between the mean scores of the experimental group in the pre/post-administration of the EFL metalinguistic awareness test results, using SPSS program (Ver. 26). Table (**6**) shows these results.

Table (6): T-test results of the experimental group in the pre-post administration of the EFL metalinguistic awareness test

skills	Group	N	Mean	Std. Deviation	t	df	Sig.
Skill_1	Pre	30	1.833	0.647	-14.000	29	0.01
	Post	30	3.700	0.466			
Skill_2	Pre	30	1.700	0.534	-14.083	29	0.01
	Post	30	3.667	0.479			
Skill_3	Pre	30	1.533	0.571	-18.018	29	0.01
	Post	30	3.767	0.430			

Skill_4	Pre	30	2.100	0.759	-14.324	29	0.01
	Post	30	4.200	0.664			
Skill_5	Pre	30	1.167	0.592	-9.633	29	0.01
	Post	30	2.500	0.508			
Skill_6	Pre	30	1.100	0.480	-11.089	29	0.01
	Post	30	2.667	0.547			
Skill_7	Pre	30	1.033	0.490	-9.815	29	0.01
	Post	30	1.967	0.182			
Total	Pre	30	10.400	0.894	-51.791	29	0.01
	Post	30	22.433	0.897			

Table (6) indicates that there is a statistically significant difference at the 0.01 level between the mean scores of the experimental group in the pre/post administration of the metalinguistic awareness   test, in favor of the post administration.

This means that the program based on integrating metacognition and neuro-linguistic programming is effective in enhancing students' EFL metalinguistic awareness skills. The researcher attributes these differences to the proposed program. Thus, the sixth hypothesis is confirmed.

5.3.7. The Seventh Hypothesis

The seventh hypothesis states that "The program based on integrating metacognition and neuro-linguistic programming has a positive effect on developing the overall EFL critical reading skills of the experimental language second secondary students."

To verify the seventh hypothesis, the effect size ((η- value) of the program was estimated after estimating the t- value. This value was converted into its parallel levels of effect size (small, middle, high) also it represents the total variance in the dependent variable which can be attributed to the independent variable as illustrated in the following table. (Kiess, 1989:486- 488 Cited in Gohar, 2007: 147)

Table (7): Levels of effect size

Level of effect size	Small	Middle	High
d	0.2	0.5	0.7

The table below indicates the effect size of the program based on metacognition and neuro-linguistic programming on developing the students' EFL critical reading skills after the experimental treatment.

Table (8): The effect size of the proposed program on developing EFL critical reading skills

Skills	η^2	Effect size
identify the main idea of the text	0.29	**Small**
specify the supporting details	0.48	**Small**
guess the meaning of unfamiliar words	0.43	**Small**
make inference about a conclusion or an opinion	0.31	**Small**
discover relevant and irrelevant information	0.39	**Small**
make judgements based on personal experiences and evidences	0.24	**Small**
distinguish facts from opinion	0.37	**Small**
make comparisons and contrasts	0.57	**Middle**

identify cause and effect relationship	0.54	**Middle**
give interpretations of a text	0.57	**Middle**
Total	0.97	**High**

Table (8) shows the effect size of the proposed program on the overall score for testing EFL critical reading skills, where the values of ($\eta 2$) in each skill and the total score of the test ranged between (0.24, and 0.97). Results also show that the effect size of the proposed program on the experimental group's performance in the EFL critical reading skills test as a whole is high.

5.3.8. The Eighth Hypothesis

The Eighth Hypothesis states that "The program based on integrating metacognition and neuro-linguistic programming has a positive effect on developing the overall EFL creative writing skills of the experimental language second secondary students.

The effect size ((η- value) of the program was estimated after estimating the T- value. This value was converted into its parallel levels of effect size (small, middle, high) also it represents the total variance in the dependent variable which can be attributed to the independent variable.

Table (9): The effect size of the proposed program on developing EFL creative writing skills

Skills	$\eta 2$	Effect size
describe persons, actions, places, and things	**0.98**	**High**
describe the appearance of an imaginary character	0.87	**High**
tell what an imaginary character say in a certain situation	0.91	**High**
present dialogue between characters	0.96	**High**
suggest a suitable title of the short story	0.87	**High**
write an introductory paragraph of the short story	0.98	**High**
write the body of the short story	0.95	**High**
write a concluding paragraph of the short story	0.78	**Middle**
Total	0.99	**High**

Table (9) shows the effect size of the proposed program on the overall score for testing EFL creative writing skills, where the values of ($\eta 2$) in each skill and the total score of the test ranged between (0.78, and 0.99). Results also show that the effect size of the proposed program on the experimental group performance on the creative writing test as a whole is high.

5.2.9. The Ninth Hypothesis

The ninth hypothesis states that "The program based on integrating metacognition and neuro-linguistic programming has a positive effect on EFL metalinguistic awareness of experimental language second secondary students".

The effect size ((η- value) of the program was estimated after estimating the T- value. This value was converted into its parallel levels of effect size (small, middle, high) also it represents the total variance in the dependent variable which can be attributed to the independent variable.

Table (10): Effect size of the program on developing EFL metalinguistic awareness skills

Skills	$\eta2$	Effect size
identify parts of speech	0.87	**High**
recognize parts of the sentence	0.87	**High**
recognize parts of the sentence	0.92	**High**
recognize grammatical errors in a sentence	0.88	**High**
realize different uses of personal pronouns	0.76	**High**
use affixes attached to base forms of words	0.81	**High**
identify certain differences and similarities between the native and the foreign language (translation)	0.77	**High**
Total	**0.98**	**High**

Table (10) shows the effect size of the proposed program on the overall score for testing EFL metalinguistic awareness skills, where the values of (η 2) in each skill and the total score of the test ranged between (0.76 and 0.98). Results also show that the effect sizes of the proposed program on the experimental group performance on the metalinguistic test as a whole is high.

6. Results of the Study

Results of the pre/post EFL critical reading, creative writing, and metalinguistic tests revealed the significant effect of the program based on integrating metacognition and neuro-linguistic programming on enhancing secondary students' EFL critical reading, creative writing skills, and metalinguistic awareness. This study asserted that integrating metacognition and neuro-linguistic programming is a useful teaching technique for developing EFL critical reading, creative writing skills, and metalinguistic awareness.

6.1. Concerning developing EFL Critical Reading Skills

- Participants could identify the main idea of the text.

- Participants could specify the supporting details.

- Participants could guess the meaning of unfamiliar words.

- Participants could make inference about a conclusion or an opinion.

- Participants could discover relevant and irrelevant information

- Participants could make judgements based on personal experiences and evidences.

- Participants could distinguish facts from opinion.

- Participants could make comparisons and contrasts.

- Participants could identify cause and effect relationship.

- Participants could give interpretations of a text.

6.2. Concerning developing EFL Creative Writing Skills

- Participants could describe persons, actions, places, and things.

- Participants could describe the appearance of an imaginary character.

- Participants could tell what an imaginary character say in a certain situation.

- Participants could present dialogue between characters.

- Participants could suggest a suitable title of the short story.

- Participants could write an introductory paragraph of the short story

- Participants could write the body of the short story

- Participants could write a concluding paragraph of the short story

6.3. Concerning developing EFL Metalinguistic Awareness

- Participants could identify parts of speech.

- Participants could recognize parts of the sentence.

- Participants could tell what an imaginary character say in a certain situation.

- Participants could recognize grammatical errors in a sentence.

- Participants could realize different uses of personal pronouns.

- Participants could use affixes attached to base forms of words.

- Participants could identify certain differences and similarities between the native and the foreign language (translation).

7. Discussion of the results

The results of the experimental group and the control one on the EFL critical reading, creative writing skills, and metalinguistic awareness pre-test indicated that the students of the two groups were almost homogeneous as there were no significant differences between the two groups before administering the experimental treatment of the study. In addition, it was obvious that the levels of the two groups in EFL critical reading, creative writing skills, and metalinguistic awareness pretests were low.

After experimental treatment, the results revealed that the level of the experimental group taught using the program base on integrating metacognition and neuro-linguistic programming was higher than that of the control group taught using traditional methods of teaching. This was the result of:

1. Improving students' ability to integrate metacognitive activities and neuro-linguistic programming outside classes.
2. Developing students' confidence in overall EFL critical reading, creative writing skills, and metalinguistic awareness.
3. Enabling students to express their opinions and ideas in English correctly through integrating metacognition and neuro-linguistic programming.

4. Enhancing students' ability to read critically, write creatively, and increase their metalinguistic awareness.

5. Enabling students to organize their ideas coherently, read and write correctly.

6. Promoting self-learning and co-operative learning.

8. Recommendations

Recommendations focused on providing training sessions for students on how to engage in fruitful metacognitive and neuro-linguistic programming activities and work as a member of a large group or sub-group in sessions, setting up sub-groups in light of students' abilities so that high contributors work together and low contributors work together; reducing class size so that students can communicate competently; using activities based on integrating metacognition and neuro-linguistic programming with other techniques to maximize their usefulness and enhance students' interactivity and participation.

Recommendations also emphasized the need to extend the use of metacognitive and neuro-linguistic programming outside the classroom through daily activities. Some sites such as teams could be a great extent, solve the problem of time, and help slow students to build their confidence in using the target language, improve their EFL critical reading, creative writing skills, and metalinguistic awareness.

1. Metacognitive and neuro-linguistic programming should be used by teachers to collaborate with their colleagues in order to find new teaching techniques and solve EFL critical reading, creative writing skills, and metalinguistic awareness problems. They offer new strategies of teaching such as metacognitive activities and neurolinguistics. They may also open the gate in front of teachers to update their skills and find new resources of their career development.

2. Metacognitive and neuro-linguistic programming should be used to support teaching EFL for creating a better learning environment. They meet in harmony the cooperative learning and collaborative methodologies. They may create an effective atmosphere of learning. They may boost students to participate in different tasks. They may help students judge their experience and gain new useful experience.

3. Metacognitive activities support a pleasing, funny, enjoyable learning environment. This happens in consideration of students' achievements and experience. They offer the learning environment of positive interaction.

4. Metacognitive and neuro-linguistic programming have a satisfying effect when teaching different EFL critical reading, creative writing skills, and metalinguistic awareness. Learning English must happen in real-life situations rather than artificial ones. They can boost students to practice EFL skills. They enable learners to evaluate their own performance. They can motivate students to judge the topics they experienced. They can lead students for self-learning based on their past experience.

5. EFL course designers are recommended to:

a. Put into account new methodologies in teaching languages based on metacognitive and neuro-linguistic programming when designing curriculum especially those related to teaching languages.

b. Benefit from new education theories such as Multiple Intelligences, Cooperative Language Learning and Communicative Language Teaching in addition to a vast variety of learning styles relying on individual differences.

c. Design curricula which help to build the students' character to master leadership skills, problem solving, decision making, team building, time management, and acquire life skills and task performance.

d. Put into consideration searching for experience when building curriculum with an eye on self-learning and metacognitive activities.

e. Include the curriculum lessons that include integration among EFL critical reading, creative writing skills, and metalinguistic awareness.

6. EFL experts, specialists, and supervisors are recommended to:

a. Organize workshops for teachers to implement technologies including chats, online conversations, and programming in teaching different school subjects including the English language.

b. Get teachers implement different EFL critical reading, creative writing, and metalinguistic awareness different skills and sub-skills.

c. Encourage teachers to pay attention to EFL critical reading, creative writing skills, and metalinguistic awareness.

d. Organize online meeting with experts from different countries all over the world to exchange experiences and promote the level of EFL critical reading, creative writing skills, and metalinguistic awareness in Egypt.

9. Suggestions for Further Studies

The following topics are suggested for further research:

1. Using integrating metacognition and neuro-linguistic programming to develop other language skills: critical writing, reflective reading, listening, and speaking.

2. Using integrating metacognition and neuro-linguistic programming to improve the low-achievers' EFL critical reading, creative writing skills, and metalinguistic.

3. Using virtual world applications based on metacognition and neuro-linguistic programming to enhance listening and speaking skills.

4. Using integrating metacognition and neuro-linguistic programming to investigate their effect on primary and preparatory students' EFL critical reading, creative writing skills, and metalinguistic awareness.

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