

The Effect of Using Marzano Model and Renzulli Learning System on Developing Critical Thinking of 10th graders in Jordan in Writing Composition of English

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Abstract:

This study investigated the effect of using Marzano model and Renzulli learning system on developing critical thinking of tenth grade students in writing English composition in Jordan. The researchers designed a writing pre-test and post-test to test the students' skills in writing composition, where its validity and reliability were verified. This study followed quasi-experimental research design methodology. The sample of the study consisted of (233) tenth grade students in Al-Mazar Directorate of Education during the first semester 2020/2021 including (120) male and (113) female students.

The findings indicated that there were statistically significant differences at ($\alpha = \leq 0.05$) between the three groups, the (Renzulli, Marzano, and Conventional), in favor of Renzulli learning system. Furthermore, there were no statistically significant differences at ($\alpha = \leq 0.05$) that could be attributed to the variable of gender (female and male).

Several recommendations were suggested as conducting further research to investigate the effect of applying Renzulli learning system and Marzano Model with different variables and with other language skills.

Keywords: Critical thinking, English language, Marzano model, Renzulli learning system, writing composition.

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أثر استخدام أنموذج مارزانو ونظام رينزولي التعليمي في تنمية التفكير الناقد لدى طلاب الصف العاشر في كتابة الإنشاء باللغة الإنجليزية في الأردن

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ملخص:

هدفت الدراسة إلى معرفة أثر استخدام أنموذج مارزانو التعليمي ونظام رينزولي التعليمي في تنمية التفكير الناقد لدى طلبة الصف العاشر في كتابة الإنشاء باللغة الانجليزية في الأردن. ولقد تم تصميم اختبار قبلي وبعدي لقياس أداء الطلبة في مهارة كتابة الإنشاء وتم التأكد من صدق الاختبار وثباته. تكونت عينة الدراسة من (233) طالباً وطالبة من الصف العاشر في مدارس مديرية تربية المزار الجنوبي خلال الفصل الدراسي الأول من العام الدراسي 2021/2020، وتم توزيع الطلبة على مجموعتين مجموعة تجريبية ومجموعة ضابطة، المجموعة التجريبية انقسمت إلى مجموعتين فرعيتين: الأولى درست باستخدام نظام رينزولي التعليمي، والثانية تم تدريسها باستخدام أنموذج مارزانو التعليمي أما المجموعة الثانية فتشكلت من المجموعة الضابطة، والتي درست بالطريقة التقليدية.

أظهرت نتائج الدراسة وجود فروق ذات دلالة إحصائية عند مستوى الدلالة الاحصائية ($\alpha \leq 0.05$) بعد تطبيق نظام التعلم رينزولي وأنموذج مارزانو لصالح نظام رينزولي التعليمي. ولم تكن هناك فروق ذات دلالة احصائية عند مستوى الدلالة الاحصائية تعزى الى متغير الجنس (الإناث والذكور).

كانت من بين أهم توصيات الدراسة اجراء مزيد من البحوث لدراسة تأثير استخدام نظام رينزولي التعليمي ونظام مارزانو التعليمي مع متغيرات مختلفة ومع مهارات لغوية اخرى. الكلمات المفتاحية: التفكير الناقد، اللغة الإنجليزية، كتابة الإنشاء، نظام رينزولي التعليمي، أنموذج مارزانو.

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Introduction

English is an international language and thus it is widely spoken language. The educational goal of learning English is to enable learners communicate their ideas to others, thus its importance for student's life goes beyond what can be read in a textbook. In order to communicate well in English, learners have to acquire all the four skills of the English language (listening, reading, writing, and speaking), among these four skills, listening and reading are receptive skills, whereas, speaking and writing are productive or active skills (Rao, 2019).

Flanegin and Rudd (2000) reported that although English language is necessary for all professions, teaching English in the Arab world is challenging, where many students can understand the language, but most of them face the problem of communicating their ideas effectively. Supporting that, Adas and Bakir (2013) stated that writing is a complex task, it is most difficult of all languages to acquire.

This study investigates the effect of employing two models that could contribute to enabling students how to face the difficulties in writing, and how to be effective in developing critical thinking in writing English composition. That is through employing Renzulli learning system and Marzano Model.

Renzulli learning system:

Renzulli Learning System (RLS) is an Internet-based system that matches students' interests and learning styles to many different experiences designed to provide enriched, challenging and learning opportunities. Renzulli System is a totally referred to a unique use of the Internet that combines computer based strength assessment with search engine technology. It celebrates and builds upon students' strengths, abilities, and interests (Renzulli & Reis, 2007).

Thus, it can be claimed that students who are trained to think demonstrate a positive impact on the development of their education. Within this context of learning strategies, developing students' skills can be derived from several learning methods, among which the Renzulli system and the Model of Marzano.

The Model of Marzano:

According to Marzano, et al. (2005), the Model is important to students and educators in their learning process. Marzano identifies thirteen higher order thinking skills, namely comparing, classifying, inducing, deducing, error analysis, constructing supporting, analyzing perspectives, abstracting,

decision making and investigation, problem solving, experimental inquiry, and invention.

Statement of the Problem:

As noticed by the researchers as educators, in several occasions, students are unwilling to write meaningful sentences in their writing composition tasks without committing different errors. More seriously, some students in Jordan have low marks in their writing composition compared with their marks in the rest parts of the English Language exams because they create incoherent and weak paragraphs. Thus, teachers should be aware of many instructional methods and strategies as Renzulli learning system and Marzano Model as learning strategies, it might be expected that using these two strategies will contribute to alleviate the difficulties that English learners may encounter.

Questions of the Study:

1. Is there any effect of using Renzulli learning system on developing tenth grade students' critical thinking in writing composition skills in English language?
2. Is there any effect of using Marzano model on developing tenth grade students' critical thinking in writing composition skills in English language?
3. Are there any statistical significant differences at ($\alpha < 0.05$) on developing the students' achievement in writing composition that could be attributed to the variable of teaching/learning strategy (Renzulli learning system, Marzano model, and the conventional method)?
4. Are there any statistical significant differences at ($\alpha < 0.05$) on developing the students' achievement through using (Renzulli learning system, Marzano model and conventional method) in writing composition that could be attributed to the variable of students' gender (Male or Female)?
5. Are there any statistical significant differences at ($\alpha < 0.05$) on developing the students' achievement in writing composition that could be attributed to the interaction between the study's variables (students' gender; Male or Female and the teaching method: (Renzulli learning system, Marzano model and conventional method)?

Significance of the Study:

1. It is expected to guide students on how to develop their writing composition skill especially when they write critically about new topic(s).

2. It is expected to guide teachers and students on how to practice effective, valuable, and creative strategies as Renzulli Learning System and Marzano Model in teaching writing composition.
3. It is expected to guide planners and decision makers to direct teachers to employ new teaching/learning strategies, such as; Renzulli Learning System and Marzano Model in teaching English language composition skills.
4. It forms an unprecedented attempt that compares between Marzano Learning Model and Renzulli Learning System on improving writing composition skill in English language learning in Jordanian Schools.

Conceptual and Operational Definitions of Terms:

- **Marzano Model:** It is a set of strategies used by the researchers in the study, with five domains namely, formation of trends and positive perceptions of learning and planning for classroom teaching; knowledge acquisition and integration; expanding information through activities; use of information meaningfully and know mental habits (Marzano, et al 2005).
- **Renzulli learning system:** It is a system that enables teachers to use different activities in the classroom by creating individualized assessment of child's interests, it also delivers customized learning experiences to help students think and learn based on their personal strength, and where students require differentiated approaches that can challenge them in regular classroom settings (Wood et al., 2010).
- **The Conventional Method:** It refers to a teaching method where the teacher follows the teacher's book and the student's book in teaching process
- **Writing Composition:** It is a skill that enables students express their feelings and thoughts, students use it to define themselves, clarify their knowledge and their ideas, to understand the problems that may face them as well as to find solutions for such problems (Hughey, 1983).
In this study, it is what students had produced in their writing composition through using correct grammar and vocabularies.
- **Tenth Grade Students:** It refers to the students of the highest level of the basic education classes in Jordan schools, where their ages are between (15-16) years old who study English as a foreign language for ten years.
- **Critical Thinking:** It is the mastery of a set of skills such as knowledge, comprehension, application, analysis, synthesis, evaluation, and applying

the best when faced with a novel situation (Bean, 2001).

For the purpose of this study, critical thinking is related to several activities that students are expected to practice among which are: analyzing argument, making inferences, judging, evaluating all aspects of argument, making decisions, solving problems, interpreting, explaining, asking and answering question.

Delimitations of the study:

- In terms of the targeted sample, this study was conducted on the tenth grade students in the schools of Southern Al-Mazar Directorate of Education, in Jordan.
- In terms of instrumentation, this study was limited to the use of the English writing composition test developed by the researchers in unit 3 (Science and Scientists), where its validity and reliability were verified.
- In terms of time, this study was conducted during the first semester of the scholastic year of (2020 -2021).

Theoretical framework:

There are continuing efforts on developing the teaching strategies/methods in order to improve the quality of students' learning. In Jordan the educational process has been developed to deal with the students' characteristics, learning styles and with the call for the necessity of using different methods of teaching.

Hence, the current study investigates the effect of using Marzano Model and Renzulli Learning System on developing critical skills of writing composition in English language.

Writing composition is a mental activity of producing, thinking, expressing and organizing ideas into statements and paragraphs that will be clear to a reader. Al Fadda (2012) stated that in order to improve writing composition skills, teacher should put great emphasis in the use of figurative language. Supporting that, Adas and Bakir (2013) noted, essay-writing techniques should be grasped from lower educational level, since student writing enthusiasm depends on writing technique employed.

Parts of writing composition:

Writing composition consists of three parts, which are introduction, body, and conclusion. According to Colonna and Gilbert (2006) introduction is the first paragraph of the topic; where it should be written inductively or from general to the specific points; the body of an essay may consist of several paragraphs which contained the information that support the topic statement of the introduction; while conclusion is the last

paragraph(s) in the topic, where the writer must restate the topic statement then s/he has to shape one sentence to unite the whole content by using a statement which consists suggestion, advice or opinion.

Renzulli learning system

Renzulli Learning System (RLS) is an exciting new system that matches students' interests and learning styles to many different opportunities designed to provide enriched, challenging learning environment. Different types of programs based on Renzulli and the focus was on many different types of introducing enrichment activities as creative problem solving.

Renzulli System considers each learner is unique in his/her characteristics and is responsible for own learning within the varied activities that enhance critical and creative thinking (Renzulli& Rise, 1994).

The steps of using Renzulli learning system:

Firstly, students are asked to answer series of questions about their interests and the ways they like to learn. Secondly, a special series of interesting and challenging activities are selected for each student with the help of his/her teacher. Thirdly, logging on to Renzulli Learning sites, students easily learn how to respond to a user-friendly series of questions. Then, students complete their assessments, a profile of their learning instantly appears, followed by a detailed and comprehensive choice of many exciting learning opportunities and enrichment activities that are constantly being updated, this system helps teachers access abundant of chances to provide appropriate differentiation activities for students of all levels of achievement and abilities (Renzulli& Ries,2007).

The teacher's role and the student's role in Renzulli learning system:

In Renzulli learning system, teacher plays different roles as the curriculum planner, instructional designer, the learning facilitator, the explainer, the guide, a class leader, and a resource developer. In addition, s/he is required to be passionate about his work, loves his students, sensitive to the student's problems and is ready to help. Moreover, open to new ideas, appreciates creativity and always strives for excellence and perfection. He has the moral courage to say, "I don't know". In addition, has a great deal of communication (sending and receiving) and diplomacy skills., democratic, organized, frank, honest, cooperative, and self-motivated and directed (Renzulli, 2007).

Marzano Model:

Marzano Model is the learning dimensions of teaching task models from Ausubel theory (Ausubel, 1968) and about the process of learning and ideas of (Ganee) which has organized educational content in a hierarchy, and (Merill) which emphasized the need to summarize the ideas, and to clarify the relationship between the parts of knowledge on various topics within the lesson (Qutami et, al. 2005).

Moreover, Marzano model is an installation starts in which learners find the problem, and they complete the cycle of education by developing concepts and announcements list to their work and therefore proposes a most influential education and is aimed at making students literate able to develop themselves and their abilities to make them able to continue learning. (Marzano et al, 2005).

The steps of using Marzano Model

According to Razouki and Abdel Karim (2015) the basic steps on which Marzano Model based on, are the following: firstly, identify information and present the main concepts and ideas of the topic at the outset in the form of knowledge maps, hierarchies, pictures and drawings; secondly, organizing students to interact with new knowledge then formulate educational tasks and educational activities based on emphasizing the learner's positivity and active participation in the situational education to achieve the educational goals; thirdly, diversity of educational activities, in order to have the opportunity to practice different thinking skills; fourthly, previewing new content and chunking it into easy parts; and fifthly, training students in different learning situations .

The teacher's role and student's role in Marzano Model:

Within the context of Marzano Model, teacher's role should revolve around setting the goals that are related to the students' works, providing the students with adequate feedback, helping the students interact with the new knowledge, engaging with students by allowing them to talk about their interests and needs (Marzano, et al .2005).

At the end of the process, students are required to take time to think about and reflect on what they learned and/or the thinking process they used to learn it (metacognition) (Marzano, 2013). Within this context, there are many types of thinking that have positive influence in developing the skills of writing composition of students such as critical thinking.

Critical thinking

It is a type of thinking that requires the ability to actively and skillfully

conceptualize, apply, analyze, synthesize, and evaluate information to make a judgment or formulate an innovative solution. In alignment with that, Suvarna (2021) reported that critical thinking includes different cognitive abilities: questioning, comprehending, reasoning, inferencing, interpreting, judging, decision making, brain storming, experimenting, problem solving and creative thinking. However, for the purpose of this study critical thinking has been defined as any goal oriented conscious thinking skill. Within this context, according to Treffinger, (2007) and Imperio et.al (2020), the types of tasks that enable learners become critical thinkers are as following: (Suvarna, 2021)

1. Questioning, which allows the teachers and learners to collaboratively generate a classroom discussion on a text/concept to be learnt.
2. Problem based learning, where the learners are given problems, and encouraged to process the language to solve the given problems either individually or in groups.
3. Logical arguments (critical reading): where the learners start constructing arguments and countering others' arguments.
4. Information transfer: where, learning tasks are expected to enable the learners transfer a verbal text into a non-verbal one, also enables the transfer of skills from one context of learning to the other.
5. Analysis and judgments, where, ideas and conditions that support beliefs and the conclusions will be subject to intellectual standards, including clarity, accuracy, depth, logic, and fairness..

Some critical thinking techniques:

The following, as highlighted by Bean (2001), are some of the techniques that can be employed within critical thinking:

1. Reflection: engage in the reflective and critical process thinking.
2. Rationality: rely on reason rather than emotion, require evidence, ignore unknown evidence, follow evidence where it leads, be concerned more with finding the best explanation than being right, analyze apparent confusion and ask questions.
3. Self-awareness: weigh the influences of motives, recognize own assumptions or point of view.
4. Open-mindedness: evaluate all reasonable inferences, consider a variety of possible viewpoints or perspectives, and remain open to alternative interpretations.

Review of the empirical studies:

AL-Btoush (2016) investigated the effect of using Marzano Model on developing critical thinking skills among students of Islamic Studies. The participants of the study were consisted of the first secondary schools in Al-Mazar District, the study sample consisted of (43) female students in the first secondary grade in Al Mazar in the academic year (2014/2015). The results showed the impact of using Marzano's Model in the development of critical thinking.

Al –Khataybeh and Al-Tarawneh (2016) investigated the effect of using Renzulli learning system and SCAMPER strategy on developing tenth grade writing English composition in Mu'tah Model School in Al-Mazar directorate of education during the second semester in 2015-2016. The sample of the study consisted of (80) tenth grade female and male students in Mu'tah model school which was selected purposefully. The findings of the study indicated that there were statistically significant differences at ($\alpha=0.05$) before and after applying Renzulli learning system and SCAMPER strategy in favor of Renzulli learning system and there were no statistically significant differences between the students due to gender.

Al-Othman (2019) investigated the effect of using Marzano model in developing the critical thinking skills of the 10th grade students in social education. The participants of the study were consisted of (66) female students of the tenth grade, which included two groups: the experimental group and the number of the female students were (33). The study followed the semi-experimental methodology to the application of the study to the tenth grade students. The researcher prepared a test to measure the skills of critical thinking.

Al-Talhi (2020) investigated the effectiveness of teaching using Marzano model in the development of habits of mind among students of social education in the fifth grade of primary school. The sample of the study consisted of (60) fifth-grade students from Khalid bin Al-Walid Primary School in Taif Governorate. The researcher prepared an achievement test to measure cognitive achievement and a scale for some mind habits, as a result there were statistically significant differences between the mean performance of the control group and the experimental group on the post-test and in favor of the experimental group as measured by the achievement test, which confirms that Marzano's model of learning dimensions has a positive effect that reflected on students' achievement and on developing students' mental habits.

Galal Gad (2020) identified the effect of using the Science Writing Heuristic (SWH) strategy on developing the reflective thinking as one part of critical thinking and habits of mind by Marzano model of preparatory stage pupils. The group of the research was comprised of 72 pupils of the first year preparatory stage, and was divided into a control group and an experimental group. The results of the research indicated that using the Science Writing Heuristic (SWH) strategy in teaching science had a great effect on developing the reflective thinking and the habits of mind among first year preparatory stage pupils.

Concluding Remarks:

The researchers have benefited from the previous studies in preparing and developing the tools of the study and in developing the suitable tests of the study such as Al-Khataybeh and Al-tarawneh (2016), a few of the previous studies compared between two strategies in writing composition for EFL learners where most of the previous studies investigated the using of Renzulli learning system in different skills as reading comprehension or in social studies, and some other studies investigated the use of Marzano Model independently.

Therefore, it is expected to enrich the learning process with effective teaching/learning strategies that could be applied in teaching/learning English language and practicing, adequately, its several skills in Jordanian Schools.

Design and methodology.

This study followed quasi-experimental research design. The variables of the study included the independent and dependent variables, where independent variables refer to the learning strategies, which are of three levels; (Renzulli Learning System; Marzano Model; and Conventional Method). In addition, the dependent variable focuses on the development of the students' **critical thinking** in writing composition skill in English language.

Table (1): Study Design

Group	Pre- Test	Teaching Strategy	Post- Test
Experimental Group A		Renzulli System	
Experimental Group B		Marzano Model	
Control Group		Conventional Method	

The study Participants:

The participants of the study consisted of all tenth grade students in AL-Mazar Directorate of Education schools in Jordan, with the total of

(1487) students: (749) female students and (738) male students as in the first semester of the scholastic year of 2020- 2021. Where three schools encompass tenth grade students female and male, were intentionally selected. Table (2) shows the distribution of the study participants according to their variables.

Table (2): Distribution of the Study Participants

Teaching Method(s)	School Name	Students' Gender	
		Male	Female
Marzano Model	Mu'tah Model School/section (C)	20	
	Khalid Ibn Al-waleed school for boys	20	
	Mu'tah Model School/section (A)		17
	Al-Husseiniah Secondary School for girls.		20
Renzulli Learning System	Mu'tah Model School/section (D)	20	
	Khalid Ibn Al-waleed school for boys	20	
	Mu'tah Model School/section) B)		18
	Al-Husseiniah Secondary School for girls		20
Conventional Method	Mu'tah Model School Section (C)	20	
	Khalid Ibn Al-waleed School for boys	20	
	Mu'tah Model School Section (B)		18
	Al-Husseiniah Secondary School for girls		20
Total		120	113
		233	

Instrument of the study:

Achievement test in English language writing composition was designed then employed, coupled with developing one frame of writing composition test, namely; writing composition test for the critical thinking. The test based on the content of unit (3) form Action Pack for 10th grade.

Test validity:

The composition test and the rubric for scoring the writing were submitted to a jury of (11) TEFL specialists, namely; university Professors, educational supervisors, and senior teachers of English language. The jury were asked to examine the validity of the test items; their suitability to assess writing skills and students' level of critical thinking and the clarity of the test questions/items.

The number of test items for critical thinking was (3) main questions, on its first version. According to the suggestions of the jury, several modifications were studied carefully, and the necessary modifications were considered. However, the number and the content of the questions remain as is. Hence, prepared for application for the study purpose(s).

Test reliability:

To verify the reliability of the test, (test –retest technique) was employed on a pilot sample consisted of (24) tenth grade students, the students were from the population of the study but excluded from its sample. For the reliability purpose(s), the test was applied in different times with interval period of two weeks. Afterwards, the Pearson-Correlation test was applied between the results of the two periods, and the results come out with reliability coefficient ranges of (0.85-0.90) with overall coefficient of (0.89), which indicated a high correlation between the results of test and retest, and considered acceptable for the purposes of the current study.

The procedures of the study:

For the purpose of this study, the researchers adopted the following procedures:

1. Selecting the study sample based on the teaching strategies, it was distributed into three groups: the first experimental group where Marzano Model was employed, the second experimental group where Renzulli Learning System was employed and the third was the control group where the Conventional Method was employed.
2. Reviewing the theoretical literature and previous studies that were relevant to the current study. Constructing the study tools (achievement tests) in their initial drafts then asking a set of jury to validate the tests.
3. Developing the validity and the reliability of the study's instruments.
4. Obtaining the official approvals from Mu'tah University and the permission from AL-Mazar Directorate of Education to conduct the study.
5. Selecting the schools where the study's strategies have been applied.
6. Determining the studying unit in English language textbook for 10th grade, preparing the unit plan for unit three, and preparing the lesson plans according to the study strategies.
7. Implementing the experimental treatment through teaching students in the first experimental group, for sections (B and D), the procedures for using Renzulli learning system as the following:- The researchers introduced the concept of Renzulli Learning System in front of the class, conducted a distant class discussion about Renzulli Learning System by using Microsoft teams which is applied in Mu'tah Model school, the researcher told the students about the different activities in this system through powerpoint presentation as virtual trips, projects, websites, research sites and videos to enhance the students learning about the

- benefits of the system. The researchers gave the site www.Renzullilearning.com to the students and asked them to write the site in their notebooks to get extra information about the system.
8. Explaining the meaning of critical thinking through applying Renzulli Learning system power point.
 9. The researchers introduced the writing composition test in front of the class and asked the students to choose one topic to write about. The researchers stated **a writing rubric** in order to correct the writing topics and the rubric with three criteria: **correcting procedures:** Content and comprehensibility, which have (40), points. Organization which has (20) points. Grammar and spelling (40) points, it deals with the mechanics of writing as punctuation, capitalization and spelling)
 10. Teacher corrected the papers of the students with a composition rubric.
 11. The researchers explained to the students for sections (A and C) the procedures for using Marzano model as the following: The researcher sent the site of the model and explained the details by showing them a power point show to let the students be familiar with the topic, showing the students the way of using critical thinking by applying Marzano Model through a powerpoint show.
 12. The researchers collected the papers of the two topics then corrected them using the rubric. After applying the study, the researchers collected and analyzed the data using the statistical package for social sciences (SPSS), obtaining the results, discussing them and concluding with recommendations based on the results.

Results, Discussion and Recommendations

The results of the study are presented and discussed with reference to the study's main aim and sub-aims (study questions).

Results and Discussion of the study:

Results related to the research first question: Is there any effect of using Renzulli learning System on developing tenth grade students' critical thinking in writing English composition skills?

To answer this question, the researchers applied a critical writing composition test to the experimental cohort that studied using Renzulli Learning System. In order to investigate the differences, the test results were subject to a t-test analysis. Results as presented in Table (3).

Table (3): (t- test) for the experimental group (20 male students and 18 female students) that used Renzulli Learning System.

Writing skills	Variables	Means	Standard deviation	Degree of freedom	t value	Significance	Significance Value
Critical Thinking	Pre	64.82	4.68	37	16.19	0.00*	87.63%
	Post	88.58	8.07				

Table (2) revealed that there were apparent differences among students' scores between the pre and post achievement tests, where the maximum mark was (100) marks.

The differences between students' scores at the pre and post-test reached (23.76) points, and these apparent differences and values were statistically significant, with (t) value of (16.19) and the significance value of (0.00) and calculated effect value of (87.63), which in turn reflects the effectiveness of the Renzulli Learning System strategy on developing the Critical Thinking Skills.

This result, according to Cohen's classification, confirmed that there was a significant effect of Renzulli learning System on the achievement of tenth grade students in critical writing skills.

Discussion of the results related to the research first question:

The results showed that there were statistically significance differences in the students' achievement in writing English composition in the post test scores after applying Renzulli learning System, which indicated that there were effective effects of RLS on the students' achievement in writing composition and on the developing the critical thinking skill. The results of this question are in line with the results of Al-Khataybeh and Al-Tarawneh (2016), who investigated the effect of using Renzulli learning system and SCAMPER strategy on developing tenth grade writing English composition.

The researchers attribute these results to the characteristics of Renzulli system, in particular, promoting active learning in writing composition because it matches the students' needs and interests, which in reality help tenth grade students write about their ideas and thoughts freely.

Results related to the research second question:

Is there any effect of using Marzano model on developing tenth grade students' critical thinking in writing English composition skills?

To answer this question, the researchers applied a critical writing composition test to the experimental cohort that taught by using the Marzano Model.

The results were subject to a (t-test) analysis. Results as presented in Table (4), revealed that there were apparent differences among students' scores on the pre and post achievement, where the maximum mark was (100) marks.

Table (4): (t-test) of critical writing skills for the group that used the Marzano Model

Writing skills	Application pre/ post	N	Means	Standard deviation	Degree of freedom	t Value	Significance	Significance Value
Critical thinking	Pre	(18 male students and 17 female students)	64.38	4.77	37	13.09	0.00*	%82.24
	Post		80.86	5.07				

The differences between students' scores at the pre and post-test reached (16.48) points, and these apparent differences and the values were statistically significant, with (t) value of (13.09), and with the calculated effect value of (82.24), which in turn reflects the effectiveness of the Renzulli Learning System strategy on developing the Critical Thinking Skills.

According to Cohen's classification, confirmed that there was a significant effect of Marzano Model on the achievement of tenth grade students in critical writing skills.

Discussion of the results related to the research second question:

The results revealed that there were statically significant differences at ($\alpha \leq 0.05$) in students' achievement in writing skills between the pre and post- test of critical writing skills among the students' mean scores of the group that were taught by using Marzano Model. The researchers attributed these results to the characteristics of the Model of Marzano, where it offers a way of thinking about the extremely complex process of learning, in addition it is helpful in writing because it matches their interests and needs.

With regard to the means of students' scores, the overall scores in the post-test exceeded the level of the students' performance in the pre-test, which indicated that the differences were in favor of the post-application test. The current study result for the second question agrees with **Al-Talhi (2020)** who confirmed that the use of the Marzano model in teaching has had a positive effect on developing students' mental habits.

Results related to the research third question:

Are there any statistically significant differences at ($\alpha \leq 0.05$) on developing the students’ skills in writing composition that could be attributed to the variable of teaching/learning strategy (Marzano model, Renzulli learning system and the Conventional method)?

To answer this question, means and standard deviations for students’ scores on the post achievement test in writing skills in English for the three groups were found. One Way ANOVA was employed to investigate the differences between the three groups in the level of performance in the post-test. The results outputs were as presented in Tables (5) and (6).

Table (5): Means and Standard deviations of students’ achievement according to the different teaching strategies.

Writing skills	The strategy	Means	Standard deviation
Critical thinking	Renzulli	88.58	8.07
	Marzano	80.86	5.07
	Conventional	65.69	4.62

Results in Table (5) Renzulli strategy occupied the first rank with the mean of (88.58). The Marzano strategy occupied the second rank with the mean of (80.86). While the conventional method occupied the third rank with the mean of (65.69). More interestingly, these results reflect the superiority of the Renzulli strategy over the Marzano and the conventional strategies. Furthermore, with regard to the students’ performances of the both experimental groups (who taught by employing the Renzulli and the Marzano strategies), results showed that they were outperforms their counterparts who taught by employing the conventional strategy at the critical skill of writing.

One Way ANOVA was employed and the results are shown in table (6).

Table (6): Results of the One Way ANOVA of variance among the three experimental groups’ achievement in the Posttest.

Writing skills	Source of Variance/ Contrast source	Sum of squares	Degree of freedom	Average square	F calculated value	Level of Significance	Effect Size ETA squared
Critical thinking	Between the Groups	11359.135	2	5679.567	155.432	0.000*	72.7%
	Within the groups	4275.232	117	36.540			
	total	15634.367	119				

Results in Table (6) indicated that there were statistically significant

differences between groups at the post achievement test of the writing skill of critical thinking, where (F) value reached (155.432), and to the level of significance associated with it was (0.00), and the size of the calculated effect value reached (72.7%). These values, according to Cohen’s classification, had an effect to the diversity of teaching methods in developing the achievement of tenth-grade students in writing composition, and this indicates a great effect for the teaching methods in creating differences between students' scores on the post achievement test in writing skills in English. The results of this question were in line with AL-Othman (2019), who examined the effect of applying Marzano's model on the development of critical thinking skills in tenth grade students in the post-test of social pedagogy.

In order to identify the sources of differences among mean scores of students' in the three groups, Scheffe post Hoc Multiple Comparison was used as shown in Table (7).

Table (7): Results of Scheffe post- test for dimensional comparisons between groups

Results of Scheffe post- test for dimensional comparisons			Differences among groups		
Critical thinking	Means	The group/ strategy	Renzulli	Marzano	Conventional
	88.58	Renzulli	-	7.72*	22.89*
	80.86	Marzano	-7.72	-	15.17*
	65.69	Conventional	-22.89*	-15.17*	-

The results in Table (7) showed that there were statistically significant differences between the three groups represented by the teaching strategies Marzano, Renzulli and conventional methods, and in favor of the Renzulli Learning system followed by Marzano model and finally the Conventional method at the level of critical thinking skills.

Discussion of the results related to the research third question:

The results of the third question showed that there were statistically significant differences at ($\alpha \leq 0.05$) on developing the students’ achievement writing composition due to the strategy on the post-test in favor of Renzulli learning system. This indicates the superiority of Renzulli Learning System over Marzano Model and the conventional way. The researchers, noticed, during the experiment that, the students were interested and highly motivated toward Renzulli learning system because it is a helpful system in writing composition and they haven’t ever used this system as an instructional tool. This is an interpretation to the system capacity in helping students to be critical and effective students in their writing.

The result of the current study is in agreement with the study of Smith (2019) in which Renzulli System affirmed the possibility of providing opportunities for teachers to reflect on the effect of their instructional practices and activities on students, and creating libraries of math-specific varied resources at school sites.

Results related to the research fourth question:

Are there any statistically significant differences at ($\alpha \leq 0.05$) on developing the students' writing skills through using Renzulli Learning System, Marzano Model and Conventional Method that could be attributed to the variable of students' gender (male, female)?

The mean scores for students' achievement were calculated. Results, as presented in table (8), revealed the following; with regard to Marzano there were observed differences between female and male students with overall mean score of (80.75) for males and (81.00) for females, with (t) value of (1.148). With regard to Renzulli, male students mean scores reached (86.25) while it was (91.17) for female students, with (t) value of (1.94). However, with regard to the conventional method, male students mean scores reached (64.82) while it reached (66.52) for the female students, with (t) value of (1.24). Furthermore, with regard to the overall mean scores, it reached (76.87) for male students, while it reached (78.41) for female students, with the overall (t) value of (0.753).

Table (8): (t-test) for independent samples for differences in the post- test of writing composition skills according to the variable of students' gender

The group	Variables/N	Mean	Standard Deviation	t value	Level of significant
Renzulli	Males (20)	86.25	6.42	1.94	0.06
	Female (18)	91.17	9.07		
Marzano	Males (20)	80.75	4.82	1.148	0.88
	Females (17)	81.00	5.94		
Conventional	Males (20)	64.82	4.86	1.24	0.22
	Females (20)	66.52	4.33		
Overall level	Males (60)	76.87	10.69	0.753	0.464
	Females (55)	78.41	12.27		

In addition to that, the results in Table (8) showed that there were no statistically significant differences in the post-test of writing composition skills according to the overall level and to the writing skills of critical thinking that could be attributed to the variable of students' gender.

Discussion of the results related to the research fourth question:

The results showed that there were not statistically significant

differences on the students' achievement in the post-test of writing composition skills of critical thinking on the post test due to the variable of students' gender which indicates that they have the same level of writing composition in the post test because they got the similar training activities. This result is aligned with the result of the previous studies, namely: Al-Khataybeh and Al-Tarawneh (2016) in which the study indicated that there were no statistically significant differences at the level of $\alpha \leq 0.05$ on the writing composition test with the respect to gender. However, results showed that there were statistical significant differences related to the Renzulli related to the overall level due to variable of gender in favor to females, where the mean score for females reached (86.72) while it was (84.80) for males, with significant level of (0.02), which is statistically significant.

Results related to the research fifth question:

Are there any statistically significant differences ($\alpha \geq 0.05$) on developing the students' achievement in writing composition that could be attributed to the interaction between the study's variables students' gender (male and female), and the teaching method (Renzulli Learning System, Marzano Model and Conventional Method)?

To answer this question, the analysis of variance (Two Way ANOVA) was employed to investigate the existence of any statistical significant differences in the level of performance in the post-test that could be attributed to the interaction between the two variables (the teaching method and gender). Results as shown in Table (9) revealed that there were statistically significant differences in the post-test of writing skills of critical thinking due to the interaction between the study's two variables.

Table (9): Results of the Two-Way ANOVA test to detect differences in the level of achievement in the posttest due to the interaction between the teaching method and the gender

Writing skills	Source of variance	Sum of squares	Degree of freedom	Average squares	F value	Level of Significance
Critical Thinking	Method*Gender	11621.355	5	2324.271	66.027	0.00*
	error	4013.012	114	35.202		
	Total	738556.000	120			

Table (9) shows that (F) value reached (66.02) for the skills of critical thinking, with significance level of (0.00). These results confirm that there were interactions between the study's variables, which indicated the dependency of the effect of each variable.

Figure (1) shows the mean scores and the interaction between the two variables.

**Figure (1) The Means and the interaction between the two variables.
(Teaching method and gender)**

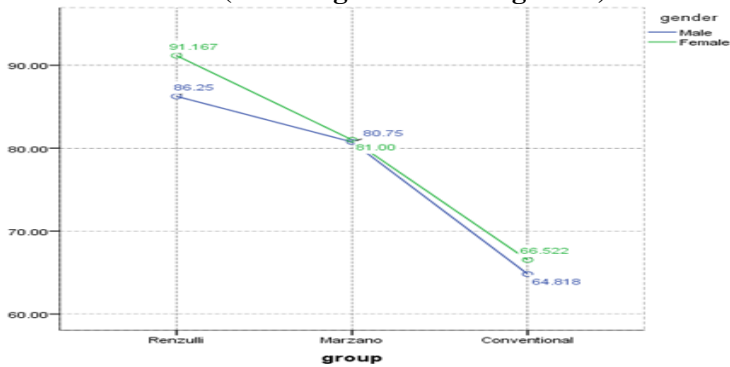


Figure (1) shows that there was an interaction between the variable of strategy of teaching (Renzulli, Marzano and Conventional) and the variable of gender (males or females) in the post- test for critical thinking. In Renzulli and the Conventional Method, results reflected that the females are outperforming their counterparts the males, while in the Marzano Method, the results of males appear to be matched with females.

It is also indicated that there were plausible differences in the scores of the second experimental group students' (**Marzano Model**) and these differences could be attributed to the variables of gender as male students mean scores reached (80.75), while the female students mean scores reached (81.00) related to critical thinking, with (0.148) (t) value and (0.88) level of significant. It was also indicated that there were plausible differences in the scores of the third group students' (Conventional Method). These differences could be attributed to the variables of gender as male students scores 'mean reached (64.82) while the female students mean scores reached (66.52) related to critical thinking, with (1.24) (t) value and (0.22) level of significant.

Discussion of the results related to the research fifth question:

The results showed that there were statistically significant differences in the post-test of writing skills of critical thinking due to the interaction between the study's two variables. In Renzulli Learning System, the females were outperforming their counterparts the males, while in the Marzano Model; the results of males appear to be matched with females. While in the conventional method, males outperform their counterparts of females.

The results showed that there were significant statistical differences between the experimental group and the control group in favor of the

experimental group due to Renzulli Learning System. The results agree with the results of Biggs (2019) in which the students' achievement indicated a difference before and after applying the system of Renzulli due to the different and effective exercises that the students practiced.

Recommendations:

In light of the results of the study, the following recommendations were suggested:

1. Further studies and research related to Renzulli learning System and Marzano Model are recommended with new variables, such as attitudes and motivation.
2. Continuing the efforts and endeavors of the Ministry of Education on professional development for teachers, on how to employ Renzulli learning system and the Marzano Model in learning process in the Jordanian schools is recommended.
3. Applying Renzulli learning system and Marzano Model to develop the students' achievement in other writing skills such as creative and reflective thinking in different units of English language is also recommended.

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