

The impact of SCAMPER and Baron's Techniques on the Development of English Language Critical Thinking Skills: Applied Study on 10th Grade Students

Abdallah Azzam Al - Jarrah, Maram Abdel Fattah Al Tarawneh

Faculty of Educational Sciences, Mutah University, Jordan.

Received: 26/4/2019

Revised: 23/6/2019

Accepted: 27/9/2020

Published: 1/9/2021

Citation: Al - Jarrah, A. A., & Al Tarawneh, M. A. F. (2021). The impact of SCAMPER and Baron's Techniques on the Development of English Language Critical Thinking Skills: Applied Study on 10th Grade Students. *Dirasat: Educational Sciences*, 48(3), 437-445. Retrieved from

<https://dsr.ju.edu.jo/djournals/index.php/Edu/article/view/2886>

Abstract

This study aims at identifying the impact of SCAMPER and Baron's models on the development of English Language critical thinking. The sample consisted of (112) 10th graders students at Asma Bent Abi Baker secondary school (ABAB) in the first educational directorate of Amman, the capital. The current study used the semi-experimental method to apply both models to two experimental groups and one control group. The study instruments were developed according to SCAMPER, the teaching thinking model, to be applied to the first experimental group of (36) students; and Baron, the good thinker model, to be applied to the second experimental group of (38) students; whilst the control group of (38) students taught by the conventional teaching method. All experiments were separately conducted using the designed critical thinking skills, test, which evaluates the English language skills (interpretation, inference, and deduction) against the SCAMPER and Baron's techniques based on the content of the first two units in the first term of the 10th grader's English curriculum. The results showed that there are slight statistically significant differences between the experimental groups, SCAMPER's group and Baron's, in favor of SCAMPER; however, there was a considerable significant difference when compared with the control group. This ensures the effectiveness of applying both models in developing critical thinking skills among 10th students with the superiority of the SCAMPER model. Finally, the current study recommends conducting future studies to investigate the impact of SCAMPER and Baron techniques.

Keywords: Critical thinking skills, SCAMPER model, Baron's model, English language, Jordan

أثر نموذجي سكامبروبارون في تنمية مهارات التفكير الناقد في اللغة الإنجليزية لدى طالبات الصف العاشر الأساسي في عمان

عبدالله عزام الجراح، مرام عبد الفتاح الطراونة
كلية العلوم التربوية، جامعة مؤتة، الأردن.

ملخص

تهدف الدراسة إلى تعرّف أثر نموذجي سكامبر لتعليم التفكير وبارون للمفكر الجيد في تنمية مهارات التفكير الناقد في اللغة الإنجليزية لدى طالبات الصف العاشر الأساسي في مديرية تربية وتعليم قصبة عمان في الأردن. واستخدمت الدراسة المنهج شبه التجريبي؛ حيث تألفت العينة من (112) طالبة من مدرسة أسماء بنت أبي بكر الثانوية التابعة لمديرية تربية وتعليم قصبة عمان، وجرى توزيع العينة إلى مجموعتين تجريبيتين ومجموعة ضابطة، ولتحقيق أهداف الدراسة حُدّدت مهارات التفكير الناقد، وهي: (التفسير، الاستنتاج، الاستنباط). بناءً على تحليل محتوى المادة التعليمية المكون من الوحدة الأولى والثانية من الفصل الدراسي الأول، وجرى تصميم دليل للمعلم وفقاً لكلا النموذجين، إضافةً إلى بناء خطط دروس يومية لكلا النموذجين، ومن أجل التقويم جرى بناء اختبار مهارات التفكير الناقد للوحدتين التعليميتين، وجرى التحقق من صدقه وثباته. أظهرت نتائج المقارنة بين متوسطات المجموعتين التجريبيتين تفوق نموذج سكامبر على نموذج بارون بنسبة متقاربة، مما يعني فاعلية كلا النموذجين في تنمية مهارات التفكير الناقد لدى الطالبات، وفي ضوء النتائج توصلت الدراسة إلى عدد من التوصيات، من أهمها: إجراء المزيد من الدراسات التي تتناول نموذج بارون للمفكر الجيد ونموذج سكامبر لتعليم التفكير. الكلمات الدالة: مهارات التفكير الناقد، نموذج سكامبر لتعليم التفكير، نموذج بارون للمفكر الجيد، اللغة الإنجليزية، الأردن.



© 2021 DSR Publishers/ The University of Jordan.

This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY-NC) license <https://creativecommons.org/licenses/by-nc/4.0/>

1. Introduction

Recently, critical thinking and decision making are one of the 21st-century skills (Roberts and Billings, 2014). In traditional education settings, students find themselves in an environment where independent thinking is not encouraged; however, students do not become critical thinkers overnight; critical thinking involves first discovering who, what, when, where and how objects go through. Finding the answers to these questions at the childhood stage and making use of knowledge address how much the complexity of such tasks. Critical thinking is an interactive process, which requires the participation of teachers and students. An essential requirement of critical thinking is full openness; therefore, academic supervision and training allow teachers to assume openness to discover new knowledge and based on what already constructed (Hooks, 2013)

Mastering how to develop critical thinking skills with current flooded information makes the need to address the actual need for certain knowledge and reasoning techniques. However, making use of acquired information totally relies on the implications and consequences of thinking followed procedures. In addition, it is worthy to fully adopt the valid arguments and avoid those that which in turn make it easier to persuade others to change their beliefs (Lavery and Hughens, 2015).

Interpretation skill is needed to interpret statement and argument in a way that makes meaning as clear as possible, reasoning skill is needed to recognize the different types of inference and to become familiar with these different methods of assessment, deduction works from a general premise, hunch or theory to find specific results (Lewis and Griggs, 2018).

Critical thinking can be viewed as a mental activity with conscious attempts to make sense of learner experience, establish meaning, construct the knowledge and understanding; and thus, control of surrounding environments. Therefore, mindset activities are central to critical thinking, including recognizing dubious assumptions and generalizations, imagining alternatives, taking account of context, developing reflective knowledge (scepticism and Lecister, 2009).

English is a fundamental and international language media of learning and communicating in all cultures; therefore, the Jordanian students need to acquire a sufficient level of English and critical thinking skills to make aligned judgments on texts, contexts and social norms in light of Arab- Islamic culture and values. Students are expected to use critical and analytical skills when using and responding to communications media or learning through English curricula. Students are expected to analytically and critically cope with emerging issues. Hence, Education Reform for the Knowledge Economy (ERFKE) curricula emphasis on educating students to be innovative thinkers who can locate, analyze and communicate information and work with one another to create a prosperous knowledge economy for all, as well as focusing on integration of knowledge economy skills such as critical thinking and problem solving (Ministry of Education, 2013).

Therefore, this paper opts to select the most cited critical thinking models, SCAMPER and Barons to be investigated against their effectiveness and impact on teaching English as a Foreign language (EFL).

SCAMPER technique is a structured way that uses an acronym of (Substitute, Combine, Adapt, Modify, Put to another use, Eliminate, Reverse) to prompt the use of several actions to evoke or “trigger” new or varied options; it is based on Alex Osborn’s “Idea Spurring Questions” (Shavinina, 2009). SCAMPER assisting students to think out of the box when generating ideas. It argues that the new ideas are the results of modifying those already existing. Such creative thinking often yields to a unique idea based on critical mindset activities. SCAMPER technique can help students broaden their understanding of book content, events, people in history, writing their own ideas and criticism. Moreover, students can choose one or more thinking prompts or acronym that best fit his\her skill (Dacey, 2013).

Michalko (2006) determined several methods for SCAMPER acronyms as follows:

1. Substitute: An alternative to an idea, command, or performance can be substituted based on questions of: What can be used as an alternative; and What then; Is there another place; and Is there another time?
2. Combine: Ideas or attitudes are grouped together. It includes the following questions: What can you gather; and What meets the idea or attitude; What are the goals; and What are ideas or materials needed?
3. Adapt: Items are adjusted in a position to fit the desired objective, including restructuring, adjustment, and approval.
4. Modify: Applying adjustments to resize, shape, color or other properties of an object, including magnification or

addition to an idea, sentence, product, or invention.

5. Put to other use: The use of an object in different context or role of its original use. It includes several questions: What are the new uses; and What other places do they use; When is it used; and how is it used? However, switching to new use requires having new ideas and a description of the new context.

6. Eliminate: A part of something is abbreviated or completely removed. It relies on several the answer of several questions: What can be abbreviated; or What can be abbreviated; or What can be simplified?

7. Reverse: It refers to the ability to reverse an object, idea or meaning in a way that gives a new situation. However, the reverse prompt requires a suitable lesson, subject, idea or activity to work on.

Baron's technique is a thinking model based on the problem –solving techniques proposed by Jhonathan Baron in (1985). This model adopts several phases starting with searching, in which thinkers search to set a goal or criterion; attempt to find the potential tools for achieving that goal (possibilities); and then collects pieces of evidence that prove or disprove defined alternatives. Basically, searching processes are internally performed based on previous knowledge and schema beard to solve the current problem; however, an external knowledge or resources can be exploited to accomplish the solution framework (i.e. asking an expert). Afterwards, the output of the searching phase moves to the next phase, called implementation or execution. This phase involves recognizing and prioritizing the evident alternatives based on the thinker's heuristic skills. The heuristic can be defined as a set of rules for directing search processes or classifying certain alternatives based on valid arguments or evidence (Mc Cormick, Miller and Pressley, 2012)

In the EFL context, the learning skills classified to be productive, which need to be analyzed and arranged. Therefore, EFL learning requires adopting initiative teaching methods to allow learners to develop their critical thinking skills. Therefore, this study aims at investigating the impact of using two critical thinking techniques, SCAMPER and Baron techniques, embedded in the teaching strategy for the 10th graders' students in EFL classes.

2. Literature Review

In educational literature, several studies have reviewed the use of the SCAMPER technique as an independent or a dependent variable in EFL learning or different science fields. However, at-the researcher-knowledge, very few studies have investigated the use and effect of Baron's technique.

Ozyaprak (2015) recommended using the SCAMPER technique in schools or companies as it provides the students or individuals with a method to practice creative thinking for all ages. He studied the effect of the SCAMPER technique in the development of creative thinking skills. The results of the creative skills test after experiencing SCAMPER showed an improvement in the student's ability in creative thinking. Similarly, Al- Harithy (2015) identified the impact of the SCAMPER technique on the development of the vocabulary of the English language among the first-grade students in Makkah. The results showed that there were statistically significant differences between the pre and post applications of the experimental group in favor of the post-application of the English vocabulary test. In a different setting, Al- Tarawneh and Al- Khataybeh (2017) studied the effect of using the Renzulli learning system and SCAMPER technique to develop the skill of writing in English for students of the 10th at the Mu'tah University Model School. The results showed that there were statistically significant differences following the implementation of the Renzulli learning system; however, there were no statistically significant differences due to gender.

As for general critical thinking skills, Mohammed (2009) investigated the effect of possessing these skills on the 10th graders' students' critical thinking. The results showed that there were statistically significant differences between the two groups in favor of the experimental group. However, it found that there were no statistically significant differences between the students due to the interaction between the two groups and linguistic proficiency. In 2006, Al-Hassan examined the impact of using a proposed program based on deliberation in the development of writing skills and critical thinking in English for students of the 10th at Al - Israa Primary School in Amman, Jordan. The results also indicated that the experimental group achieves improved scores in writing skills, sub-skills of good writing, and critical thinking skills.

Therefore, this study comes to fill the literature gap by combining two important critical thinking techniques, SCAMPER and Baron, to investigate their effectiveness and identify which best fit our EFL learning setting in Jordan.

3. Research problem:

Critical thinking is not an inherited trait; it can be learned, developed, practiced and continually integrated into the curriculum to engage students in active learning. However, developing critical thinking skills requires ensuring the validity of the content, teaching methods, and assessment methods (Ojha, 2018). Hence, critical thinking techniques are significant for students to resolve their educational and social issues. However, these techniques need to be applied to certain ages when considering EFL learning.

Therefore, the teachers are required to initiate an effective implementation of these techniques to enhance the student`s critical thinking skills, in which students possess the abilities to resolve educational and social life challenging issues (Javed, Nawaz, Qurat - Ul - Ain, 2015). Thus, educators show a great tendency to find and propose new approaches in order to help students improve their critical thinking skills ((Javed, Nawaz, Qurat - Ul - Ain, 2015; Mohammedi and Golandouz, 2017). Furthermore, facilitating and fostering critical thinking skills are a necessity in or outside the classroom; otherwise, students are at a loss and lack the ability to develop to their capacity (O'Brien, 2013). However, several obstacles related to the teaching of critical thinking can be addressed ,such as the lack of reliable programs specifically designed to teach critical thinking , the availability of user guidelines to clarify the role of both teacher and student , and the absence of educational qualifications of the teacher critical thinking skills.

Moreover, through the work field of the researcher as an EFL teacher, she noticed how students have difficulties when exposed to critical questions in reading skills, expressing opinions, providing solutions and hypotheses, writing expressions, criticizing opinions and developing new ideas. These difficulties can be attributed to the used teaching methods, which is the most important media for developing critical thinking skills. Therefore, the current study employs two different critical thinking techniques and examines their effectiveness in the development of critical thinking skills, including: interpretation, conclusion, deduction.

4. Study Aim and Objectives:

The current study aims at identifying the impact of SCAMPER and Baron`s techniques on the development of English Language critical thinking skills. Therefore, it considers achieving the following objectives:

1. Preparing the teaching content and setting that suit critical thinking techniques.
2. Developing pre and post-test for assessing student critical thinking skills after and before the experiments.
3. Comparing the effectiveness, the two employed techniques in developing critical thinking skills

5. Research Questions:

To achieve the aim of the study, the following research questions were addressed:

1. Are there any statistically significant differences at ($\alpha \leq 0.05$) between the level of developing critical thinking skills due to the teaching method (SCAMPER, Baron and conventional)?
2. Are there any statistically significant differences at ($\alpha \leq 0.05$) between the level of developing critical thinking skills due to the teaching method (SCAMPER, Baron`s)?

6. Study Importance

The importance of the current study stems from the followings:

- Providing a conceptual framework that shows the importance of the SCAMPER technique for teaching thinking and the Baron`s technique of good thinker, in addition to critical thinking.
- Providing a practical model for the application of both models (the SCAMPER technique for teaching thinking and the Baron's good thinker technique) in teaching critical thinking skills that have been identified to suit the learning stage and the nature of the learning material, and provides the teacher with an instructional guide for both techniques as well as lesson plans for both techniques.
- Allowing the learner to learn about modern strategies to develop critical thinking skills in English language skills, which increases the learner's ability to express his\ her opinion and activate critical thinking skills to solve daily problems.
- Providing a new source for future studies that intent to examine the critical thinking techniques in the development of different thinking skills.

7. Limitation of the study:

The current study is limited to:

- Sample limit: the target sample is limited to the 10th female students in Asma bint Abi Baker secondary school in the first educational directorate of Amman during the First Semester (2018/2019).
- Subject limits: the use of SCAMPER technique to generate ideas and Baron's technique of the good thinker and their effect on the development of critical thinking in the first and the second units in the 10th grade English textbook.

8. Operational Definitions of Key Terms:

Critical thinking: is the set of thinking skills that will be introduced and trained: conclusion, interpretation, and reasoning.

Conventional method: is defined as a set of methods mentioned in the teacher's guide and followed by the teacher during class.

The tenth grade: is the final stage of compulsory basic education. Students in this class are between 15 and 17 years old. They have spent ten years of school in the school according to the laws of the Ministry of Education.

Baron's technique : the designed model based on baron technique , which is the program prepared by the researcher for the two educational units: Anew business Idea, Rainforests based on the model steps of: Suspicion, Searching the goals, rephrasing the target, rephrasing the original goal, searching for possibilities The goal was to reach and conclude the research. The researcher trained the students in the first group on the program to find out the impact of the program in developing critical thinking skills in English.

The SCAMPER technique: the designed model based on SCAMPER technique, which is then prepared by the researcher for the two educational units: Anew business Idea, Rainforests based on the components of the SCAMPER technique: Substitute, Combine, Adapt, Modify, to another use, Eliminate, Reverse.

9. Study Design and Methodology:

The current study used the semi-experimental method to apply both models on two experimental groups and one control group. The study design developed according to SCAMPER, teaching thinking model, to be applied on the first experimental group; and Baron, good thinker model, to be applied on the second experimental group; whilst the control group taught by the conventional method.

9.1 Study Population

The population of the study consisted of all the female students of 10th graders students in the First Educational Directorate of Amman during the first semester of the academic year (2018/2019). The total number of female students are (4289), according to the statistics of the Planning Department of the First Educational Directorate of Amman.

9.2 Study Sample

The researchers have intentionally chosen Asma Bent Abe Baker secondary school in order to apply the experiment to include (112) students of the 10th graders, section A, B and C. Afterwards, they were randomly divided into three groups: a control group consisted of (38) students and two experimental groups: The first group consisted of (36) Students and the third group consisted of (38), as shown in Table (1).

Table (1): Distribution of the Study Sample

Group	Number	Percentage
The first experimental group (SCAMPER)	36	32%
Second experimental group (Baron)	38	34%
Control Group	38	34%
Total	112	100%

9.3 Research Instruments

This study employed two different instruments to investigate students' critical thinking skills, including interpretation, deduction and conclusion as follows:

1- New lesson plans of the first and second units from the 10th grade English Textbook Action Pack of the first semester. These plans adopted after performing content analysis based on critical thinking skills that align SCAMPER and Baron requirements. In addition, the researcher provided a teacher's guidelines for both techniques.

2- Pre and posttest to measure students' critical thinking skills before and after experiencing critical thinking lessons. The test provides multiple-choice and essay questions based on content analysis of the critical skills and the table of specification. The test consists of (8) items to measure the development of critical thinking skills: interpretation, induction and conclusion of the 10th-grade students in the English language.

9.4 Instruments Validity and Reliability:

To ensure the content validity of the proposed study instruments, lesson plans and achievement test, both were sent to a number of experts in educational science and curricula in Jordanian universities. Their comments were considered to delete, amend, and add some suggestions to the instruments until they finally approved.

As for the reliability or the internal consistency of the designed pre and posttests, the researchers used test and retest method to find Cronbach's alpha to a pilot sample of (20) students, who were excluded from the main study. The result of Cronbach's alpha coefficients reached (0.78), which is an acceptable correlation coefficient that indicates the internal consistency of the test.

Moreover, the One-Way ANOVA- test was applied to ensure that the level of critical thinking skills of the designed groups is identical (i.e. no significant differences). The result is shown in table (2).

Table (2): Pre-test Groups differences

Source of variation	Sum of squares	FD	Mean squares	(f)	Sig
Between groups	54.217	2	27.108	1.532	0.221
The error	1892.838	107	17.690		
Total	1947.055	109			

**significant at ($\alpha \leq 0.05$).*

The results in Table (2) showed that there are no statistically significant differences at ($\alpha \leq 0.05$) between the pre-test scores for all groups, experimental and control groups. This indicates that students in all groups have the same critical thinking skills level before applying the intended techniques, SCAMPER and Baron, which ensure the validity of the experiment setting and environment.

10. Study Results:

Several descriptive and analytical statistics applied to answer the research questions, including means, frequencies, standard deviation, One-Way ANOVA and ANCOVA. Accordingly, the next subsections show the result of the research questions. The results of the study are shown by answering the questions accordingly.

10.1 Results of the First Question:

In order to answer this question, which states "Are there any statistically significant differences at ($\alpha \leq 0.05$) between the level of developing critical thinking skills due to the teaching method (SCAMPER, Baron and conventional)?", ANCOVA test was used as an analysis of the students' scores in the post-test. Results are shown in tables (3 and 4).

Table (3): ANCOVA for the differences in the development of critical thinking skills the post-test.

Source of Variance				Total squares	The degree of freedom	Average squares	Value (P)	Level of significance	Volume effect of ETA
	Group	N	Mean	346.297	2	173.148	7.220 **	0.001	0.118
1	SCAMPER	36	14.75						
2	Baron	38	13.84						
3	Control	38	10.89						
Pre - Test				101.305	1	101.305	4.224	0.042	0.038
The error				2590.077	108	23.982			
Total				22315.000	112				
correction				2994.991	111				

** statistically significant at ($\alpha \leq 0.05$).

The results in Table (3) show that there are statistically significant differences at ($\alpha \leq 0.05$) between the results of the post-test for both experimental groups and the control group in the development of critical thinking skills in English. Furthermore, the effect size pointed by (ETA=0.118), which indicates a moderate effect according to Cohen's classification. Table (4) shows to which group the difference is attributed using the Bonferroni post hoc test.

Table (4): Bonferroni Post hoc Analysis

Group	Mean	SCAMPER	Baron	Control
SCAMPER	14.75	-	1.226	4.228*
Baron	13.84	-1.226	-	3.001*
Control	10.89	-4.228	-3.001	-

Table (4) shows that the differences between the investigated group are in favor of the two experimental groups (SCAMPER and Baron). This can be attributed to the influence of both SCAMPER and Baron on the development of Critical Thinking Skills in English. This may be due to the SCAMPER technique's ability to stimulate students' imagination and their thinking to generate new ideas by answering questions about assumptions made by students, content being discussed, the substitution of another word gives the same meaning, modifying the context of the sentence to give the intended meaning, and deleting what is not consistent with the content. SCAMPER can develop the students' ability to use the logical steps to produce logical outcomes based on the relations between the concepts and objects being taught. Furthermore, SCAMPER can help to clarify the English terms and concepts to be used by their own, allow students to express a positive attitude towards English; and thus, motivate them to learn and improve their self-confidence to avoid hesitation. The current result totally agrees with the result of Ozyaprak study (2015).

10.2 Results of the Second Question:

In order to answer this question, which states "Are there any statistically significant differences at ($\alpha \leq 0.05$) between the level of developing critical thinking skills due to the teaching method (SCAMPER, Baron)?", the t-test was used as an analysis of the students' scores in the post-test. Results are shown in tables (5).

Table (5). T-test analysis results

Group	N	Mean	FD	t	Sig
SCAMPER	36	14.75	72	0.821	0.414
Baron	38	13.84			

The results in table (5) show that there are no statistically significant differences between the SCAMPER and Baron techniques in the development of critical thinking in the English language among the students of the 10th grade in the Directorate of Education of Kasabat Amman. This indicates that both techniques have the same effect on the development of critical thinking skills in the experimental groups. Furthermore, it can be said that both techniques are able to highlight and form the characters of the students through the development of their critical thinking skills.

However, the result shows a slight difference in favor of the SCAMPER technique compared to Baron technique, but not significant. This can be attributed to is due to the ease of interpretation and application of SCAMPER technique strategies, which help to generate ideas in different directions. The convergence of the differences between the two techniques may explain that their simultaneous application has made the role of students more positive and more effective. They were motivated to learn critical thinking skills while providing the learning material based on both techniques.

In summary, both techniques developed the ability of students to identify the relationship between English language concepts and expressions as a result of replacing one word with another, or in another context, which helped them to understand relationships. In addition , both techniques developed the ability of students to identify weak evidence that does not serve the context, support the point of views and try to find a strong argument to support them, help students to discover the views of other colleagues and develop the strength of observation among students and their peers.

Recommendations:

Based on the study results, the followings are recommended

1. Planning extra selective lessons from the English language curriculum of the 10th graders based on SCAMPER and Baron techniques.
2. Training of English language teachers to use SCAMPER and Baron techniques to teach Critical Thinking skills to allow the student to create positive attitudes towards them and help them to acquire their concepts and improve student achievement.
3. Conducting further studies on the SCAMPER model and the Baron model in order to identify their effectiveness in different English language thinking skills in another context to get benefit from their positive effect.

References

- Abu- Jado, S., & Nofal, M., (2007). *Teaching Thinking - Theory and Practice*. Amman, Jordan: Dar Al Masirah.
- Al- Harithy, S. (2015). The impact of the use of Scamper in the development of the vocabulary of English students in the first grade in the city of Mecca, *Unpublished MA thesis, Umm Al-Qura University, Saudi Arabia*.
- Al- Hassan, S. (2006). The impact of a proposed program based on deliberation in the development of writing skills and critical thinking in English among students of the primary stage in Jordan, *Unpublished PhD thesis, Amman Arab University for Graduate Studies, Jordan*.
- Al-Saliti, F. (2006). *Critical and creative thinking Cooperative learning strategy in the teaching of reading and literary texts*: Jadara books press: Amman, Jordan.
- Al- Tarawneh, S., & Al- Khataybeh, M., (2017). The impact of using the Renzulli learning system and SCAMPER's strategy in developing writing skills for 10th grade students at the Mutah Model School. *Al-Manara Magazine*, 23(3), 555-588.
- Baron, J. (1985). *Rationality and Intelligence*. Newyork: Cambridge Press.
- Baron, J. (1988). *Thinking and Deciding*. Cambridge: Cambridge university press.
- Baron, J. (1991). Beliefs about Thinking. *Informal Reasoning and Education*, 169-186.
- Barqawi, J. (2012). *Critical and creative thinking*. Amman, Jordan: Dar Safa for Publishing and Distribution.
- Dacey, J. (2013). *Creativity and Standards*. Shell Education.
- DeBono Center for Teaching Thinking. (2015). *Introduction to teaching thinking and developing creativity*. Amman, Jordan:

Debono Learning Center.

- Eberel, B. (1996). *SCAMPER On Games for Imagination Development*. United States of America: Prufrock Press Inc.
- Grigg, R., & Lewis, H. (2018). *Teaching Creative and Critical Thinking in Schools*. Sage.
- Hooks, B. (2013). *Teaching Critical Thinking: Practical Wisdom*. Routledge.
- Husseini, A. (2007). Developing creative thinking among fourth graders in Saudi Arabia using the SCAMPER program, Unpublished MA, Gulf Arab University, Manama, Bahrain.
- Husseini, A. (2007). Developing creative thinking using the SCAMPER program is a guide for the trainee and trainer. *Center for Studies and Research of Disabled Persons, Saudi Arabia*.
<https://www.google.com/search?q=www.academia.edu+%5C+11560018+%5C+SCAMPER&oq=www.academia.edu+%5C+11560018+%5C+SCAMPER&aqs=chrome.69i59l2j69i60.1567j0j7&sourceid=chrome&ie=UTF-8>.
- Jaber, A. (2008). *Frameworks of thought and theories guide to teaching, learning and research*. Amman, Jordan: Dar Al Masirah.
- Javed, M., Nawaz, M., & Qurat- ul- Ain, A. (2015). Assessing Postgraduate Student`s Critical Thinking Ability. *I- Manager`s Journal on Educational Psychology*, (2)9.
- Lavery, J., & Hughes, W. (2015). *Critical Thinking: An Introduction to the Basic Skills*. (7th ed.). Broad View Press.
- Leicester, M. (2009). *Teaching Critical Thinking Skills*. Continuum International Publishing Group.
- McCormick, C. B., Miller, G. E., & Pressley, M. (Eds.). (2012). *Cognitive strategy research: From basic research to educational applications*. Springer Science & Business Media.
- Michalko, M. (2006). *Thinkertoys: A handbook of creative-thinking techniques*. Random House Digital, Inc.
- Ministry of Education of Jordan – Directorate of Curricula and School-textbooks (2013). *General Guidelines and General and Specific Outcomes for English Curriculum*. (2nd ed.).
- Mohammadi, M., & Golandouz, G. (2017). A Comparative Study of Critical Thinking Skills of EFL Learners and Humanities Students. *Journal of Applied Linguistics and Language Research*, (4)3, 105-118.
- Mohammed, S. (2009). The impact of using the strategy of teaching critical thinking skills in the critical thinking of the tenth grade students in the Directorate of Education Karak, *Unpublished MA, University of Mutah, Jordan*.
- Moseley, D., Baumfield, V., Elliott, J., Gregson, M., Higgins, S., Miller, J., & Newton, D. P. (2005). *Frameworks for thinking: a handbook for teaching and learning*. Cambridge University Press.
- LaPoint-O'Brien, T. (2013). Action Research: The Development of Critical Thinking Skills. *Online Submission*.
- OJHA, S. (2018). Development of Critical Thinking Skills in History. *Journal of Indian Education*, (43)4.
- Ozyaprak, M. (2015). The Effectiveness of SCAMPER Technique on Creative Thinking Skills. *Journal for The Education of Gifted Young Scientists*, 4(1), 31-40.
- Roberts, T., & Billings, M. (2012). *Teaching Critical Thinking Using Seminars for Twenty First Century Literacy*. An Eye on Education Book.
- Roberts, T., & Billings, L. (2014). *Teaching Critical Thinking : Using Seminars for 21st Century Literacy*. Routledge, Taylor & Francis Group.
- Shavinina, L. (2009). *International Handbook on Giftedness*. Springer Science & Business Media.