

**The Effect of the Project Method  
on the Development of Creative Thinking,  
Critical Thinking and Emotional  
Intelligence Among Secondary School  
Students in the State of Kuwait**

**By:**

**Dr/ Majed. M. A. Al-Ali**

Public authority of applied learning,  
Psychology section.

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

**The Effect of the Project Method on the  
Development of Creative Thinking, Critical  
Thinking and Emotional Intelligence Among  
Secondary School Students in the State of Kuwait**

Dr/ Majed. M. A. Al-Ali

**Introduction:**

Scholastic activities and projects are an integral part of school life. Participation rates in them are known to be very high in the United States. Despite raft of studies on participation in scholastic activities undertaken over nearly eight decades (mainly in the United States), however, not much is known or understood about the causal effect between participation in such activities, projects and educational outcomes (Boaz, 2010). In 1987, Holland and Andre carried out a review of literature relating to extracurricular participation and adolescent development with the aim of providing a critique of methodological approaches and possible directions for future research (Holland& Andre, 1987). Mahoney and Stattin (2000, pp.114-115) characterized highly structured activities as including ‘regular participation schedules, rule-guided engagement, direction by one or more adult activity leaders, an emphasis on skill development that is continually increasing in complexity and challenge, activity performance that requires sustained active attention, and clear feedback on performance’. These characteristics, according to Bronfenbrenner and Morris (1998), facilitate the development of initiative and lead to healthy adolescent development. Eccles, Lord and Buchanan (1996) mentioned that leisure provides adolescents with unique developmental opportunities. Leisure is a context in which adolescents are encouraged to manage their own experiences through

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

exerting personal control over their environments and acting autonomously (Brown & Theobald, 1998). Moreover; leisure also provides opportunities for identity exploration and skill building (Kleiber, 1999) as well as both social differentiation and integration. Many school-based extracurricular activities and projects, such as sports, student publications, radio stations, or performing groups, can be characterized as highly structured activities. Although outside the narrowly defined academic curriculum (e.g., maths, science, social studies and English), extracurricular activities and projects have traditionally been offered by schools as a way to offer developmental and leadership opportunities for young people, and to build school spirit (Dewey, 1916). Project-based learning was introduced in the early twentieth century to motivate student self-learning (Kilpatrick, 1918). Project-based learning method calls for learners to acquire and develop core learning concepts through collaborative projects that require the learning and application of contextual knowledge. The literature has shown that project-based learning enables students to become interactive learners (Synteta& Schneider, 2002), in addition to constructing knowledge through exploration (Prince& Felder, 2007). Project-based learning blends traditional subject-matter goals and objectives with authentic learning environments. The primary rationale for using authentic activity as the model for appropriate learning activities is the enhanced understanding that develops through application and manipulation of knowledge within context. Finding solutions for a problem whether posed by the teacher or a new social environment, is more likely to develop generic as well as subject specific skills when using project-based curriculum. In other words, project-based learning provides productive environments for the development of meta-cognition (Downing, Kwong, Chan,

Lam, & Downing, 2009). In project-based learning, students construct knowledge and build on their background knowledge. Students retain more information when they learn by doing. Dewey proposed that learning by doing has great benefit in shaping students' learning. High-quality experiences, as well as continuity of experiences, are paramount. Project-based learning is an effective approach and is in the line with Dewey's philosophies, which many educators have ascribed for enriched learning (Dewey, 1938). Polychronopoulou and Divans (2009) conducted a study to identify dental students' self-reported sources of stress. The findings revealed that project based learning when compared with traditional curricula was inversely associated with perceived stress and that in turn had a strong impact on learning. Nevertheless, transformation of the conventional classroom into an authentic learning environment involves much more than incorporating features of real-life situations into school work. Furthermore, curriculum innovations are never easy to implement or to examine systematically. Balasooriya, Hughes and Toohey (2009) carried out a study on the impact of a new integrated medical educational design on students' approaches to learning. Although the programme was based on curriculum features identified in the research literature to promote deeper approaches to learning, the results indicate shifting students towards deeper approaches for learning maybe a more complex task than previously understood. The project method has emerged as a promising practice for meeting the varying needs and interests of today's young students (Katz& Chard, 2000). The project method 'refers to a way of teaching and learning as well as the content of what is taught and learned' (Katz& Chard, 1989, p.3). As a way of teaching and learning, it requires a teacher to encourage children's active participation in their own learning through

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

interaction with the environment, including people and objects, in personally meaningful ways. The content is 'usually drawn from the world that is familiar to the children' (ibid.). This approach 'is designed to help young children make deeper and fuller sense of events and phenomena in their own environment' (Katz, 1998, p. 48). Children work on projects individually, in small groups or as a whole class. During projects, children strive to find answers to questions which they have conceived by themselves or in collaboration with their teachers. The goal of project work is to explore and learn more about a topic, not necessarily to find the right answer (Paul, 2012; Shalaway, 1997).

Projects are 'the epitome of an integrated curriculum' (Gordon & Browne, 2004, p.398). The topic of a project is an authentic experience that children can research directly instead of relying solely on secondary sources through library research. Helm and Katz (2001) argued that topics of interest for children need to be the heart of projects, but not every interest a child has is equally worthy of the time and effort implicated in high quality projects. Topics should allow children to understand their own experience and environment deeply, in order to strengthen their disposition to investigate phenomena worthy of attention, to apply various skills, and to develop an understanding about various media applicable to their work. A project involves three phases. During the first phase, children and their teacher select and discuss a topic to be explored. In the second phase, the children conduct first-hand investigations and then create representations of their findings. The third phase includes culminating and debriefing events (Katz, 1994; Katz& Chard, 1989, 2000). Today the project is one of the standard teaching methods (Apel& Knoll, 2001). It is generally considered a means by which students can (a) develop independence and responsibility, and (b) practice

social and democratic modes of behaviour. The notion of the project is central to socio-constructivism and other related activity-based approaches. A project allows learners to identify and formulate their own problems. The goals which they set as well as the unexpected discoveries that they will make during their interaction with the environment serve as guides (Collins, Brown, & Newman, 1989; William & Curtis, 2012). It is therefore important to divide scenarios and to divide problems into sub-problems, so that learners perform only one task at a time and that these tasks are flexible enough in order for learners to be able to achieve them whatever their basic level. Project-based learning is a model which is distinct from traditional teaching, since the focus is put on the learner and their project. Learners have the opportunity to work more autonomously and build their knowledge. Sallee (2010) mentioned that the project method is a multidimensional and interconnected method of teaching based on the constructivist theory of how children learn. The method reflects a philosophy of teaching that permeates the topics of children's study and the way they are taught. The content of a project varies depending on the topic a particular group of children and teachers is interested in investigating and their abilities. The project method has the potential to enable students to research, plan, design and reflect on the creation of technological projects (Doppelt, 2000). This method could be used as a tool to develop students' competencies through working on integrated projects (Barlex, 2002). Designing an authentic project means that students define their own design problem, deal with needs, and decide on their requirements. An authentic project deals with real life situations and by definition has an integrated nature and enables pupils to combine 'hands-on' activities with what Papert (1980) has termed 'heads-in' activities. Hsum (as cited in Edwards, 2012) interviewed

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

seven Taiwanese early childhood teachers including novices and experienced teachers in order to explore their professional development. In this study, one of the participants discussed an expanded way of thinking after utilizing the project approach; this approach also enhanced teachers' abilities to propose questions and to communicate with children. Results also showed that teachers' professional development benefited from their teaching experiences, work tasks, communicating (with parents, colleagues and supervisors) and job training. Teachers using the project method must give their students more chances to support their several cognitive and emotional skills and abilities. Since the project method involves plans, processes experiences, ideas, interaction, products, evaluation, and feedback, students must feel that there is a democratic environment around them that supports their ideas and imagination without prejudice or fears. The greatest care of education must be keeping away from the mind of a child things which go beyond his or her capacity (Oelkers, 1997).

These factors will support several of the critical and creative thinking abilities, of course, with a learned, educated and creative teacher and available scholastic administration that ensures all the finances and materials support their students in achieving their projects. A project is an in-depth investigation of a topic in which 'children's ideas, questions, theories, predictions, and interests are major determinants of the experiences provided and the work accomplished' (Katz & Chard, 2000, p. 5). Kilpatrick's (1918) article, 'Project Method' attested to this historical root. He articulated that a project is 'the hearty purposeful act and could be used to actualize the ideal that education is life' (p. 320), not a mere preparation for later life. He argued that educational experience should have a resemblance to the worthy life, which consists of 'purposive activity' (p. 322).



In project work students are not required to move through a set sequence of stages. They are able to choose their work from a wide range of options that the teacher provides. In the level of difficulty, the student is able to choose topics by what they are interested in, rather than by their ability level. Students are encouraged to select a variety of tasks ranging in level, so as not to feel overwhelmed or bored by their experiences. The project approach or method has come to be viewed as a progressive education movement, that encourages students to be actively engaged in their studies, rather than passively stuffed full of knowledge. This movement has brought the redefining of the word project (Jenny & Catherine, 2011). Yi-Man (2010) mentioned in his study that students in their scholastic projects not only learned academic skills and thinking, but also improved their self-confidence and self-esteem through their practice in the their projects. Therefore, they build self-confidence by discovering answers by themselves and knowing adults can be both assistants and consultants. In addition, students also developed better observational skills and a higher sensitivity towards the environment. They had better problem solving skills and acquired a full understanding of the new concepts through in-depth investigations. Students exhibited improved communication and social skills while performing their tasks. Therefore, the project method is a teaching and learning model (curriculum development and instructional approach) that emphasizes student-centered instruction by assigning projects. It allows students to work more autonomously to construct their own learning, and culminates in realistic, student-generated products. More specifically, project-based learning can be defined as follows:

- i. Focus on the central concepts of a discipline;

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

- ii. Engaging learning experiences that involve students in complex, real-world projects through which they develop and apply skills and knowledge;
- iii. Learning that requires students to draw from many information sources and disciplines in order to solve problems;
- iv. Learning in which curricular outcomes can be identified up-front, but in which the outcomes of the student's learning process are neither predetermined nor fully predictable; and
- v. Experiences through which students learn to manage and allocate resources such as time and materials (Moursund, 2002; Thomas, Mergendoller, & Michaelson, 1999).

The project method (Kilpatrick, 1918) was made famous by William Heard Kilpatrick, who emphasized the project method after studying the experiences of students in vocational agriculture and in the Future Farmers of America (FFA) organization in rural areas (Marlow, 2000). The project method is an essential component of the triadic model of agricultural education programmes (Grady & Julie, 2007). 'A project is a problematic act which is carried to completion in its natural setting' (Stevenson, 1925, p. 43). The real value of the project method is that it connects school to the real world (Stockton, 1920). According to Stevenson (1925), the educational use of the word 'project' was borrowed from the United States Department of Agriculture, which used the term to describe planned investigations conducted by experimental stations and planned demonstrations conducted by the extension service. Clark (2006) mentioned that, in addition to the three phases of a project, there are three components to consider when undertaking project work; content, processes and product. Based on previous introduction and psychological with educational dimensions of scholastic activities and project

method, the present researcher will seek to study the effect of project method in the field of scholastic agricultural on the development of creative thinking, critical thinking and emotional intelligence among secondary school students in State of Kuwait.

**Review of Literature of Project Method:**

This part of present study consists of a review of literature of the project method that includes a summary of several research studies in order to examine the effect of the project method in terms of the target variables. Additionally, with other set of variables to realize and determine the effect and impact of the project method on various sets of educational and psychological variables, especially the variables of the present study; creative thinking, critical thinking and emotional intelligence. These studies as follows:

**Yaron (2009)** mentioned in his study that infusing creative thinking competence through the design process of authentic projects requires not only changing the teaching methods and learning environment, but also adopting new assessment methods, such as portfolio assessment. The participants in this study were 128 high school pupils who have studied Mechatronics from tenth to twelfth grades (16–18 years old). By the end of twelfth grade, the pupils had created 57 authentic projects. The intervention programme had two parts: first, the pupils documented their project according to a creative design process that had been introduced to them. Second, the projects were assessed according to a creative thinking scale. This scale was designed to assist pupils in documenting the design process. It could be used as a guideline for teachers and pupils during the course of the project. The research examined pupils' performance during project-based learning. The research tools included observations of class activities, portfolio

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

assessment, and external matriculation assessment. The findings show first that pupils learned to document their design process. Second, pupils' projects demonstrated various levels of creative thinking skill. Evidence for high-level documentation of the projects was found in pupils' portfolios. On the other hand, Yaron concluded there is much to be learned about documenting teamwork and pupils' reflection. This research could assist researchers and teachers who are interested in assessing engineering education outcomes.

**Bennett (2010)** in his investigation studied the strategies for using related cases to support design problem solving as project method. The study reported in his paper investigated learners' understanding of multimedia instructional design and development derived from the analysis of two richly detailed cases, and how this understanding then supported learners in their own design projects. A qualitative case study approach was used to follow a class of Master's degree students engaged in a technology-supported, case-based learning environment. Students' work from case analysis, group project and reflective tasks was the key data source, complemented by interviews with students and their instructor, observations of class meetings, and the collection of online discussion list records and electronic resource files. The study found that the case analysis task raised learners' awareness of design approaches and project management strategies, and that discussion and reflection play critical and creative roles in developing students' understanding and interesting.

**Dominguez and Jaime (2010)** examined the learning of database design by the project based approach organized through a course management system. This study describes an active method for database design learning through practical tasks development by student teams in a face to

face course. This method integrates project-based learning and project management techniques and tools. Some scaffolding is provided at the beginning that forms a skeleton that adapts to a great variety of student-proposed domain projects and emulates the real way of working in database design. The authors included a quasi-experimental study in which the results of five academic years were analysed. For the first three years, a traditional strategy was followed and a course management system was used as material repository. The active method was introduced for the last two years and coexisted with the traditional one. The course management system greatly simplifies the management of the numerous documents produced, the description and scheduling of tasks, the identification of teams, as well as all communication needs. The authors analysed various aspects such as drop-out rates, exam pass rates, exam marks, and class attendance. Students that followed this active learning approach obtained better results than those that followed a traditional strategy. Besides, the experience of the introduction of such a method in a student subgroup positively influenced the whole group.

**Eskrootchi and Oskroch (2010)** tested the effectiveness of project-based learning in a technology-rich environment. A science project, Land-use in Watershed, which takes advantage of internet facilities, was developed and integrated with a simulation software package, Structural Thinking and Experiential Learning Laboratory, with Animation (STELLA), developed to promote deeper understanding of land-use by students. The participants in the study were 72 students in a quasi-experimental research design. Statistical analyses showed that students who participated in the manipulation of the experimental model of the watershed experiment and the STELLA simulation performed best on understanding the watershed concept.

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

This study suggests that students learn best by actively constructing knowledge from a combination of experience, interpretation and structured interactions with peers and teachers when using technology. Simulations do not work on their own, there needs to be some structuring of the students' interactions with the simulation to increase effectiveness.

**Stepath and Bacon (2010)** in their study administered a hands-on Marine Debris Clean-up Project, for seven to eight weeks, using a service project to provide an introduction to marine science ecology, watershed interrelationships, the scientific method, and environmental stewardship to eighth-grade middle school students. It utilized inquiry-based learning to introduce the sources and impacts marine debris to the students, while demonstrating the integration of service learning programmes into meaningful learning situations. The goals of the project were to promote inquiry-based learning, address Hawaii Department of Education)science learning outcomes, improve students' care for the environment, train students to improve their future through service learning, to develop pedagogy that engages learners in living laboratories by using preparation, action and reflection phases of instruction, and to promote university, community. Students had a chance to learn and apply the scientific method in a real world situation to improve the environment where they live. This programme engaged 300 middle-school students in activities designed to help them reach Hawaii Department of Education science benchmarks, through learning natural systems, monitoring a beach, testing hypotheses, and collection and analysing data associated with a beach clean-up. This outdoor learning experience not only gave the students hands-on science experience, but also provided opportunities for students to write a final report, and give an oral presentation about what they learned. These students applied the scientific method in

a real world situation, which was shown to be meaningful by helping them to improve the local environment where they live through active stewardship participation. The project demonstrated how service-learning projects are opportunities for applied science learning, which address real problems existing in the students' community and the ocean environment. As active participants the students learn to develop real life solutions using scientific principles and concepts, and improve their academic development. The project instructors observed positive change in the students' environmental knowledge and attitudes, which will lead to the students taking individual responsibility for positive long-term actions and consequences.

**The Problem:**

Firstly the researcher will study the relationship between the project method and social and scholastic environments, on the one hand; besides, its relationship with the specific variables of creative thinking, critical thinking and emotional intelligence through realizing its positive or negative effects on these variables and examining the scores pre- and post administration of tools among students during their working and practising in their project method in the field of agriculture, on the second hand. More specifically, this research also aims at an understanding of the nature of the correlational and predictive relationships between creative thinking with the target variables of critical thinking and emotional intelligence, also to determine the effect of gender and academic specialization of students on creative thinking by ANOVA technique. Furthermore, we cannot understand the project method without studying the other relevant psychological variables and its effects. Thus, it is of paramount importance to explore the effect of the project method on the target variables on the one hand, and study

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

the relationship and predictive aspects of creative thinking with other variables of this study on the other hand.

**Objectives of Present Study:**

Generally, this study seeks to explore the effect of the project method on the target variables of current study in an agriculture project among secondary school students in the State of Kuwait. More specifically, this study seeks to fulfil the following objectives:

- i. To reach a sound framework concerning the nature and the dimensions of project method and its relevance with some educational, psychological and environmental effected factors examining the variables under study by studying its theoretical perspectives;
- ii. To present contemporary thought, ideas and related studies conducted in the area of this study, so that researchers with relevant interests will benefit;
- iii. To examine the differences between the gender scores (males and females), also between academic specialization scores of students (scientific section and literary section) in the variables of the present study;
- iv. To investigate the directions of the correlations between the three variables of the present study – which are creative thinking, critical thinking and emotional intelligence – among secondary school students;
- v. To study the effect and interaction of gender (males, females) and academic specialization (scientific and literary section) on creative thinking;
- vi. To determine the best predictors of creative thinking among the study variables of critical thinking and emotional intelligence; and
- vii. To explore the effect of the project method on an agriculture project among secondary schools on the study variables; creative thinking, critical thinking and emotional intelligence.



## **Definitions of Study Variables**

### **i. Project method**

The project method has been described as: ‘That kind of method which focuses on various scholastic activities, whereas students can find their selves by their working and practicing together among specific problem or subject or topic with several chances of open discussions and exchange educational experiences, educational progressive thoughts and democratic ideas. Moreover, students can discover and develop their creative thinking and other abilities by sharing with each other in these scholastic projects.’(Grady& Julie, 2007).

### **ii. Creative thinking.**

Guilford (1959) described creative thinking as ‘a hierarchy consisting of a number of mental abilities and processes that differ according to the context’. The mental abilities identified by Guilford are:

- Fluency: ability to produce a great number of appropriate responses in a given time in the face of a given situation or problem.
- Flexibility: ability to produce a great number of varied ideas.
- Originality: ability to produce unfamiliar and uncommon ideas".

### **iii. Critical thinking.**

Critical thinking is ‘the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered, or generated by, observation, experience, reflection, reasoning, or communication, as a guide of belief and action. For its exemplary form, it is based on universal intellectual values that transcend subject matter divisions: clarity, accuracy, precision, consistency, relevance, sound

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

evidence, good reasons, depth, breadth, and fairness.’(Linda, 2007).

**iv. Emotional Intelligence:**

Emotional intelligence is the ‘ability to recognize the meanings of emotion and their relationships, and to reason and problem-solve on the basis of them. Emotional intelligence is involved by the capacity in order to perceive emotions, assimilate emotion-related feelings, understand the information of those emotions, and manage them.’ (Mayer, Caruso, & Salovey, 1999, p. 267).

**Research Hypotheses:**

In the light of the objectives of the present study, the empirical literature, the general directions of the findings of the related studies, and definitions of the study variables, the following hypotheses were formulated to be tested as follows:

- i. There will be differences between the gender scores (males and females) in creative thinking, critical thinking and emotional intelligence;
- ii. There will be differences between the scores of students of different academic specialization (scientific section and literary section) in creative thinking, critical thinking and emotional intelligence;
- iii. There will be a statistically positive correlation between creative thinking and critical thinking among the total participants of this study;
- iv. There will be a statistically positive correlation between creative thinking and emotional intelligence among the total participants of this study;
- v .There will be significant effect and interaction of academic specialization and gender on creative thinking among the total participants of this study;

- vi. Emotional intelligence will be the most important predictor of creative thinking among the total participants of present study; and
- vii. There will be an effect of project method in the academic discipline of agriculture on the study variables; creative thinking, critical thinking and emotional intelligence among the total participants of present study.

**Method:**

In the previous parts of this study, an introduction to the present problem, the objectives, variables definitions and the hypotheses of the study have been discussed. The details and the phases of the method are as follows:

**Participants:**

The participants of the present study consisted of two categories:

**Pilot Study Participants:**

There were 50 participants in this category, 25 boys and 25 girls (Kuwaiti students). The participants were in the eleventh and twelfth grades of secondary school, with a mean age of 16.7 years, SD 1.89 years. They were selected from government schools, two boys' schools and two girls' schools, in Al-Farwanyah Province, the third province of the State of Kuwait (there are six provinces in the State of Kuwait). The participants represented 0.07% of the total students in this province (71,394 students) (Educational Statistical Group, 2012). This exercise was the first administration for the variables of present study, to make sure of its validity and reliability.

**The Main Participants:**

The main participants of this category was selected among adolescents on the basis of a stratified random sampling method with mean age of 17.2 years, SD 1.94 years. They were eleventh- and twelfth-grade students from

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

government schools, two boys' schools and two girls' schools, in Al-Farwanyah Province (see 4.5.1.1). The participants represented 0.2% of the total students in the province. The total number of the participants at the beginning of the assessment was 173(84 boys and 89 girls), but the actual number who completed all measures was 157 (75 boys and 82 girls). This was the second administration of the study tests. Subjects had comparable socio-economic backgrounds. The main demographic characteristics of the selected participants are: their ages between 15 and 18 years, family incomes in the category of KD 1400–1500, their main form of transportation is private car, not other kinds of transportation such as taxi, bus...etc., they live in their parents' houses not in flats...etc, their parents are not divorced and lives together in their own houses, still working not retired, with no mental or physical handicaps, all subjects are citizens and live in the same province. In table 1, we can note the characteristics of the total participants concerning their grades and scholastic academic majors, by gender.

Table 1.  
Characteristics of the Participants

Sex	Literary Major			Scientific Major			Grade 12			Grade 11		
	Percentage of Total participants	Percentage of Total participants Regarding Sex	N	Percentage of Total participants	Percentage of Total participants Regarding Sex	N	Percentage of Total participants	Percentage of Total participants Regarding Sex	N	Percentage of Total Participants Regarding Sex	N	
Males	61%	39%	25	32%	54%	50	22.2%	47%	35	25.4%	49%	40
Females	39%	61%	39	27.3%	46%	43	25.4%	53%	40	27%	51%	42
Total	100 %	100 %	64	59.3%	100 %	93	47.6%	100 %	75	52.4%	100 %	82

Note: M=75, F =82, T=157

**Procedure:**

The researcher sent an official letter to the principals of each of the schools where the study would be conducted. The letters pointed out the significance of the study and its hoped-for positive reflections on the different scientific fields and the different educational institutions. After that, the researcher met the principals of the schools to give a complete explanation of the dimensions and aims of the study. The headmasters welcomed the study and thankfully facilitated its application, and they mentioned that the psychological researchers who work in the schools would help with its application, i.e., the administration of the tools and obtaining the required information about the subjects from school records. Four researchers from the psychological service of the Ministry of Education helped the researcher in the application the specific tests of present study. Before setting them the tests, the researchers gave a synopsis of the study to the subjects, asserting that the results would be used privately and would not have any reflections on their academic scholastic achievements and records. That is, they were told that the results would have nothing to do with their success or failure. This was necessary to secure valid and sincere responses, and cooperation on the part of the subjects. Furthermore, the school administrators were asked to keep all the subjects away from any stressful situation which could affect their completion of the programme. After distributing the relevant booklets, answer sheets and questionnaires among the students (without mentioning the variables on these papers, then or during our verbal introduction for the students about our mission), the researchers demonstrated a model answer using PowerPoint. The students were asked to write their background data on the answer sheets before starting to complete the tests. The students were told to complete the tests and not to talk to each other. This was to ensure that the

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

students would not compare answers and thus distort their responses. In other words, they were told to complete the exercise independently so that this would give a real picture of their personalities and creative abilities. Also, they were told to hold their hands up in case they had any questions to ask. Before any testing session, the individuals who helped the researcher were reminded to make sure that they took students' packages once when they finished with the tools. Testing sessions were scheduled for the male and female subjects as set out in table 2.

Table 2.

Schedule of Testing Sessions

Days	Tests
First Day	Creative Thinking Test
Second Day	Critical Thinking Test
Third Day	Emotional Intelligence Test

The tests were applied among 157 subjects (75 boys, 82 girls) in November 2010, before entering into the main project method, which is an agricultural project, so the administrations of the specific tests were pre-administration (the first phase of the present study). Within six months from November 2010 to May 2011 the participants studied various theoretical and practical lessons about an agricultural project, whether in the classroom or in the school agriculture fields. In May 2011 same tools were applied to the same subjects of the study as the post-administration (the second phrase) in order to study and realize the effect of the project method (agriculture project) on the study variables. The subjects of this study had already selected a specific topic for their project which is: Are there positive effects of practising an agriculture project on our personal and cognitive abilities?

**Measures**

Several measures were used by the present researcher in order to collect data and make various analyses for the

presented study, and these measures were used on the basis of: the level appropriate to the participant's ages; their social and educational background; and the levels and dimensions of the variables. These instruments consisted of:

**i. Creative Thinking Test (Creat CTT)**

This scale was developed by Sa'ed (1999) in order to measure various components of creative thinking; fluency, flexibility, originality and sensitivity to problems.

**Description and Scoring of "Creat CTT"**

In the beginning, this scale consists of 42 multiple-choice items, then after its evaluation from the experts for the psychometric property it consists of 38 items, each item is followed by five choices (strongly agree–strongly disagree) where the respondent is asked to choose the one that applies to him or her, the score for the five choices ranged from 1 to 5. The maximum score of this scale is 190 and the minimum score is 38. A high score means a high creative thinking level, and the low score means low creative thinking level. The time for completion of this scale is 15 minutes.

**Psychometric Properties of "Creat CTT"**

The developer of this scale used many techniques in order to establish the psychometric property of this scale, as content validity and internal consistency, whereas the correlation coefficient reported at  $r = 0.77-0.86$ . Also the reliability of the CTT as reported by the developer who used split-half method was  $r = 0.93$ . In this study, the researcher verified the validity of this scale by consulting five experts and specialists in the fields of education and psychology from Kuwait University to evaluate the dimensions and components of the CTT as appearance validity. The present researcher cancelled four items following the notices and remarks of experts, and for the rest of the items there was concord (89%) among the experts to be without changes. The final version of the CTT consisted of 38 items. As for

the reliability of the CTT in the present study, the developer of this scale used split half method which reported  $r = 0.93$ , also by internal consistency which reported of  $r = 0.88$ . The present researcher computed the Cronbach's Alpha Coefficient which reported  $r = 0.79$ . The previous statistical techniques and values are satisfactory for the validity and reliability of the present scale (CTT).

**ii. Critical Thinking Test (Crit CTT)**

This scale was developed by James (2006), then translated into Arabic version by Rajab (2009) to test components of critical thinking which are explanation, conclusion, assumption and argument.

**Description and Scoring of "Crit CTT"**

In the beginning this scale consists of 25 multiple-choice items, then after it evaluation from the experts for the psychometric property it consists of 18 items, each item is followed by two choices (yes, no) from which the respondent is asked to choose the one that applies to him or her, the score for the two choices ranged from 1 to 2. The maximum score of this scale is 36 and the minimum score is 18. A high score means a high critical thinking level, and a low score means low critical thinking level. The time for completing of this test is 10 minutes.

**Psychometric Properties of "Crit CTT"**

The developer of this scale used many techniques in order to establish the psychometric property of this scale as concurrent validity with Calvin Test of Critical Thinking (C.T.C.T), where  $r = 0.78$ , and internal consistency whereas correlation coefficient reported  $r = 0.82-0.89$ . In this present study, the researcher verified the validity of this scale by consulting six experts and specialists in the fields of psychology from the Gulf University in Bahrain to evaluate the dimensions and components of (CTT) as appearance validity. The researcher cancelled seven items following the notices and remarks of experts, and for the rest of the items



there was concord (85.7%) among the experts to be without changes. The final version of the (CTT) consists of 18 items. As for the reliability of (CTT) in this study, the developer of this scale used test-retest method which reported  $r = 0.87$ . Also by Cronbach's Alpha Coefficient which reported  $r = 0.78$ . The present researcher used Cronbach's Alpha Coefficient which reported  $r = 0.82$ . The previous statistical techniques and values are satisfactory for the validity and reliability of the present scale (CTT).

iii. Emotional Intelligence Test (EIT)

This scale was developed by Alrabi'a (2006) in order to measure various components of emotional intelligence; self control, self awareness, achievement drive, and control of social skills.

**Description and Scoring of EIT**

In the beginning this scale consists of 48 multiple-choice items, then after it evaluation from the experts for the psychometric property it consists of 44 items, each item is followed by five choices (strongly agree – strongly disagree) from which the respondent is asked to choose the one that applies to him or her, the score for the five choices ranged from 1 to 5. The maximum score of this scale is 220 and the minimum score is 44. A high score means a high emotional intelligence level, and a low score means low emotional intelligence level. The time for completing of this test is 15 minutes.

**Psychometric Properties of EIT**

The developer of this scale used many techniques in order to establish the psychometric property of this scale as concurrent validity with Paul Test of Emotional Intelligence (P.T.E.I), where  $r = 0.82$ , also by validity of content. In this present study, the researcher verified the validity of this scale by consulting five experts and specialists in the fields of psychology from the Public Organization for Applied

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

Education and Training in Kuwait to evaluate the dimensions and components of the EIT as appearance validity. Finally, the researcher cancelled four items following the remarks of the experts, and for the rest of the items there were concord (86 %) among experts to be without changes. The final version of (EIT) consists of 44 items. As for the reliability of the EIT in the present study, the developer of this scale used Cronbach's Alpha method which reported  $r = 0.84$  and also the split-half method which reported  $r = 0.82$ . The present researcher used Cronbach's Alpha as a statistical technique which reported  $r = 0.89$ . The previous statistical techniques and values are satisfactory for the validity and reliability of the present scale (EIT).

**Units of the Agriculture Project**

The specific scholastic project of this study is an agriculture project (Rashed, Abdul-Hadi, & Foad, 2009). In this project students can invest their various abilities and skills by practising in the schools' agriculture fields the theoretical and practical aspects of the selected project. This project consists of five units, as set out in table 3.

Table 3.

Units of the Agriculture Project

Units	Subject	Time table
Unit One	<b>Fundamental Elements of Agriculture</b> 1. The soil. 2. Significant basic elements of soil. 3. Soil nature and groups. 4. Problems of agriculture soil.	14th Nov–31st Dec 2010
Unit Two	<b>Processes associated with agriculture</b> 1. Initial process. 2. Soil preparation for planting. 3. Basic elements for plant nutrition.	9 th Jan–25 th Feb 2011
Unit Three	<b>Types of agriculture</b> 1. Productive agriculture. 2. Beautifying agriculture. 3. Internal plants.	6 th March–7 th April 2011
Unit Four	<b>Agriculture in the State of Kuwait</b> 1. Agriculture Journey in Kuwait 2. Role of Agruculture and livestock wealth 3. Fruit palm cultivation in Kuwait	10 th April–5 th May 2011
Unit Five	General practical and applied lessons in schools agriculture fields.	8 th –30 th May 2011

Students attend three theory lessons per week. Moreover at the end of each lesson there are different practical and applied lessons in the schools' agriculture fields, and sometimes there are visits to commercial and private agricultural establishments in which students will find more kinds of fields, soils, trees, flowers etc., then more practical and applied experiences. At the end of the interaction between these units, with their theoretical and practical lessons, the students will have gained various agricultural experiences. It is then possible to start the second phrase of this study, which is application of the tools to students in order to study the effect of the agricultural project on them. The three tools are the creative thinking test, critical thinking test and emotional intelligence test.

**Analysis of Data and Results**

In the previous part of this study, I have already presented the statement of the study, study problems and objectives, definitions of study variables, study hypotheses, and the method. In this part of study, I will deal with the statistical devices used in this study. These included; mean, median, mode, SD, variance, skewness, kurtosis, range, minimum, maximum and the sum of study variables of the participants of girls and boys as set out in tables 4.

Table 4.  
Frequencies Statistical Analysis of Study Variables of Participants(N= 82 Girls, 75 Boys)

Statistical Aspects	Emotional Intelligence		Critical Thinking		Creative Thinking	
	Girls	Boys	Girls	Boys	Girls	Boys
Mean	140.2	138.0	27.4	27.2	133.1	129.1
Median	140.5	135.0	28.2	28.0	134.0	127.0
Mode	129.0	123.0	28.1	28.0	137.0	123.0
Std. Deviation	22.6	24.4	3.1	2.6	11.4	12.0
Variance	512.7	597.5	9.6	7.2	131.7	144.9
Skewness	.96	.52	1.1	.27	.22	.66
Kurtosis	2.7	3.2	1.9	2.6	.19	.54
Range	135	163.0	15.0	14.0	54.0	62.0
Minimum	150.0	44.0	18.0	18.0	104.0	106.0
Maximum	185.0	207.0	33.0	32.0	158.0	168.0
Sum	11502.0	10353.0	2252.0	2044.0	10915.0	9686.0

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

t-test was used in order to detect the difference between the genders (boys and girls) in the variables of the study. Table 5 below presents the mean differences across the variables.

Table 5.  
Mean Differences of the Variables between Genders

Variables	Boys		Girls		t - value
	M	SD	M	SD	
Creative Thinking	129.1	12.0	133.1	11.4	2.11
Critical Thinking	27.2	2.6	27.4	3.1	0.45
Emotional Intelligence	138.0	24.	140.2	22.6	0.42

Note: N = 75 Boys, 82 Girls

Table 5 presents t-test values for the differences between boys and girls among the variables of the study; creative thinking (t =2.11), critical thinking (t = 0.45), and emotional intelligence (t = 0.42). These values are not statistically significant at (.01) . That means there are no differences between boys' and girls' scores in the study variables. Table 6 presents mean differences between academic specialization (scientific and literary) in the variables of the present study as follows.

Table 6.  
Mean Differences between Academic Specialization

Variables	Scientific Section		Literary Section		t - value
	M	SD	M	SD	
Creative Thinking	133.3	11.9	128	11.1	2.3
Critical Thinking	27.5	2.7	27.0	3.0	0.96
Emotional Intelligence	140.0	23.1	137.2	26.3	0.72

N = 75 Boys, 82 Girls, N of Students: in Scientific Section = 93, Literary Section= 64

Table 6 presents t-values for the differences in academic specialization between the scientific and literary section of the education system among the variables of the study; creative thinking (t =2.3), critical thinking (t = 0.9), and

emotional intelligence ( $t = 0.7$ ). These values are not statistically significant at the (.01). That means there are no differences between the scores of students (the total participants) according to academic specialization (scientific section and literary section). In order to observe the inter correlation among all the variables in the study, a 3x3 correlation matrix was computed for the total participants (N=157) in order to find out the relationship between creative thinking and the other variables. The correlation coefficients were sorted separately and are presented in table 7.

Table 7.  
Pearson’s Coefficient of Correlation between  
Creative Thinking and Other Study Variables

Variables	1	2	3
Creative Thinking	-	.009	.287**
Critical Thinking		-	.234**
Emotional Intelligence			-

Note: \*\*  $P < .01$ ,  $N=157$

Table 7 presents the correlations between creative thinking and the other variables of the study for the total participants. Creative thinking was found to be positively and significantly correlated with emotional intelligence ( $r = 0.287$ ,  $p < 0.01$ ), but was not found to be related with critical thinking ( $r = 0.009$ ). Critical thinking was found to be positively and significantly correlated with emotional intelligence ( $r = 0.234$ ,  $p < 0.01$ ). To examine the effect of academic specialization (scientific or literary) and gender (males, females) on creative thinking among the total participants of the present study. I conducted ANOVA, whose effects are shown in table 8.

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

Table 8.

Summary of ANOVA for the Effect of Academic Specialization and Gender on Creative Thinking

Source of Variance	SS	Df	MS	F
Academic Specialization (A)	1423.3	1	1423.3	10.9**
Gender (B)	976.9	1	976.9	9.4**
A X B	95.8	1	95.8	.73
Error	19936.3	153	130.3	
Total	2725203.0	157		
Corrected Total	22010.6	156		

Note: \*\*\* P <0.001, N = 75 Boys, 82 Girls,

N of Students in Scientific Section = 93, Literary Section= 64

As shown in table 8, there is confident evidence that the academic specialization has a statistically significant effect on creative thinking (F= 10.9, p<0.001), as does gender (F= 9.4, p<0.001), but there is no statistically significant effect of their interaction together on creative thinking (F= 0.73). Stepwise regression analysis was conducted to find out the best set of predictors of the total participants of creative thinking among the other study variables; critical thinking and emotional intelligence. In this study and the analysis, the dependent variable is creative thinking, whereas the remaining two variables were independent variables. The independent variables were entered into the regression equation in order to predict creative thinking among the total participants. Table 9 presents the stepwise regression analysis results used to find out the best set of predictors of creative thinking of the total participants among the other study variables.

Table 9.

Summary of Stepwise Regression  
Dependent Variable: Creative Thinking

Variable	B	Beta	SE	t-value	R	Sig.	R <sup>2</sup>
Emotional Intelligence	.13	.28	.03	3.7	.28	0.001	.8

Note: N = 157, \*\*\* P<0.001

Table 9 reveals that when the independent variables are entered in the regression model with creative thinking as a criterion for the total participants, the most important independent variable to have an effect on creative thinking is emotional intelligence which alone contributed .8 percent of the variance. The remaining variable was not considered to be an important predictor which is why it is not shown in table 9. To examine the effect of the project method theory of Kilpatrick in the area of scholastic agriculture on the study variables, t-test was used in order to detect the difference between pre and post scores of the tests for the study variables of creative thinking, critical thinking and emotional intelligence among the total participants. Table 10 presents the mean differences between the scores, pre- and post administration for the total participants in the study variables as follows.

Table10.  
Mean Differences between Scores,  
Pre- and Post Administration

Variables	Pre-Administration		Post-Administration		t - Values
	M	SD	M	SD	
Creative Thinking	131.2	11.8	135.5	15.7	107.9***
Critical Thinking	27.3	2.9	28.2	2.5	136.3***
Emotional Intelligence	138.9	24.4	142.0	18.5	95.9***

Note: N = 157, \*\*\* p<0.001

As shown in Table 10, there are statistically significant differences between the scores of the tests on the study variables pre- and post administration; creative thinking (t = 107.9, p<0.001), critical thinking (t = 136.3, p<0.001), and emotional intelligence (t = 95.9, p<0.001). That means there is a significant positive effect from applying and working with the project method on the study variables.

### **Interpretation of Results and Discussion**

The project method possesses a characteristic that distinguishes it from other proven didactic procedures of the new education movement. Unlike the Dalton Plan, Winnetka, Decroly or María Montessori, the project method was ‘fatherless’; its origins cannot be traced clearly to any one author. This condition was made especially apparent at times owing to the reluctance of a number of North American pedagogues – Dewey in particular – to claim paternity (Ronald, 2010). Eskrootchi and Oskroch (2010) assert that there is more opportunity in project method for collaboration during the experiment and simulation, hence more interaction between students, and also with the teacher. This finding also supports Schutte’s (1997) suggestion that the enhanced levels of interaction with other students and the teacher results in greater efficacy of computer-mediated communications.

In order to study the first and second hypotheses of this study, t-test was used in order to detect the difference between the gender and academic specialization in the study variables. In tables 5 and 6 we can see that all t-test values in both previous tables are not significant, which means that both males’ and females’ scores and those of students in the two academic specializations, are similar in the study variables. To discuss and analyse these results, I am aware that these results reflect the dimensions and the reality of the environmental, educational and social circumstances and influencing factors surrounding the present participants represented in family and prevailing culture. Such influencing factors impose on the study participants a specific nature and type of thinking, behaviours, social interaction, selection of specific academic specialization, and academic achievements. There is no doubt that as these results suggest, there are no differences between the genders



or academic specializations in the study variables, and that means the effect and the impact of scholastic, socially and familial environments with various circumstances of the study participants in present study are equal or at least similar. The scholastic factors and circumstances include students' activities, scholastic curricula, the dimensions and the nature of interaction between the students and their teachers...etc. The social factors and circumstances are the quantity and quality of the social organizations and activities etc. The familial factors and circumstances are the familial nature of parental upbringing and education, the family atmosphere, the nature of interaction between the parents and their family members...etc. These effects and impacts of the surrounding environment – scholastic, social and familial – are similar or equal between the males and females in the present study. That is why there are no differences between the genders in the study variables, based on the result of t-test, nor differences between the academic specializations. These results offer specific indicators and reflections – the contents, cognitive traits and personal skills whether in the curriculum of the scientific or literary major –which give us the same educational outcomes and results, even for various students' activities which belong to these sections, and their impacts were equal with its reflections on students' skills and abilities whether in creative thinking or critical thinking or emotional thinking, that is why the results of t-test values indicated that there are no differences between academic specializations. This result leads to rejection of the first hypothesis of the present study, which stated that there will be a difference between gender scores (males, females) in the variables of the present study; creative thinking, critical thinking and emotional intelligence. Moreover, it leads to rejection of the second hypothesis of present study, which stated that there will be differences between the scores of

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

students with different academic specializations (scientific and literary) in the previous variables.

The third hypothesis of present study mentioned that: there will be statistically positive correlations between creative thinking and critical thinking among the total participants of this study. To clarify and determine the nature and direction of this relationship, I used Pearson Coefficient of Correlation Technique to determining the type of relationship between the selected variables. As shown in table 7, the finding showed that there is no statistically significant correlation between creative thinking and critical thinking among the total participants of the present study. This result leads to rejection of the third hypothesis of the study. There are some studies its results are the same as the results for the third hypothesis of the present study (Galton as cited in Gardner, 1993; Flora as cited in Henz, 1992; Matt& Rick, 2001; Yang& Lin, 2004). Some studies have asserted that there is a positive correlation between creative thinking and critical thinking (Bizman, 1990; Majdi, 1986). Isaksen (1993) mentioned that there are many studies on logic which conclude that there is relationship between creative thinking and critical thinking, as the general situation needs both creative thinking and critical thinking to be more actively coordinated and interacting together at the level of facts processing. However, Michelli (1991) asserted that there are differences between creative thinking and critical thinking – creative thinking is free thinking, but critical thinking is analytic and logical thinking. Other studies, in contrast, have mentioned that creative thinking and critical thinking are opposed to one another (Toren, 1993), while others acknowledge complementary functioning (Bleedorn, 1993), and it is also argued that there is a problem in attempting to distinguish the two separate kinds of thinking. It is suggested simply that the focus

should be on good thinking in the context of the rules, methods and criteria of specific domains (Bailin, 1993). For example, a number of researchers emphasize that critical thinking involves not only logical but also creative (intuitive) aspects (Meyers, 1986; Brookfield, 1987; Garrison, 1991). Critical thinking requires the understanding of a broad knowledge base, the ability to identify inferential relationships, examining the credibility of statements, the search for elements to draw conclusions, and the ability to explain the reasoning to get to this point. This analysis process is quite different from the other literature that had more parallels to creative thinking processes (Marrapodi, 2003). Bloom's taxonomy (as cited in Marrapodi, 2003) is often referenced, using the higher level thinking skills in order to connect to critical and creative thinking. He mentioned that critical thinking involves logical thinking and reasoning while creative thinking involves creating something new or original. While critical thinking can be thought of as more left brain and creative thinking more right brain, they both involve 'thinking'. Brookfield (1987) advocates the process of a critical thinker's examination of information by looking at the epistemological, experiential, communicative and political perspectives of the source information. Wycoff (as cited in Marrapodi, 2003) considers creativity to be a natural ability of every person and the skill of developing a number of ideas and connecting diverse concepts can be enhanced through training and exercise. It is up to the leadership to provide the direction and stimuli to spur creativity. She names nine components of personal innovation. Several of these overlap with steps involved in the critical thinking process. The Saskatchewan School Board (as cited in Jean, 2003) defines both creative and critical thinking as qualities of good thinking processes and as types of thinking. Creative thinking is generally

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

considered to be involved with the creation or generation of ideas, processes, experiences or objects; critical thinking is concerned with their evaluation. So they are interrelated and complementary aspects of thinking. Helgeson (1993) suggests that there are three ingredients for teaching critical and creative thinking to children through the content areas; using relevant, real world issues, providing structure to solve problems and organize information, and a nurturing classroom environment. This thinking parallels with many of the suggestions on fostering creativity in the workplace. The environment must be supportive of the process. Ragsdell (2001) writes about 'critical creativity' using a process of critical systems thinking. Being critical involves encouraging complementarism, sociological awareness, human well-being and emancipation. Complementarism could be seen in an appreciation that creativity can arise from a number of different origins, from conflict or from natural personal qualities. Critical creativity attempts to further the emancipation of individuals through design and debate. Whether there are differences or consistency between the results of studies as mentioned before, the directions and the nature of these results depend on many situational, technical and personal factors, and circumstances such as the participants, tools, gender, socioeconomic variables, demographic variables, individual differences, cognitive traits and conceptualization stimulations.

According to the fourth hypothesis in present study that mentioned: there will be a statistically positive correlation between creative thinking and emotional intelligence among the total participants of this study. I used Pearson's Coefficient of Correlation to determine the direction of the relation between the selected variables. As shown in table 7, and as is obvious among correlation values, there is a positive relationship between creative thinking and

emotional intelligence. As this result supports the fourth hypothesis. There are some related studies that reached the same results between the two previous selected variables (David, 2005; Fatema, 2009). The components and abilities of creative thinking and emotional intelligence do not work in different ways or directions but together. So if we want to gain higher quality of achievements and goals, we must encourage integration and interaction between these components. It is also highly probable that some components/habits of mind come to the fore at different times and for different purposes in development. We all know, for instance, children who are talented and creative in drawing or painting whose social and physical abilities are much more rudimentary, or the young child who shows little aesthetic interest, only to blossom in adolescence. We also know youngsters who, experiencing times of emotional distress, may either endow their creative practice with heightened feelings or withdraw from any such activity entirely (Judith, 2009). Gardner (1983) claims that humans do not have just one kind of intelligence, as traditionally assumed, which can be assessed by standardized tests such as the Stanford-Binet IQ test. He states that we have several (seven) different kinds of intelligences including; musical, social or interpersonal, emotional or intrapersonal, logical mathematical, linguistic and visual-spatial. Creative thinking and emotional intelligence together can be seen as fundamental capacities which can create a state of balance which is at the same time, paradoxically, a constant state of flux. The development and enhancement of these capacities in a person enables them to be able to adapt and adjust to changing realities, whether those realities are other people, ideas or environmental (Victoria, 2000). We can realize that emotional intelligence can facilitate decision making, problem solving and the pursuit of important life goals. For

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

instance, emotional intelligence can facilitate creative thinking, which in turn can expand one's options in making important life decisions (Sam, 2012). Victoria (2000) mentioned that emotional intelligence is essential to creative thinking in several important ways. First, the discipline and motivation that it takes to learn and master the essentials of a given domain of inquiry demands the ability to tolerate frustration and ambiguity, as well as the ability to delay gratification. Second, the ability to put a problem aside and let it incubate without having an immediate solution also demands tolerance for frustration, ambiguity and delayed gratification. Third, the ability to withstand the upheaval caused by questioning belief systems and assumptions, demands these emotional abilities as well. Therefore, emotional intelligence is crucial for the utilization of this skill in a healthy and productive way. We can realize that emotional intelligence provides a basis for the kind of creative thinking and problem solving necessary in mastering a skill and developing the capacity for intellectual reasoning. The same kind of thinking is also needed to build one's emotional intelligence abilities and then develop these abilities, in order to achieve this point by effective ways with high quality and guarantee. As the matter of fact, he/she must gain and develop various creative components such as: fluency, originality, flexibility...etc. This is because, as I mentioned before, the components of the previous variables are not working in different ways or directions but working together, with their interaction, perfection and complementary processes reaching a specific point with higher levels of outcomes. So there is a direct relation between creative thinking and emotional intelligence abilities and components. Goleman (1998) considered school as one place which can work to compensate children's deficiencies in emotional and creative

competence. As such schools face the challenge of teaching as well as nurturing the emotional and creative skills of children. Bruner (1996, p.23) mentioned in his book “The Culture of Education” that “education is not just about conventional school matters like curriculum or standards or testing”. What we resolve to do in school only makes sense when considered in the broader context of what society intends to accomplish through its educational investment in the young. How one conceives of education, according to Bruner, is a function of how one conceives of the culture and its aims, professed or otherwise. The contemporary educational system in the United States appears in some aspects to be inadequate for the purpose of effectively preparing students for success in the twenty-first century. One possible solution has been presented which involves the implementation of certain theoretical concepts of creative thinking and emotional intelligence. It has been posited that these ideas can be inculcated into the already existing curriculum through changes in teaching style and methods of testing without altering the learning and mastery of the basic skills in a given domain of knowledge (Victoria, 2000).

The fifth hypothesis of present study mentioned that: there will be significant effect and interaction of academic specialization and gender on creative thinking among the total participants of this study. To test and detect the effect and interaction between academic specialization and gender on creative thinking among the study participants, I used ANOVA as a suitable technique of statistical analysis. As shown in table 8, the values of ANOVA for the effect (separately) of academic specialization (literary and scientific) and gender (males and females), and also their interaction together, on creative thinking among the total participants. It is obvious that there is a clear effect of academic specialization, but only on creative thinking and

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

gender, but together there is no specific effect of their interaction on creative thinking. This result supports and confirms just the first part of the fifth hypothesis that: there is an effect of academic specialization and gender on creative thinking among the study participants, but rejects the second part of the fifth hypothesis that: there is interaction between academic specialization and gender on creative thinking among the study participants. Thus whether a student is in the literary or scientific section of the secondary education major system can have an effect on their creative thinking. Also gender can have an effect on creative thinking. Each of these variables can have an effect on creative thinking without their existence or interaction together, because wherever or whenever both of these previous variables occur together, they have no effect on creative thinking regarding to the study participants. That is why we must take into consideration in future educational visions, plans and strategies these technical points when determining scholastic programmes and activities in the field of creative thinking. This result of the fifth hypothesis needs more investigation and research in future studies with wider participants for the results to be more accurate and valid. It needs to reflect in the end all cognitive and personal dimensions and traits of the selected participants, and to realize in the final vision the reasons why the interaction between academic specialization and gender on creative thinking has no effect. The answer to this question will be very important in our educational future and will support our goals and achievements to be more realistic.

The sixth hypothesis of this study mentioned that: emotional intelligence will be the most important predictor of creative thinking among the total participants of the present study. To examine and clarify the possibility of predicting the best variables of creative thinking, I used a



specific statistical analysis method –Stepwise Regression Analysis– with creative thinking as the dependent variable and other variables as independent variables. As shown in table 9, there is convincing evidence that emotional intelligence alone is statistically significant as a predictor of creative thinking among the total participants of the current study, while there is no statistical significance for critical thinking to predict creative thinking. This result of Stepwise Regression Analysis supports the results of the third and the fourth hypotheses of the current study about the direction of relationship of creative thinking with critical thinking and emotional intelligence. As I mentioned before, with more details of analyses and discussions on the fourth hypothesis, there is a strong relationship between creative thinking and emotional intelligence regarding their components and interaction together. That is why emotional intelligence is the main predictor of creative thinking. So whenever or wherever we see students with emotional intelligence skills and abilities, we can predict that they also have creative thinking abilities, and that they will be creative people drawing on their emotional intelligence skills and abilities. Emotional intelligence is a very important variable as the main means to discover and predict creative students and educate them by various educational activities and programmes in schools. This result of Stepwise Regression Analysis supports the sixth hypothesis of the current study that emotional intelligence is the most important predictor of creative thinking among the total participants of the present study. As should be clear from the above discussion, emotional intelligence provides a basis for the kind of creative thinking and problem solving necessary in mastering a skill and developing the capacity for intellectual reasoning. In addition, the capacities enumerated as part of emotional intelligence allow creative thinking to be utilized

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

in interpersonal relationships in the sense of facilitating the capacity for empathy, perspective-taking, putting aside one's own needs in the face of a greater situational need, the ability to 'read' the context of a situation and making appropriate choices (Victoria, 2000). We can observe the interactive and predictive relationship between emotional intelligence and creative thinking not only in schools, but also in various situations and environments. Sam (2012) asserted that emotional intelligence can be applied in various workplaces to facilitate decision making, problem solving, and the pursuit of important life goals. For instance, emotional intelligence can facilitate creative thinking, which in turn can expand one's options in making important life decisions. Further research has indicated that an emotionally intelligent person is likely to be skilled in two key areas within the emotional competence framework; namely 'personal competence' – how one manages the self –, and 'social competence' – how one manages relationships (Renuka, 2009). While the former essentially implies self-awareness (of internal states, preferences, resources, and inhibitions), self-regulation (of internal states, impulses and resources) and motivation (traits that facilitate accomplishing goals); the later comprises empathy (the ability to understand others' emotions, and others' talents or skills needed to influence, communicate, lead, develop others, manage conflicts, promote team work, or catalyse change), and social skills such as expertise in inculcating desirable responses in others (Bhalla & Nauriyal, 2004). There is thus no doubt that these abilities and skills of emotional intelligence will support and enhance various components and attitudes of creative thinking on different educational levels and whether in schools or other social environments and situations.

The seventh hypothesis of present study mentioned that: there will be an effect of the project method in the academic discipline of agriculture on the study variables; creative thinking, critical thinking and emotional thinking among the total participants of present study. To test and determine the effect of project method on the variables in this study. I used t-test as the method of statistical analysis to compare pre-and post scores of the present participants in the study variables. As shown in table 10, that all t-test values are statistically significant, which means that there is a real and actual positive effect of the project method on the study variables. This result supports and confirms the seventh hypothesis of the current study. This result also enhances and supports the ideas of the progressive education movement championed by Dewey and Kilpatrick that places the focus and emphasis on the importance of scholastic practice and activities to discover students' various skills, abilities, and attitudes and then educate them by their interaction and involvement together in various scholastic programmes and activities, with the space and freedom of a democratic atmosphere and discussions of their multiple thoughts and opinions (Dewey, 1938; Kilpatrick, 1936). Sallee (2010) researched the impact of the project method on young children with disabilities or at-risk children. In the study reported by Salle, mixed methods were used to study the impact of the project method on the social interactions, challenging behaviours, and language development of eight selected children in two inclusive classrooms. The child participants were two children with IEPs and two identified as at-risk from each class. Adult participants were six professionals who received high quality support to implement the project method. The adults were interviewed prior to the beginning of the study and again during and after implementation. Choice time observations were videotaped

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

twice per week over 14 weeks in order to assess the impact of the project approach on play levels. Results revealed that social interactions, challenging behaviours, and vocabulary, were positively affected by implementation of the project method. There is thus no doubt that application of the project method in the school environment will support students' abilities in creative thinking, critical thinking, and emotional intelligence, and probably that the positive effect of the project method will apply not only to these previous variables, but also on other related variables. There are several studies its results asserting the importance and effectiveness of the project method and such scholastic activities for students. Their results offer strong support and confirmation of our seventh hypothesis, and some of these studies already mentioned in the review of literature part of this study (Min& Yu-Ping, 2002; Yvonne, 2003; Gregory, James& Tracy, 2005; Iris& Matthew, 2007; Sola& Ojo, 2007; Pamela, 2008; Savich, 2008; Benek& Ostrosky, 2009; Sallee& Michaelene, 2009; Yvonne& Josefina, 2009; Bennett, 2010; Dominguez& Jaime, 2010). Advocates of the project method do not suggest that project work should constitute the whole curriculum. Rather, they suggest that it is best seen as complementary to the more formal, systematic parts of the curriculum in the elementary grades, and to the more informal parts of the curriculum for younger children (Kilpatrick, 1936; Beneke, 2000; James, Robert, Glen, Lois, & Karen, 1986). Project work is not a separate subject, like mathematics; but it provides a context for applying mathematical concepts and skills...etc, (Liliana, 1994). Eskrootchi and Oskroch (2010) conducted a study to test the efficacy of project work among 72 students in a quasi-experimental research design. The title of their study was 'A study of the efficacy of project-based learning integrated with computer based simulation (STELLA)'. This

study suggests that students learn best by actively constructing knowledge from a combination of experience, interpretation and structured interactions with peers and teachers when using technology. Simulations do not work on their own, there needs to be some structuring of the students' interactions with the simulation to increase effectiveness. The purpose of this study was to investigate the effectiveness of project-based learning in a technology-rich environment. A science project on land-use in watersheds, that takes advantage of the internet, was developed and integrated with a simulation software package, structural thinking and experiential learning laboratory, with animation (STELLA) developed to promote deeper understanding of land-use by students. Statistical analyses showed that students who participated in the manipulation of the experimental model of the watershed experiment and the STELLA simulation performed best on understanding the watershed concept. More specifically, the results of this study 'indicated that learning in the online PBL group did not have a significant effect on the content knowledge acquisition scores but it had a significant effect on increasing the critical thinking skills' (Eskrootchi & Oskrochi, 2010, p. 242). Children have a much wider range of capabilities than they have usually been permitted to show in the regular classroom. In order to show these capabilities, they need learning environments that are responsive to the many individual differences that influence learning. The project method provides one way to introduce a wider range of learning opportunities into the classroom and has a developmental basis. Projects can expand a child's learning (Judy, 2010). Jena (2011) examined high school mathematics teachers' perceptions regarding the need for a constructivist practice resource outlining three constructivist teaching methods (project, thematic, and reflective writing)

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

within integrated mathematics classrooms in an inner-city school in the southern USA. The research question involved identifying the specific unmet needs faced by these mathematics teachers in providing practical applications of constructivist teaching practices to help students learn through a new integrated mathematics curriculum. The Constructivist Practice Resource Needs Assessment (CPRNA) was used to map a prioritized list of needs based on the responses of 33 of 102 mathematics teachers in this system. Items were ranked using descriptive statistics and then integrated and aligned to a thematic analysis of other research on constructivist practice techniques. These findings were then used to develop a new resource to support local mathematics instruction. The study contributes to social change by informing best practice in mathematics education pedagogy that incorporates more constructivist teaching approaches, which may lead to better prepared students and improved student achievement in the integrated mathematics classroom. Generally, the positive effects and impacts through practising the project method will reflect not only on the cognitive and personality aspects, but also on the academic performance which is the main focus from the student's side whether on the academic level of school or university. For example, Zeegers (2001) found a positive relationship between a deep methods to learning and academic performance in university law undergraduates, as did Snelgrove and Slater (2003) with nursing students. A recent trend in the learning paradigm emphasizes the socio-cultural aspects of learning which insist that learning is inherently social and situated (Palincsar, 1998), incorporating dynamic processes of individual and social construction of knowledge building (Zhang, Scardamalia, Lamon, Messina & Reeve, 2007). Even though knowledge construction is basically a cognitive process, knowledge is

developed through interaction between the knower and the known rather than cumulated in individual minds only (Van Aalst, 2009). Project method is an exemplary model of the social learning perspective (Hmelo-Silver, Chernobilsky & Jordan, 2008). In the project method students with different levels of knowledge and prior experience work together in small groups towards a common goal which is pertinent to their real contexts. Although the project method might be implemented either in individual or in collaborative contexts, considering the notion of Dewey's social aspects of learning, there is no doubt that learners are likely to achieve better outcomes from the project method in collaborative contexts. They are not only able to co-produce project artifacts but also able to co-construct knowledge through social interaction and peer assistance in collaborative project work (Heek, Kyu & Youngsoo, 2010). Stephanie (2010) asserted that project-based learning promotes social learning as children practice and become proficient with the twenty-first-century skills of communication, negotiation, and collaboration. That is why the project method will be one of the most important educational methods to apply in Kuwaiti schools if we want to achieve a higher quality of educational outcomes in various levels

### **Recommendations and suggestions for further research**

Over many years of research and development, project method has continued to be a topic of considerable interest and concern to educators as well as to social, educational and behavioural scientists and researchers, regarding its positive effects not only among students, but also among all the sectors in the society. Unfortunately, from my point of view I cannot see these interests or a focus on project method in Arabian educational environments or culture, because it depends on the educational system whether we are still following traditional educational system, or we do

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

not have a greater educational vision in the future or we do not want to open our educational windows on the educationally developed countries...etc. The Arabian educational culture and system needs a strong educational revolution to change and renew the traditional educational methodologies and curricula to make them more interesting and attractive to discover, enhance and support various whether creative or other thinking skills and abilities to create generations that can build and develop their societies. We cannot achieve our educational strategies or build system of creative abilities in our students without adopting a specific educational system or methodology in order to translate our objective to real life. Project method is one of these systems that will support our educational system to enrich scholastic outcomes by its educational and psychological dimensions and effects. Many previous and related studies, as mentioned before have asserted the importance of the project method to foster creative personal with critical and emotional abilities. In the light of my experience, the following recommendations and suggestions for further researchers could be made as follows:

- i. Develop studies of project method training programme for children and study its effect on various aspects of children's cognitive and personal abilities. It has been found in many studies that training enhances the outcomes;
- ii. Study children's creativity as related to their parents' creativity in order to determine the hereditary aspect of creative, critical and emotional abilities, then the academic implementations of project method theory to explore then support this aspect;
- iii. Study the creativity of the teacher as related to the creativity of the students and determine the positive aspects of teacher-student interactions towards the development of the educational outcomes;
- iv. Develop more tools by conducting various psychological and educational studies for measuring scientific, artistic and literary aspects in project method that will support



- educators and researchers to classify talented and creative children and adolescents regarding to their abilities;
- v. Study the environment of family and school; the quality of teachers, extracurricular activities and project methods performed by the students as related to their creativity, critical and emotional development;
  - vi. Conduct cross-cultural studies on the project method among children, adolescents and adults in order to find out whether the cultures of different countries have anything to do with the development of creative, critical and emotional abilities;
  - vii. Conduct longitudinal studies for determining personal, cognitive and demographic characteristics that contribute to the project method among children and adolescents;
  - viii. Conduct studies to investigate the effect of the project method on development and support of some social values and variables as leadership, volunteering, cooperation;
  - ix. Conduct further studies to investigate the effect of project method theory on development of the variables of current study – creative thinking, critical thinking and emotional intelligence – but through bigger participants and different educational and demographic characteristics such as nationality, educational background of parents, socioeconomic background, culture, age, gender, environment, academic achievement, extracurricular activities, and achievement motivation;
  - x. Conduct predictive studies on the project method to determine the best set of variables as predictors of creative thinking, critical thinking and emotional intelligence; and

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

REFERENCES

- Alrabi'a, T. (2006). Emotional Intelligence Test. Unpublished Test, Amman: Al-Ershad Press.
- Apel, H. J., & Knoll, M. (2001) Project learner, foundation and tutorials. Munchen: Oldenbourg Verlag.
- Bailin, S. (1993). Problems in conceptualizing good thinking. *American Behavioral Scientist*, 37(1), 156-163.
- Balasoorya, C. D., Hughes C., & Toohey S. (2009). Impact of a new integrated medicine program on students' approaches to learning. *Higher Education Research & Development* 28(3), 289-302.
- Barlex, D. (2002). The relationship between science and design and technology in the secondary school curriculum in England. In: I. Mottier, & M. J. De-Vries (Eds.), *Proceedings of the PATT12 Conference*, 3.
- Beneke, S., & Ostrosky, M. M. (2009). Teachers' views of the efficacy of incorporating the project approach into classroom practice with diverse learners. *Journal of Early Childhood Research & Practice*, 11 (1), 12-21,
- Bennett, S. (2010). Investigating strategies for using related cases to support design problem solving. *Educational Technology Research and Development*, 58 (4), 459-480.
- Bhalla, S., & Nauriyal, D. K. (2004). Emotional intelligence: The emergency paradigm in personnel dynamics. *Psychological Studies*, 49 (2), 97-106.
- Bizman, B. (1990). *Creative mind*. New York: Basic Book.
- Bleedorn, B. D. (1993). Toward an integration of creative and critical thinking. *American Behavioral Scientist*, 37(1), 10-2.
- Boaz, S. (2010). Do extra-curricular activities in schools improve educational outcomes? A critical review and meta-analysis of the literature. *International Review Education*, 56 (5-6), 591- 612.
- Bronfenbrenner, U., & Morris, P. (1998). The ecology of developmental processes. In R. M. Lerner (Ed.), *Handbook of child psychology. Theoretical models of*

- human development (5 ed., Vol. 1, pp. 993-1028). New York: J. Wiley.
- Brookfield, S. D. (1987): *Developing critical think: Challenging adult to explore alternative ways of thinking and acting*. San Francisco: Jossey Bass Publishers.
- Brown, B. B., & Theobald, W. (1998). Learning contexts beyond the classroom: Extracurricular activities, community organizations, and peer groups. In K. Borman & B. Schneider (Eds.), *The adolescent years: Social influences and educational challenges: Ninety-seventh yearbook of the National Society for the Study of Education, Part I* (pp. 109-141). Chicago, IL: The National Society for the Study of Education.
- Bruner, J. (1996). *The culture of education*. Cambridge, Massachusetts: Harvard University Press.
- Clark, A. (2006). Changing classroom practice to include the project approach. *Journal of Early Childhood Research & Practice*. 8 (2). Retrieved Jan 13, 2011, from <http://www.eerp.uiue.edu/v8n2/clark.html>.
- Collins, A., Brown, J. S., & Newman, S.E. (1989). Cognitive apprenticeship: Teaching the craft of reading, writing, and mathematics. In L. B. Resnick (Ed.), *Knowing, learning and instruction: Essays in honor of Robert Glaser* (pp. 453-494). Hillsdale, NJ: Lawrence Erlbaum Associates.
- David, W. (2005). Self-perceived creativity, family hardiness and emotional intelligence of Chinese gifted students in Hong Kong. *Journal of Secondary Gifted Education*. 16, 47-59.
- David, W. (2007). *Encyclopedia of social sciences*. Colorado: Colorado University Press.
- Dewey, J. (1916). *Democracy and education*. New York: The Macmillan Company.
- Dewey, J. (1938). *Experience and education*. New York: Macmillan.

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

- Dominguez, C., & Jaime, A. (2010). Database design learning: A project based approach organized through a course management system. *Journal of Computers & Education*, 55(3), 1313 - 1320.
- Doppelt, Y. (2000). Developing pupils' competencies through creative thinking in technological projects, Paper Presented to The 28th Israel Conference on Mechanical Engineering, Ben-Gurion University of the Negev Beer-Sheva, Israel.
- Downing, K., Kwong, T., Chan, S., Lam, T., & Downing, W. (2009). Problem-based learning and the development of meta-cognition. *Journal of Higher Education*, 57(5), 609-621.
- Eccles, J. S., Lord, S., & Buchanan, C. M. (1996). School transitions in early adolescence: What are we doing to our young people? In J. A. Graber & J. Brooks-Gunn (Eds.), *Transitions through adolescence: Interpersonal domains and context* (pp. 251-284). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Edwards, G. K. (2012). *Teacher and new globalization*. Cape Town: JS Publishers.
- Eskrootchi, R., & Oskroch, R. (2010). A study of the efficacy of project based learning integrated with computer-based simulation- STELLA. *Journal of Educational Technology & Society*, 3(1), 236-245.
- Fatema, B. (2009). Intuition in relation to creative motivation, emotional intelligence and achievement motivation among secondary school adolescents. *Indian Journal of Social Science Researches*, 6 (2), 118-127.
- Garrison, D. R. (1991). Critical thinking and adult education: A conceptual model for developing critical thinking in adult learners. *International Journal for Lifelong Education*, 10, 287-303.
- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.
- Gardner, H. (1993). *Multiple intelligences: The theory in practice*. New York: Basic Books.

- Goleman, D. (1998). What makes a Leader? *Harvard Business Review*, 76 (6), 93-102.
- Gordon, A. M., & Browne, K.W. (2004). *Beginnings & beyond: Foundations in early childhood education*. Clifton Park, New York: Delmar Learning.
- Grady, R., & Julie, F.H. (2007). The project method in agricultural education: Then and now. *Journal of Agricultural Education*, 48 (3), 46 – 56.
- Gregory, A. K., James, O. R., & Tracey, R. R. (2005). Evaluation of the ecological, futures, and global (EFG) curriculum: A project based approach. *Journal of Education*, 125 (4), 652- 662.
- Guilford, J. P. (1959). *Personality*. New York: McGraw Hill.
- Heeok, H., Kyu, Y., & Youngsoo, K. (2010). Exploratory study on the patterns of online international and knowledge co-construction in project based learning. *Journal of computer and Education*, 55(3), 1383-1396.
- Helgeson, L. J. (1993). Promoting creativity & critical thinking with science. *Journal of Teaching PreK- 8*, 23(5), 12.
- Helm, J. H., & Katz, L. G. (2001). *Young investigators: The project approach in the early years*. New York: Teacher College Press.
- Henz, G. (1992). *Patterns for thinking, pattern for transfer: Cooperative team approach for critical and creative thinking in the class room*. Washington: Skylight Press.
- Hmelo-Silver, C. E., Chernobilsky, E., & Jordan, R. (2008). Understanding collaborative learning processes in new learning environments. *Journal of Instructional Science*, 36(5–6), 409–430.
- Holland, A., & Andre, T. (1987). Participation in extracurricular activities in secondary school: What is known, what needs to be known? *Review of Educational Research*, 57(4), 437– 466.
- Iris, M. T., & Matthew, W. T. (2007). Project based learning approach to shale diagnosis: A better avenue to the big

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

- picture. *Journal of Geoscience Education*, 55 (4), 289-298.
- Isaksen, S. (1993). An ecological approach to creative research. Profiling for creative problem solving. *Journal of Creative Behavior*, 27, 149- 170.
- James, T. (2006). *Critical Thinking Test*. Unpublished Test, California University: PS Press.
- James, B. H., Robert, E. N., Glen, E. F., Lois. G. H., & Karen, M. Q. (1986). *Employ the project method*. Ohio State University, Center for Research in Vocational Education.
- Jean, M. (2003). Critical thinking and creative. An overview and comparison of the theories. Retrieved June 22, 2011, from <http://www.wenku.aidu.com/view/639ae5fb770bf78a652954ba.html>.
- Jena, M. R. (2011). *A research-based approach for developing resources for the integrated mathematics classroom*. Unpublished Ph.D Thesis, University of Walden, U.S.A.
- Jenny, M., & Catherine, S. (2011). *Active learning in primary school. A case study approach*. London: Pearson.
- Judith M. B. (2009). Creative intelligence and creative practice. *Journal of Studies in Art Education*, 50 (4), 323- 338.
- Judy, B. (2010, November 17). *Making meaning: The project method*. Tokyo Family Magazine, p.3.
- Katz, L. G. (1994). Images from the world: Study seminar on the experience of the municipal infant – toddler centers and preprimary schools of Reggio Emilia, Italy. In L. G. Katz & B. Cesarone (Eds.), *Reflections on the Reggio Emilia approach* (pp. 7-19). Champaign, IL: ERIC Clearinghouse on Elementary and Early Childhood Education.
- Katz, L. G. (1998). What can we learn from Reggio Emilia? In C. Edwards, L. Gandini & G. Forman (Eds.), *The hundred languages of children: The Reggio Emilia approach – advanced reflections* (pp. 27-48). Greenwich, C. T: Ablex.

- Katz, L. G., & Chard, S. C. (1989). *The project approach*. Norwood, NJ: Ablex.
- Katz, L.G., & Chard, S. C. (2000). *Engaging children's mind: The project approach*. Norwood, NJ: Ablex.
- Kilpatrick, W. H. (1918). The project method. *Teacher College Record*, 19(4), 319 – 335.
- Kilpatrick, W. H. (1936). *Remaking the curriculum*. New York: New Son.
- Kleiber, D. A. (1999). *Leisure experiences and human development: A dialectical interpretation*. New York, NY, USA: Basic books, Inc.
- Liliana, G. K. (1994). The project method. *Eric Digest Archive*. Retrieved July 28, 2011, from <http://www.ceep.crc.illinois.edu/ecearchive/digests/1994/lk-pro94.html>.
- Linda, E. (2007). *Critical thinking*. Retrieved March 5, 2011, from [http://www.criticalthinking.org/abducts/define\\_critical\\_thinking.cfm](http://www.criticalthinking.org/abducts/define_critical_thinking.cfm).
- Mahoney, J. L., & Stattin, H. (2000). Leisure activities and adolescent antisocial behavior: The role of structure and social context. *Journal of Adolescence*, 23, 113-127.
- Majdi, A. (1986). *The cognitive constructive treats of creative achievement*. Unpublished Doctoral Thesis, Education Faculty, Tanta University, Cairo.
- Marlow, E. (2000). Philosophy perspectives in teaching social studies. *Journal of Instructional Psychology*, 27 (2), 112 – 122.
- Marrapodi, J. (2003). *Critical thinking and creativity: An overview and comparison of the theories*. Unpublished doctoral dissertation, Capella College, Rhode Island. Retrieved June 23, 2011, from <http://www.applestar.org/capella/critical%20thinking%20andcreativity.pdf>.
- Matt, B., & Rick, R. (2001). Relationship between critical and creative thinking. *Journal of Southern Agricultural Education Research*, 51(1), 173-188.

**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

- Mayer, J. D., Caruso, D., & Salovey, P. (1999). Emotional intelligence meets traditional standards for an intelligence. *Journal of Intelligence*, 27, 267-298.
- Meyers, C. (1986). *Teaching students to think critically. A guide for faculty in all disciplines*. San Francisco: Jossey-Bass.
- Michelli, O. (1991). Critical thinking as creativity. *Journal of Institute for Critical Thinking Resource*, 4 (5), 3-10.
- Min, L., & Yu-Ping, H. (2002). Middle school students as multimedia designers: A project-based learning approach. *Journal of Interactive Learning Research*, 13 (4), 311-321.
- Moursound, D. (2002). *Project – based learning: Using information technology*. Canada: ISTE.
- Oelkers, J. (1997). How to define and justify scientific literacy for every one. In W, Graber& C, Bolte, C. (Eds.), *Scientific literacy: An International Symposium (Sep 9th – 12th)* (pp. 87-101), Institute for Science Education at the University of Kiel.
- Palincsar, A. S. (1998). Social constructivist perspectives on teaching and learning. *Annual Review of Psychology*, 45, 345–375.
- Pamela R. (2008). The project approach: An appreciation for the constructivist theory. *Forum on Public Policy, A Journal of the Oxford Round Table*, 26 (1), 1-20.
- Papert, S. (1980). *Mind storms, children, computers and powerful ideas*. New York: Basic Books.
- Paul, T. (2012). *How children succeed*. New York: HMH Publishing Company.
- Polychronopoulou, A., & Divans, K. (2009). Dental students' perceived sources of stress: A Multi-country study. *Journal of Dental Education*, 73(5), 631-639.
- Prince, M., & Felder, R. (2007). The many faces of inductive teaching and leaning. *Journal of College Science Teaching*, 36(5), 14–20.
- Ragsdell, G. (2001). From creative thinking to organizational learning via systems thinking? An illustration of critical





**The Effect of the Project Method on the Development of Creative Thinking, Critical Thinking and Emotional Intelligence Among Secondary School Students in the State of Kuwait**

---

- Snelgrove, S., & Slater, J. (2003) Approaches to learning: Psychometric testing of a study process questionnaire. *Journal of Advanced Nursing*, 43(5), 496–505.
- Sola, A. O., & Ojo, O. E. (2007). Effects of project, inquiry and lecture-demonstration teaching methods on senior secondary students' achievement in separation of Mixtures Practical Test. *Educational Research and Reviews*, 2(6), 124-132.
- Stepath, C, M. & Bacon, J. C. (2010). Marine debris clean-ups as meaningful science learning. The American Geophysical Union, Ocean Sciences Meeting (Portland-Feb 22nd -26th).
- Stephanie, B. (2010). Project-based learning for the 21st century: Skills for the future: *A Journal of Educational Strategies*, 83 (2), 39-43.
- Stevenson, J.A. (1925). *The project method to teaching*. New York: MacMillan.
- Stockton, J.L. (1920). *Project work in education*. Cambridge, MA: Riverside Press.
- Synteta, P., & Schneider, D. (2002). How XML can scaffold project-based learning. In *Proceeding of The 4th International Conference on New Educational Environments (ICNEE'02)*, Lugano, Switzerland.
- Thomas, J. W., Mergendoller, J.R., & Michaelson, A. (1999). *Project based learning: A hand book for middle and high school teachers*. Novato, CA: The Buck Institute for Education.
- Toren, K. (1993). Toward an integration of creative and critical thinking. *Journal of American Behavioral Scientist*, 37(1), 112-120.
- Van Aalst, J. (2009). Distinguishing knowledge-sharing, knowledge construction, and knowledge-creation discourses. *International Journal of Computer-Supported Collaborative Learning*, 4(3), 259–287.
- Victoria, S. (2000). The importance of creative thinking, emotional intelligence and the arts for education in the 21st century. Retrieved July 22, 2011, from [http://www.drivictoriastevens.com/stevens\\_edu21update 2000](http://www.drivictoriastevens.com/stevens_edu21update 2000).

- William, S., & Curtis, M. (2012). *Inequality for all*. New York: Teachers College Press
- Yang, S. C., & Lin, W. C. (2004). The relationship among creative, critical thinking and thinking styles in Taiwan high school students. *Journal of Instructional Psychology*, 31(1), 33-46.
- Yaron, D. (2009). Assessing creative thinking in design based learning. *International Journal of Technology and Design Education*, 19 (1). 55-65.
- Yi-Man, B. M. (2010). Teachers of young children in Taiwan: Teachers' concerns about curriculum and the implementation of project approach. Ph.D Thesis, Texas Woman's University, Texas, U.S.A.
- Yvonne, K. (2003). A study of bones. *Journal of Early Childhood Research & Practice*, 5 (1), 12-25.
- Zeegers, P. (2001). Approaches to learning in science: A longitudinal study. *British Educational Research Journal*, 71 (1), 115-32.
- Zhang, J., Scardamalia, M., Lamon, M., Messina, R., & Reeve, R. (2007). Socio-cognitive dynamics of knowledge building in the work of 9- and 10-year-olds. *Educational Technology Research and Development*, 55(2), 117-145.