CREATIVE THINKING IN TEACHER EDUCATION COLLEGES: AN INVESTIGATION OF THE PREPARATION OF PRIMARY PRE-SERVICE STUDENT TEACHERS IN KUWAIT

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Author's Declaration

I certify that, to best of my knowledge, all the material in this thesis represents my own work and that no material is included which has been submitted for any other award or qualification.

Signature: .....

Date: .....

Abstract

This research focuses on investigating the role of creative thinking in student teacher education colleges in Kuwait. The research is based on a (two) single-case study design, with data being collected via multiple methods from five primary departments of Kuwait's main colleges of education. The study used four instruments to collect the data; semi-structured interviews, focus groups, document analysis, and observation. Inductive and creative synthesis was used as a data analysis approach. An analysis of the study data showed that creative thinking in the preparation and training programmes of pre-service teachers was considered to be a secondary concern in both colleges.

The research findings indicate that several factors do not support the development of creative thinking in primary teacher education colleges; including teaching strategies used, classroom environment, social and cultural attitudes of the community (especially towards women's motivation in choosing the speciality), admission policies, use of technological materials, and the type of communication and cooperation between all educational institutions. This study makes specific recommendations, primarily focused on directing the development of creative thinking to include collaborative efforts by all those involved in every element of teaching and training programmes, and the education system in general. The researcher proposes a theoretical framework designed to serve as a guideline for the development of creative thinking at primary teacher education colleges in Kuwait.

Dedication

This modest effort is dedicated to all those who believe that they have creative parts to play in our personality, and we just need to be given the chance to use them. To my husband, Sulaiman Alobaidly, who encouraged me to remove all obstructions, use my skills and get my chance to success. It is also dedicated to my lovely and creative children, Eiman, Ali, Sara, and Afnan.

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I would like to express my sincere gratitude to all individuals who encouraged me to conduct this research and support me to complete this thesis. I owe a special appreciation and thanks to my mother, my husband, and my children for their support and patience.

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CHAPTER ONE: INTRODUCTION AND RESEARCH CONTEXT

Learning without thought is labor lost; thought without learning is perilous

Confucian Analects

1.1 Introduction

This chapter is a preliminary introduction for the study. It outlines the personal motivation, context and rationale behind the study, as well as expounding upon its purpose, the research methodology and research questions. Moreover, the limitations of the study and the definition of the terms that are used throughout this research are also addressed. Lastly, this chapter concludes with the overall structure and organization of the thesis.

1.2 Personal motivation of this research

The motivation that has led me to investigate this research topic has come as a result of my recent experiences working as a teacher's supervisor for in-service and for pre-service teachers during their practical course. Through my interactions with the pre-service and in-service teachers, certain observations and conclusions were made in relation to the education system in Kuwait. In particular, I recognised that in almost every subject within higher education, a strong emphasis was placed upon the transfer of information and knowledge directly to the students, without providing any significant opportunity to exercise their creative thinking. Students were not encouraged to discover the solutions to

complete specific tasks through the use of constructive dialogues, which are based upon analysis and deduction, imagination, the exploration of ideas and through generating these possibilities. By implementing such practices, it could help facilitate the intellectual growth and development of each student in realising and attaining their full potential.

This affirms that the role of thinking skills, particularly creative thinking, is neglected in their learning. Subsequently it has created a gap in the students' overall academic performance, which may not necessarily be related to their professional knowledge, but rather it could be related to the way they apply this knowledge. Thus, in order to gain a deeper insight into the current situation, this has motivated me to investigate this internally and from an insider's perspective. To do so, it seems that all elements pertaining to higher education courses need to be explored, including the teachers, the students, policies, curriculum, the teaching strategies and all factors that may affect in developing this form of thinking, either positively or negatively.

It should however, be noted that a full comprehensive study that covers every aspect of this topic cannot be achieved in terms of practicality and under the constraints of time, project size and by an individual researcher. Consequently, the proposed plan is to investigate five departments within two main educational colleges in Kuwait and more specifically, explore the views and opinions of the training staff and a group of student teachers' within each of the educational colleges. The intention behind this is to initiate constructive discussions about making creative thinking development a fundamental component within student teachers' education and training qualifications in Kuwait who will subsequently use this type of thinking with their students once they become fully qualified teachers.

Moreover, the goal is to discover any potential practical methods and samples from the participants, which may help clarify some of the factors that influence creative thinking development, particularly in education colleges. This in turn would lead to a positive contribution that could help other teacher training colleges in this area of study.

1.3 Rationale of the study

There is an almost universal agreement among researchers that have studied the subject of thinking, that the ability to create exciting opportunities for reflection is highly important, especially within academia and in the field of education (Torrance, 1963; Piaget, 1972; Swartz & Perikins, 1990; Sternberg, 1985; Popper, 1994; Fisher, 2004; Craft, 2003; Fisher & Williams, 2004; Kaila, 2005; Duffy, 2006; Gerver & Robinson, 2010; Robinson, 2011). According to them, thinking should be a major goal of educational institutions because it serves to provide the student with the relevant tools they need to interact effectively with any type of information or variables in present and future endeavours. For example, Popper (1972) believes that learning happens through the process of conjectures and refutation, which means that learners test and modify their expectations in all aspects of life around them (i.e. physical, social and intellectual). He also highlights the environment challenges that the learner must face, and in turn, they use problem-solving schema that enables them to learn from their own mistakes (Popper, 1994). Moreover, with the rapid and dramatic changes in science, knowledge, inventions and the flow of information through new means of communication, it has caused different types of difficulties and awareness of employment problems, new kinds of disease, global warming and the economic crises. This

has significantly raised the need to teach, develop and learn thinking skills, particularly creative thinking, in order to meet the challenges brought about by globalization, as well as being able to successfully deal with a rapidly-changing world in different aspects of life within society (Parkhurst, 1999; Fisher & Williams 2004; Runco, 2004; McWilliam 2008; Robinson, 2011).

In addition, the responsibility that is tasked to educational institutions, with regards to preparing individuals with the appropriate skills for them to solve unpredicted problems, is increasing. Institutes strive to develop programmes aimed at students becoming more willing to adapt to the conditions of life around them and to deal with any problems/difficulties they may face in an analytical and systematic manner, by enabling them to think of a range of choices to address contemporary concerns (Cromwell, 1993; Swartz & Parks, 1994; Fisher & Williams, 2004).

According to McWilliam (2008), creative thinking allows people to meet these challenges and needs more effectively. This is similar to Duffy's (1998) and Robinson's (2011) assertion that creative thinking gives individuals the opportunity to develop their abilities to the maximum extent, prove their ability to think and communicate, express their feelings and discover the value of certain things. However, researchers have also argued that education in its current form is not sufficient to develop thinking skills, because this skill should be a part of the curriculum in combination with other abilities that are required (De Bono, 1986, 1991; Sternberg; 2003; Fisher & Williams, 2004; Kaila, 2005; Grever & Robinson, 2010; Robinson, 2011). They claim that the schools of the future should not only be based on learning, but also thinking. A reference is made to the opposing theoretical and

practical reality that is found in educational organizations around the world, whereby it is evident that there is a widespread use of traditional methods in teaching (e.g. Craft, 1999; Kaila, 2005; Eastaway, 2007; De Bono, 2009; Robison, 2011). These methods depend on memorisation and teachers feeding information to the students directly, whilst ignoring the role of creative thinking skills and simply reiterating what they have been taught without reflecting over it.

This depiction of current classroom practices matches the situations found in the educational systems of most Arab countries. Several researchers (Al-Mushrif, 2003; TISS, 2007; Jarwan, 2009; Albergawi, 2010; Nophal, 2009; Saleh, 2011) verify that educational systems within Arab countries still adhere to the conventional methods of teaching, which concentrate on providing the knowledge to the students directly, with strict instructions that restrict the students' engagement and enthusiasm. This forces them to use specific types of thinking skills such as 'recognition, memory, and logical reasoning' which in turn hinders the growth of creative thinking (Torrance, 1990, p. 2). Guilford (1950) also claims that human intelligence does not limit individuals to one single form of ability or intelligence. Additionally, Gardner (2011, 2003) rejects the idea of comprehensive creativity in his "multiple intelligences" theory and stresses that creativity in one area does not necessarily require excellence in other areas. Hence, the development of thinking skills has taken two tracks, namely: teaching thinking as a separate programme; or incorporating thinking into the curriculum, and rebuilding ideas of how content is used traditionally in the educational process (Swartz & Perikins, 1990).

The direct teaching of thinking skills within the school curriculum (teaching thinking as a separate programme) has been introduced, applied and spread in many developed countries such as Malta (Mercieca et al., 2006), United States of America, Canada, Australia, New Zealand and Venezuela (De Bono, 1991; Shaheen, 2010). According to the researcher's experience, the Arab experiments as developing countries are still in their infancy and are limited in developing and introducing the method of teaching thinking skills into schools. However, in developing countries and particularly Arab Gulf countries, there is a pressing need to bring about actions of change, maturation and improvement in the educational organisations, in order to follow global development and improve educational results. This has motivated these countries to follow the international movement towards change and reform in education.

In the final report of the 'IBE Curriculum Development Seminar for the Countries of the Arabian Gulf' held in Muscat, Oman, Rassekh et al., (2001) provided their final recommendations to recognize creative thinking improvement in education. In Kuwait, for instance, Kuwaiti educators and policy makers have made various attempts to implement plans and development approaches that follow the universal progression and to improve educational outcomes. Examples of this are in the progressive Kuwaiti government plan, which has been directed by many professionals in the field. This plan includes rehabilitating the kindergarten and primary teachers to fulfil their role in the establishment of the younger generation, identifying and activating school curriculum standards, developing the students' creative thinking, confirming citizenship and improving educational outcomes (Kuwait Ministry of Education, 2007).

Torrance's (2002) definition of creativity clarifies that this is the process of developing an appropriate sensitivity to problems and eliminating voids in understanding/knowledge, disharmonies, insufficiencies and missing elements. Torrance (2002) further asserts that teachers need to be trained to learn the four dimensions of creativity and incorporate them in their classroom practices and pedagogy. The first dimension is fluency, which refers to what the teachers need to prepare (material or environmental preparations) to encourage children's imagination and make them express something or act fluently. Secondly, teachers must have the flexibility to accept a variety of ideas from their children, which will motivate them to produce ideas easily and to be flexible in giving them time and rules. The third dimension is originality. This is to recognise the outstanding or unusual ideas that their children produce, and lastly, is elaboration, where teachers foster rich productions by encouraging their children to include more details in their ideas, actions and explanations. What is evident from this is that a heavy burden of responsibility is placed firmly on the teacher, because they need to know how to apply their own experiences and knowledge to everyday classroom lessons.

Fullan and Stiegelbauer (1991) state that educational change depends on what teachers do and think. Hamza and Griffith (2006) have highlighted that there are uncovered insufficiencies in teaching approaches and strategies within education, in which creative thinking and problem solving are taught at all educational levels, and can affect the productivity of the individual as a worker in the future.

As part of this research, eleven existing studies have been systematically reviewed (see the first section in Chapter 2) and the results revealed a deficiency relating to the factors that

promote or impede creative thinking in the student teachers' training. Consequently, this has encouraged the researcher to conduct this investigative research in order to fill a relevant gap in this area of research.

1.4 Research aims

The aims for this research:

1. Identify and understand the factors that may affect the development of creative thinking in teacher education colleges, in order to propose the best approach for change in their future practices within the classroom.

2. Draw attention to the requirements when considering creativity as one of the main elements in teacher training programmes in Kuwait.

3. Suggest appropriate recommendations and a theoretical framework that can be helpful in improving this type of thinking in these colleges.

1.5 Context of the study

This research adopts purely qualitative methods in order to investigate the five primary departments within two main education colleges in Kuwait. These colleges are: (1) Education College of Kuwait University (KUEC), and (2) Basic Education College (BEC), under the responsibility of the Public Authority for Applied Education and Training (PAAET). What follows is a brief background of these colleges and wider look at the country of Kuwait in relation to their investments in education.

1.5.1 Education College of Kuwait University (KUEC) (Annual report – Faculty of Education, 2011-2012)

Kuwait University (KU) was established in October 1966, under the Act N. 29/1966 in regards to an organization of higher education and its laws. In November 1966, it was officially inaugurated to include The College of Science and Arts and Education and College for Women. The college of education was established pursuant to the Amiri Decree of May 1980, in response to a long-standing need for a national work-force in the field of education. The college was mandated to prepare teachers with the relevant qualifications and experience to teach, and has remained committed to its mission and sphere of operations with a proactive response to national demand for education and optimization of the teaching workforce.

The major departments include: curricula and teaching methods, educational psychology, educational foundations, educational administration and planning. Furthermore, The College of Education offers four programs at a university degree level (Bachelors), in addition to the two programmes at the level of diploma and graduate in the department of curricula & teaching methods and pedagogy.

The Bachelors programme offers three majors under specific programs:

A. Kindergarten programme.
B. Teachers' preparation for primary stage.
C. Teachers' preparation for intermediate stage.
D. Teachers' preparation for intermediate stage (Sciences).

E. Teachers' preparation for intermediate stage (Social Sciences).

This research considers the preparation of teachers for primary stage, which covers the following subjects:

1. Arabic/Social sciences
2. Arabic/Islamic sciences
3. Islamic sciences/ Social sciences
4. Sciences/Mathematics
5. English

1.5.2 BEC- PAAET in Kuwait (Al-Refaei & Al-Sharhan, 2009)

Aside from Kuwait University, BEC is the second main institute that has been established to prepare student-teachers to teach in schools, ranging from kindergarten to secondary level. This means that BEC is one of the main sources within Kuwait that provides the necessary education to shape well-trained teachers. Since the 1950s, a number of efforts have been made for the preparation of teachers in primary and kindergarten schools, which culminated in the formation of The Institute of Female and Male Teachers, which opened in 1962. The acceptance system in this institute was minimal, requiring a middle school certificate. Once students are accepted onto the course, the duration is four years of study, and upon completion, later graduates are awarded the Diploma of the Institute of Teachers. This qualifies them to teach in any primary school across the country, and includes a number of specializations such as art, physical education and general studies (for kindergarten).

Since 1977, the institute has adopted a credit hour system, whereby courses are introduced that add many disciplines, such as kindergartens, libraries, empirical studies of electronics, and since the academic year of 1986/1987, studies have been done at institutes lasting for a period of four years. The Institute gained its name The New College of Basic Education, and awards graduate degrees in specialist subjects. There are seventeen departments in the Basic Education Colleges. The current research considers five of them, which are: The Department of Islamic sciences, The Department of Arabic and Literature, Sciences Department, Mathematics Department and English Department.

1.5.3 Kuwaiti efforts in considering gifted and creative students

The State of Kuwait is one of the first Arab and Gulf countries that has come to realise the importance of nurturing gifted and creative students. According to Al-Ajmy (2010), Kuwait began this project after the issuing of the Ministerial Decree No. 135/86 during the academic year 1986/87. Table 1.1 provides a timeline of the steps that were undertaken towards a strategy for developing gifted and creative students in Kuwait.

Table 1.1: Kuwaiti efforts to consider gifted and creative students

Date	Executing Agency	Implementation steps
1973 – 1976	Group of interested educators and researchers	Essential steps were initiated to encourage researchers to apply a number of field studies that compared gifted and non-gifted students.
1983	Kuwait Ministry of Education (KME)	Separate classrooms for academically superior students were opened, to be used after school, and students were enrolled who received an average of 80% or more in

	Department of the Psychological and Social Services (KME)	mathematics and physics in the fourth grade of secondary school. A draft was prepared for the detection of creative and gifted students using psychological tests, in order to begin identifying ways to consider their giftedness and creativity.
1986/1987	Kuwait Ministry of Education	The council was established to manage the care of mentally superior children. The executive office is under the authority of The Office of the Minister. Experimental programmes for gifted students were implemented in grades 3 and 4 of primary schools. Through this experiment, the KME opened two centres: one for boys and one for girls, and began teaching in them for half of the school year. This programme lasted two months and resulted in a rise in participants' achievement and their motivation to learn. The KME intended to expand this type of intervention programme, but the Second Gulf War directly impacted all previous efforts, as the majority of the project documents were lost.
Post-Gulf War II-1992/1993	The General Secretariat of Special Education in KME	A plan was prepared for the detection of mentally gifted students in the third grade, using criteria used for detection in the previous phase, namely: the non-verbal intelligence test, the Kessler Kuwait test for the intelligence of children, Raven's test of sequential levels, and a measure of the behavioural characteristics of gifted students. These tests were to be monitored by parents and teachers. The KME adopted a policy of rapid

		scholarships for some teachers to obtain a Masters' higher diploma and Masters in special education.
1995	The General Secretariat of Special Education in KME	Three centres for the care of students in various governorates of the country began construction in March 1995, and were finished by the end of May.
2010	Funded by Kuwait Foundation for the Advancement of Sciences	Sabah Al Ahmed Centre for Giftedness and Creativity (SAGC) was established to manage the care of Kuwaiti people, and to invest in their creativity and talents for the purpose of their development and their access to the world.

Source: (Authors' search, Al Ajmy, 2010; Kuwait Ministry of Education, 2007, Kuwait Foundation for the Advancement of Sciences, 2015)

An interesting point to note is that all these efforts concentrated specifically on academically gifted students, and there was no consideration of an overhaul of the wider educational system in order to improve thinking skills in general or creative thinking in particular. Although researchers believe that instilling creative thinking in early childhood is the teacher's responsibility (Fisher, 2008; Wegerif, 2010), Carter (1992) asserts that the educational system should provide teachers with the appropriate tools and training to practically apply creativity, as well as to describe good knowledge, understand child growth, create a productive learning environment, excite and encourage creativity, use appropriate and comprehensive techniques, and develop abilities to accurately diagnose children's capacities. According to a number of researchers, there is a significant gap in the area of pre-service teachers' preparations within Arab countries in general (Al-Mushrif, 2003; TISS, 2007; Jarwan, 2009; Albergawi, 2010; Nophal, 2009; Saleh, 2011). This gap

also extends to all the elements that may influence the development of creative thinking, such as colleges' policies, culture, teaching strategies, and classroom environment.

1.5.4 Kuwait on the economic level

Although the economy in Kuwait is currently stable, experts believe there is a danger that the government is reliant upon certain areas, but extremely negligent in others (Cassinadri & Mitchell, 2008). They highlight two key areas that illustrate these concerns. Firstly, there is a heavy reliance upon the oil and petroleum industry, whereas the domestic non-oil economy is neglected and small. In 2006, the non-oil economy contributed approximately 6% of Kuwait's total revenue, making it one of the least diversified economies in the Gulf area. Moreover, due to Kuwait having no other natural resources, there is little development of, or investment in, the non-oil industry. Secondly, and posing possibly the most significant issue regarding future plans for Kuwait, is the current population. Approximately half of Kuwait's population are expatriates who work within the private sector, whereas the public sector includes approximately 95% Kuwaiti nationals. This means if immigration trends continue, it could double by 2027.

In addition, The Public Authority for Civil Information (2014) has stated that the Kuwaiti labour force includes 224,489 male workers but only 197,836 female workers. This means that there are many more males in the labour force. On the other hand, statistics from the Kuwait Ministry of Education (2014) show that 86% of Kuwaiti teachers are female (33,004), while only 14% (5,347) are male. These figures show that Kuwaiti women face

sociocultural pressures to choose the teaching profession more than any other profession, which reduces their contributions to the labour force and limits their abilities.

Given this situation, Kuwait needs to consider educational reform in order to effectively tackle its economic challenges and other problems. Educational reform is a viable solution because, as Jackson et al. (2006) have stated, the educational system has had a dynamic relationship with the world's recent economic shifts, which have led to direct increases in employment problems. This means that the nature of educational achievement is also changing, and that there has been a shift toward consideration of solutions that could contribute to the successful management of the current economic crisis.

Researchers such as Tegano et al. (1991), Edwards and Springate (1995), Duffy (1998), Torrance (1998), Fisher, (2008) and Gerver & Robinson (2010) assert that the development of creative thinking is one of the most important educational goals of human societies, and affirm the necessity of improving creative abilities at all developmental levels.

Therefore, schools must teach learners to be aware in their judgement and train them to use their critical and creative thinking skills in sync with one another, in order to solve problems and make the right decisions in their work, professions and lives (Swartz & Parks, 1994; Gerver & Robinson, 2010). However, as expressed by some researchers, the main factors affecting success in any creative thinking programme are the competence of the teacher and the practices used in the classroom (Fisher & Williams, 2004; Fisher, 2008; Gerver & Robinson, 2010; Wegerif, 2010). In order to make the leap from a didactic approach to one that nurtures creative thinking, it is vital that teachers are themselves

competent in creative thinking (Fisher & Williams, 2004). This poses a pertinent question: are pre-service teachers who have graduated from education colleges properly prepared for this kind of change in teaching?

1.6 Research question and sub-questions

The fundamental question of this research is:

- What is the role of creative thinking in primary teacher education colleges in Kuwait?
    1- How do the pre-service teachers and tutors in both colleges recognise the role of creative thinking in their preparation and training?
    2- What are the key factors that affect the development of creative thinking at pre-service student teacher education institutions?
    3- How can creative thinking in these institutions be developed?

1.7 The research limitations

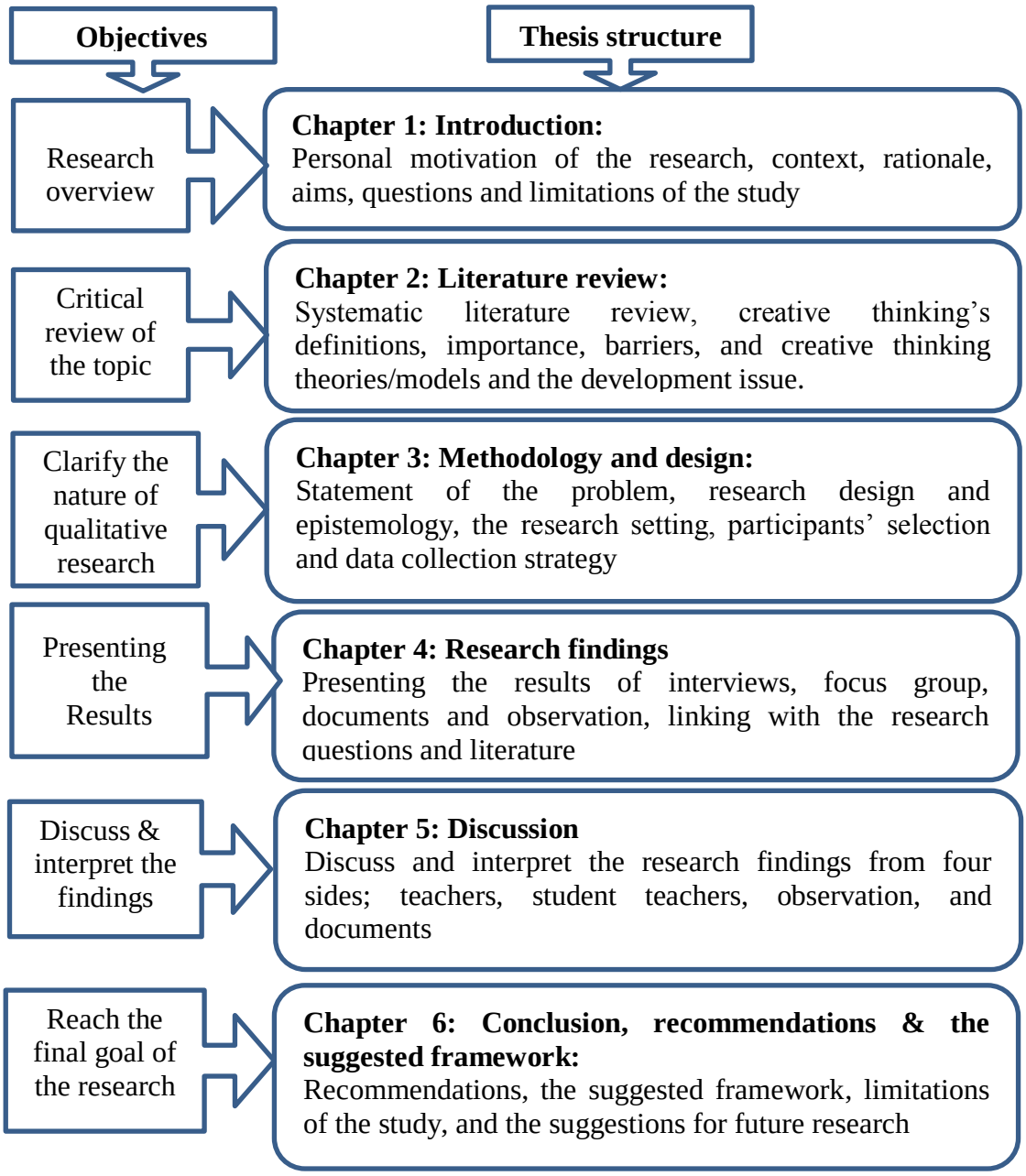
The difficulties of this research can be divided into three parts; the researcher, the context and the actual topic. As mentioned, this is a small research project that has restrictive timescales and possibilities. Thus, the individual researcher cannot expand the investigation to include every aspect of this topic, such as the perceptions and opinions of decision-makers, the authors of the curriculum or parents in their influence over the development of creative thinking. Secondly, it is envisaged that there may be obstacles to overcome when investigating across the colleges, which have specific policies and a specific culture. This could particularly relate to any issues where the focus is on reform or to understand the

problems that need to be resolved or even as a result of adding more working load to give any information. For instance, certain tutors may be quite hostile or reluctant to give any information or provide any kind of cooperation as they think it might harm them in some way or because they do not have an organized record of this information. Lastly, the concept of creative thinking skills has yet to be agreed upon as a style of its own, or even to determine its meaning and its components. According to Fisher & Williams (2004, p. 7), 'the trouble with creativity, as with intelligence and other brain based functions, is that the concept is ethereal and elusive'. This means the formation of a qualitative study will be confronted with many difficulties, particularly in developing countries where their experiments are still limited, more specifically in issues of development and in the introduction of the method of teaching and training for this type of thinking.

1.8 Thesis Structure and Summary

This study consists of six chapters (outlined in Figure 1.1). This chapter is the preliminary introduction of the study; it provided the rationale behind its exploration. Following chapter focuses on a critical review of existing literature; creative thinking studies which in relation to the theoretical framework that considered specifically the student teachers' education. It reviews the other aspects of literature related to creative thinking such as the creative thinking concept and definition, the importance of creativity, and the barriers of creative thinking. Finally, chapter two concludes with exploring the main creativity's theories and models.

***Figure 0.1**: Thesis structure and objectives*



CHAPTER TWO: LITERATURE REVIEW

Imagination is more important than knowledge

Albert Einstein

2.1 Introduction

This chapter outlines the underlying theoretical framework that this research topic is based upon, which is used to extract specific principles that shed light on how to develop creative thinking among student teachers in Kuwait. It is divided into three main sections, all of which are related to the studies reviewed in this research. The first section will discuss the leading issues related to creative thinking, such as the concept, definitions, and the importance of creative thinking from different perspectives, as well as the creativity in education and the barriers that discourage creative thinking, particularly within Arab countries. The second section consists of a systematic literature review; it explores the studies that are relevant to creative thinking skills in relation to student teachers' education. This also includes the methodology that has been adopted in these studies, the results, the critical discussion and recommendations, linking the systematic literature review with this specific research. The third section explores the theories that consider the concept of creativity and the most important models of improvement. It also focuses on the primary issues pertaining to creative thinking development and the research theoretical framework. The chapter ends with a clear definition of the working definition of terms employed in the thesis.

2.2 Creative Thinking

This section discusses four key questions, which are related to the creative thinking dimensions. They are: (1) Is there a specific concept for creative thinking? (2) What can be understood from the diversity of definitions for creativity? (3) Why creative thinking? (4) If it is such an important type of thinking, what are the barriers?

2.2.1 Is there a specific concept for creative thinking?

Several researchers have asserted that there is no agreement over the meaning of creative thinking, and it has no single agreed-upon definition (e.g. Wallace, 1986; Sharp, 2001; Craft, 2003; Mitchell et al., 2003; Kaufman and Beghetto, 2009; Taylor and Getzels, 2009). Though the concept of creativity has received much attention from scientists and researchers in the field of education and psychology over the last four decades (Craft, 2003; Jeffrey, 2005, 2006), some researchers focus on the nature of creativity, its growth and the various factors that interfere in its composition.

Researchers have realized there is a need to be free from the constraints imposed by an importance attributed to intelligent tests. This is because academics view such tests as being saturated by factors of specific knowledge, such as the verbal, numerical, spatial and perception relation's abilities, whilst neglecting the capabilities of other mental abilities like imagination, originality, intellectual fluency, creativity, automatic flexibility and sensitivity to problems (Guilford, 1986; Fisher, 1995 Sternberg, 2006a). The significance of this comes from research that proves these abilities have a direct impact on achievement and academic success.

Despite the recognition that scientists and researchers give to creativity as a form of mental activity of the individual, they differ about the way in which it is processed and selected. Some of them dealt with creativity as a process with multiple levels (Sternberg and Lubart, 1995), while others identify creativity through the creative output or product (Weisberg, 2006), which is characterized by something that has novelty, rarity, is uncommon and has a social value. However, the priority in rejecting the traditional theory of intelligence and equating it with creativity goes to Guilford (1950), whose theory distinguishes between convergent thinking or synthesis, which is measured by IQ tests, and divergent thinking or the complex, which is measured by creativity tests that he developed.

One of the first researchers that had been associated with the theory of psychological measurement of creativity is Torrance, where his work at the University of Minnesota sought to expound upon the nature of creativity using creative tests and teaching creative behaviors (Hébert et al., 2002). Torrance in 1958 suggested that there is a connection between this and the creative achievement, in which he documented and published the results for tests of creative abilities in 1966 (Hébert et al., 2002). Taylor (1959) is also one of the more prominent researchers in this area of study, which brought about a new approach to understanding creative thinking. He referred to five types of creativity. The first level is expressive creativity, which can manifest itself through automatic graphics and independent expression, and can exist without the need for any particular skill, originality or production quality. This level was regarded by Taylor (1959) to be the level that represents the early stages of childhood, wherein children express almost all of their creative efforts in this manner. The second level is technical or productive creativity; in this

type of creativity, the set and free activities are intended to restrict and improve creativity in light of certain rules. The third level is inventive, which is the flexibility level characterized by invention and discovery that enables the individual to recognize new and unusual relationships between parts of groups that were separate before. At the fourth level, known as emergent creativity, the knowledge is installed and the assumptions affiliated, similar to when new theories or scientific laws are formed and established. The fifth and final type, innovative creativity represents the ability of development and innovation, which includes the use of conceptual skills of an individual.

This shift in understanding and exploring creative thinking influenced the existing literature; and resulted with many studies that clearly illustrate this type of understanding. For instance, Oral's (2010, p.72) study focuses on the role of these components (fluency, flexibility, originality and elaboration) when selecting Turkish pre-service teachers' applicants for university, and highlights several claims in light of the results such as: 'redefining the concept of education and focusing on the impact of creativity in education and human resources.'

Al-Mushrif's (2003) study refers to the first type of creativity outlined by Taylor (1959) (i.e. 'expressive'), where the child does not have the same capabilities to be innovative as adults. That said, one may argue that this does not mean this stage should be neglected, as this stage of a human's life includes the most important elements of creative thinking. That is, a child is automatic in nature and automatic expressive completeness in terms of creativity. Attributes of self-expression, spontaneity and expressiveness in children are all steps toward creative thinking in its truest sense. Thus, one must refer back to the creativity

of children through expressions in their various forms (i.e. artistic expression, expression fiction, kinetic expression, musical expression and so on). Although Al-Mushrif (2003) considered the first level of creativity when designing creative thinking test of activities for kindergarten children, the second type of creativity was taken into account when designing the efficiencies list of creative thinking. This was aimed to develop the student teachers' skill in the following areas: identify and discover the features of creative abilities of children, teach children creative solutions to problems and provide appropriate opportunities for free expression that are automatic for children in different areas of activity. Kampylis et al. (2008) also regards Taylor's stages of creative thinking to be a frame of references for primary school teachers, which can be used to define the concept of creativity and help build a classroom environment that serves to express the different types of creativity.

Antonenko and Thompson (2009, p.220) aptly sum up this issue, asserting that 'children can indeed be creative. They may not be experts in content knowledge or problem solving, but they are original and effectively expressive'. Consequently, this places the responsibility heavily on the shoulder of educators 'to design and employ learning experience' to 'challenge the students and engage them emotionally and cognitively, and foster creativity as opposed to stifling it'.

Contrary to this, there are scientists who have studied the factors of creativity through the individuals' characteristics and concluded that this trend is possibly the most important because it deals with the concept of creative personality (Dellas & Gaier, 1970). The advocators of this trend have identified a number of mental abilities that interfere with the

formation of the individual with a personal creative ability and a number of attributes that are not mentally associated with these capabilities (Runco, 2007). This further helps teachers to discover and identify students with potential creative skills, even if they have not achieved the result of being creative, and subsequently work on sponsorship and skill development. For instance, Perkins (1981) explained that personal creativity included the following six interrelated psychological attributes:

- A strong tendency to personal aesthetics.
- High ability to detect problems.
- Mental mobility; such as the ability to think of the logic of reverses, opposites and change perspective.
- Willingness to risk by always searching for excitement and learning from mistakes.
- Skill of objectivity (critical thinking) as well as the insight and commitment.
- Internal enthusiasm (motivation); force behind reaching aims and creativity.

He also claims that the creators may not possess all six features, but the greater the occupation of these traits, the more creativity is present. Nevertheless, Kampylis et al. (2008) study shows that teachers confirm they require the appropriate training in order to acquire the necessary confidence that would enable them to understand the specific anticipations of creativity, structure development activities and assess students' creativity. This means that teachers may find extreme difficulty in recognizing the students' creative traits without adequate training and knowledge. For example, O'Rourke (2005, p.166)

refers to a pilot programme that was conducted with four Australian schools, which sought to gain an insight to the teachers' understanding of the conception of creativity and how this was manifested during daily procedures within the classroom. He highlighted that the expert from an advisory group explained the importance of helping the teachers and parents to enhance their understanding of the concept of creativity, and identified creativity as, 'when we are creative we see the world in new ways, we ask new questions, we imagine new possibilities and we seek to act in such a way that makes a difference'.

In contrast, over past decade, numerous studies have been conducted to identify the effects of environmental factors and social creativity. It seems that these factors play a crucial role in the area of creative work, whereby creative action can be faltered by environmental and social factors in spite of the availability of advanced cognitive abilities (Hill and Amabile, 1993). According to Amabile et al (1990) studies and reviews of biographies for a numbers of creators have shown that external motivation, such as the rewards and the pressure of assessment, evaluation and competition can all weaken the level of motivation and creativity. In turn, the studies found that internal motivation is necessary for the creative performance. Vint (2005) concurs, stating that in order to encourage the students to be creative and become leaders in their area, teachers have to build a successful atmosphere to promote creative thinking, apply the procedures that incite creativity and produce great consequences. Furthermore, in Meintjes and Grosser's (2010) study, they found a level of relations between a range of contextual elements and creative thinking skills, such as the sort of school model environment and culture, as well as particular factors like socio-economic and socialisation elements and definite creative thinking abilities.

Creativity has additionally been illustrated by the interaction between the traits of the creative person and attributes domain. For example, Gardner (2011; 2006; 2003; 1993) describes creativity through the interactive perspective, as he identifies the importance of interaction between individuals, regions and areas. According to Gardner, the creative person is someone who solves problems, invents products and knows new questions on a regular basis in the area of what is primarily considered acceptable within their given culture.

Furthermore, alternative propositions pertaining to the creative thinking concept also exist within literature, which have been met with agreement by many researchers (e.g. Robinson, 2011; Craft, 2003; Goleman et al., 1992; Fisher, 1995; Maslow, 1970). An example of this is the hypothesis that everyone can be creative or has the potential to be, and that creativity should exist in all types of work, subjects and in every kind of problem that individual may encounter in life. As a result, Fisher (1990) and Robinson (2011) mention some of these misconceptions regarding creativity:

First, separating between creative and critical thinking; this is similar to dividing the functions between the hemispheres of the brain, as almost all problems involve both kinds of thinking in order to not only produce new solutions, but also better solutions (Fisher, 1990; Gruenfeld, 2010).

Second, that creativity is just found in certain subjects or activities and is only found in specific people. This is highly misleading, as the imagination and originality can be included in any subjects such as science or maths, and not only limited to the arts as

perpetuated in the conventional notion of creativity (SEED, 2006). Maslow (1970) also clarifies that there is more than one kind of creativity and creative traits or abilities that can exist in any individual, and therefore, the creative process can be applied in every type of simple activity in life, and not only among the "Einstein" or genius community. It is also interesting to note, that the majority of literature that is reviewed within the present study considers creative thinking to be present in various subjects. For instance, in Newton and Beverton's (2012) study, 77% of the participants agreed that English was a creative subject, whilst Perkins et al (2006) and Antonenko and Thompson (2009) attempted to develop the student teachers' creativity through technology and web design. Moreover, Sungurtekin et al. (2009) address the importance of creative thinking in drama. Thus, Robinson (2011, p.3) appropriately sums up this issue, stating 'everyone has huge creative capacities. The challenge is to develop them'.

Another misconception is that creativity is 'simple' and depends only on 'effortless' activities (Fisher, 1990, p. 33). This conception is not necessarily accurate because creativeness needs care, motivation, persistence, effort, patience and a period of time. De Bono (1995, p.12) explains that creativity is not only represented as 'fun, lively and crazy' as many people may think, or that it just refers to using the technique of brain storming. On the contrary, creativity extends the use of fun, play and a sense of humour in a way to serve and cultivate the creative ideas that lead to 'serious creativity', which includes novelty and originality and needs acute training to all patterns of mental systems.

A final misconception is that creativity does not exist without high intelligence. This understanding of creativity is unsubstantiated, because the traditional intelligence tests fail

to measure creative skills (Robinson, 2011; Fisher, 1990). It is clear from the above that the concept of creativity has changed greatly; it is now accepted by many that creativity can be expressed in many ways.

2.2.2 What can be understood from the diversity of concepts and definitions?

Based on the above, it is clear there is no concept of one specific term for creative thinking, and it is this diversity that has led to many variations in terms of its definitions. For instance, Wallas (1926, in Popova, 2014) identified creativity as a mental process with multiple stages and sequential, starting with a sense of the problem and ending with the "glow", which carries with it the expected solution. This is illustrated in four stages that Wallas (1926, in Popova, 2014) classifies as: 1) Preparation which includes an exploration of the problem from all angles and accesses the experience and expertise of the individual. 2) Incubation - this is the latency stage or fermentation, which happens unconsciously and includes the absorption of all information and experiences, as well as appropriate representation or mentally digested. 3) Illumination, which includes the spark of creativity. This stage also represents the rise moment where the new idea "glows". Lastly, 4) Verification is the final stage that happens consciously as it represents the beta test and evaluates the creative idea.

In terms of other definitions, Torrance (1974, p.8) identifies creativity as: '…a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses, or formulating hypotheses about the deficiencies; testing and retesting these hypotheses and

possibly modifying and retesting them; and finally communicating the results'. Elsewhere, Torrance (2002) defines creative thinking as the operations of creating ideas or assumptions, challenging or examining them and communicating the results. This is consistent with what Jackson and Shaw (2005) state, wherein creativity includes imagination and the action to translate this imagination. This transpires when the person imagines doing something and this then leads them to create the idea in their mind in order to bring something original and valuable into existence. Bergström (1991, p.164) argues that further aspects should be added to this definition of creative behaviour, and that it should include 'the production of something new and unpredictable'. Simonton (2012) also incorporates the component of 'surprise' to the regular principles of novelty and utility into the United States Patent Office's invention patent specifications.

Furthermore, Craft (2000, p.4) differentiates between two types of creative thinking; the first is 'possibility thinking', which means, 'refusing to be stumped by circumstances, but being imaginative in order to find a way around a problem or in order to make sense of a puzzle'. In line with this, the National Advisory Committee on Creative and Cultural Education (NACCCE) report (1999, p.31) identified creativity as it is 'imaginative activity fashioned so as to produce outcomes that are both original and of value.' However, according to Craft (2000, p.4), what it meant by imaginative is subject to much debate in philosophical literature. For example, to be imaginative means 'going beyond the obvious' or 'seeing more than is initially apparent' or 'interpreting something in a way which is unusual'. The second differentiation of creative thinking by Craft (2003, p.114) is 'extraordinary creativity', which is defined as 'the production of new knowledge which has

a major impact on an existing area of knowledge, the boundaries of which are monitored by experts within that field. It is the validation of novelty and usefulness of any act, by the experts within a field, that qualifies it as ‘creative’’.

In The Arabic Philosophical Encyclopedia, creativity is a production of new things or a new way of formulating existing elements in one field such as science, arts and literatures (Jarwan, 2009). Creativity is a combination of capacity, preparations and personal characteristics which, if found suitable environment can raise the mental process and lead to original and useful outcomes for experience and previous experiences of the individual or the institution or the society or the world (Jarwan, 1998).

These definitions and a plethora of others, such as the 25 definitions that Morgan (1954) mentioned and put in his comments, the 1,400 definitions Aldrich (2001) collected as a dictionary in the field of creativity, as well as the 40 definitions that Rhodes (1961) examined, all demonstrate just how diverse a subject this is.

What can be concluded from the majority of these definitions is that creativity is indistinct and multi-lateral, as well as a concept that needs specific research to fill the gaps in many areas, such as a consistent definition, proper measurements and methods of development. Moreover, these definitions clearly emphasise that creativity is a form of problem-solving and it leads to conception of some new, unpredictable, original, surprising, imaginable and valuable ideas or items (Simonton, 2012; Craft, 2000; Jackson & Shaw, 2005; NACCCE report, 1999; Jarwan, 1998; Bergström, 1991; Torrance, 1974). In addition, creative thinking is strongly associated with critical thinking (Fisher, 1990; Gruenfeld, 2010) and

that the creative product, person and process has specific characteristics that are linked to mental and emotional operations (Puccio, 1999; Runco, 2004). Consequently, this can positively influence the individual and society, or sometimes have a negative influence.

From the diversity of definitions and differences between the concepts, one can therefore substantiate that:

- Creative thinking cannot be isolated, stripped or seen to be separate from the person who owns its,
- There is a relationship of interaction between individuals, regions and areas,
- Creative personality relies on a set of components and interrelated factors that surround it from childhood until attainable, as well as the factors of the physical and genetic conditions from environmental surroundings.

Therefore, this study will consider creativity from the interaction condition, personal, social and environmental dimensions because they are the main factors that are established within the creative thinking definitions of the literature review and systematic review.

2.2.3 Why creative thinking in education?

Many researchers have asserted that creative thinking is one of the most important types of thinking to consider in all educational aspects and levels (Tegano et al., 1991; De Bono, 1995, 2007; Edwards and Springate, 1995; Duffy, 1998; Torrance, 1998; Torrance, 2002; Jackson and Shaw 2005; Morris, 2006; Kleiman, 2008; Kampylis et al., 2008; McWilliam, 2008; Fisher, 2008, Robinson, 2011). This is because it allows people to meet the

challenges and needs of a rapidly changing world more appropriately, gives them the opportunity to develop their abilities to the full extent, prove their ability to think and communicate, express their feelings and discover the value of things.

Nevertheless, several researchers point out the negative side of creativity (Gino and Ariely, 2012; Cropley, 2004; Csikszentmihalyi, 1996; Runco, 1993). For example, Gino and Ariely (2012) refer to the importance of underlining the negative aspects of creativity as they found proof from five studies that show a relationship between creativity and deceit. In addition, they also found that the creative participants in their study were more inclined to justify their unethical behaviours. Another example mentioned by Cropley (2004, p.16), is that of certain universities in America that do not favour creativity, whereby some teachers do not like some of the attributes of creativity in students such as 'boldness, desire for novelty or originality'. Runco (1993) also highlights that creative thinking may be considered in education as a concept, but not when it is associated with non-acceptable behaviours such as expressing the students' views or acting independently.

Nevertheless, from the researcher's perspective, these negative aspects do not invalidate the importance of creative thinking for the individual and society, even though it should be taken into account that there may be the obstacles that cause a kind of confusion in the adoption and development of creative thinking, particularly in education. All the studies reviewed within this current research and many others emphasise the importance of creative thinking within this area; that is, they agree it is a type of thinking that cannot be ignored, particularly for the individual satisfaction and success, economic and organization development as well as for educational reform.

2.2.4 Creativity and individual satisfaction and success

Skills such as sensitivity to problems, identifying the difficulty in searching for solutions, testing and retesting hypotheses and communicating these results may be what every individual needs to learn in this current era, in order to meet the challenges brought about by globalization and its manifestations in various aspects of life in society (Parkhurst, 1999; Torrance, 2002; De Bono, 2007; Robinson, 2011). Runco (2004, p.658) states that 'the flexibility of creative persons is what gives them the capacity to cope with the advances, opportunities, technologies, and changes that are a part of our current day-to-day lives.' Moreover, in Kampylis et al.'s (2008, p.21) study, 64.6% of pre-service teachers acknowledged creativity as a 'key factors for personal development, social progress, economic growth, and physical survival of the society'.

In addition, the human mind is designed and ready to solve problems and as a result, people enjoy and revel in satisfaction when solving puzzles or learn creatively (Fisher, 2008; Jackson, 2008). This obviously specifies the 'centrality of creativity-as-transformation and the importance of creativity in relation to personal and/or professional fulfilment' (Kleiman, 2008, p.216).

One of the findings in a survey conducted by The Office for Standards in Education, Children's Services and Skills (Ofsted) (2010, p.5) during an evaluation of 44 schools that used creative approaches to learning, was that 'pupils who were supported by good teaching that encouraged questioning, debate, experimentation, presentation and critical reflection enjoyed the challenge and had a sense of personal achievement'.

2.3.5 Creative thinking in economic and organisational development

Creativity is essential, not only to the individual, but because it also substantially affects 'the socio-political realms of communities and even countries which undergo transformation from industrial to knowledge economies' (Andiliou and Murphy, 2010, p.202). As Ritter and Brassard (1998, p.1) state, 'the creativity that exists naturally within everyone in the organisation must be harnessed in order to apply the new approach of creativity, which secures that organisations will remain and succeed in today's extremely 'competitive marketplace'.

More specifically, Karka (1990) affirms that the ability to think creatively and solve problems are highly important primary skills that are a necessary and basic requirement for employment. For example, in the Arab Gulf countries (the context of this research), where companies 'privatise and liberalize economies', the companies need to be more creative in order to face challenges that are brought about by the present 'increasingly knowledge-based economy' and meet the competitive elements of success, which is dependent upon improving 'managerial expertise and enhancing competitiveness' (Rice, 2003, p.461).

Furthermore, The UK Universities (2010, p.3) in their report mentions that creativity: '…is crucial to the future growth of economy. Digital technology is reshaping the economic landscape, demanding new business models and multidisciplinary solution that combine creativity with technological know-how and business skill…distinctions between creativity and science are increasingly irrelevant – the UK must excel in both'. It is therefore asserted that the higher-education sector plays a core role in this scheme. This is similar to Jackson

et al.'s (2006) assertion, in that the educational system has a dynamic relationship with the world's economic shift, which has led to an increase in employment issues.

This means that educational achievement is also changing in terms of what should be considered as important issues that could contribute to the successful reduction of this economic crisis (Jeffrey, 2006). In turn, this implies that educational institutions have a greater task in terms of preparing individuals with the appropriate skills to solve unpredicted problems and enable them to think on a range of choices to address contemporary concerns (Cromwell, 1993; Fisher, 1998; Wilson, 2005).

2.2.6 The importance of creative thinking in promoting the brain based learning and educational reform

According to Fisher (1990), the human brain is divided into two spherical halves: the left half of the brain specializes in specific operations and logical organization such as menus, words, numbers, sequencing and logical analysis, whereas the right side focuses on various activities such as rhythm (music), imagination, perception, daydreaming, seeing dimensions and spatial awareness. Thus, children who are trained to invest in only one side without the other begin to weaken the mind's capacity for half the functions that are not trained. As a result, the implications of this can be quite significant.

The Brain-Based Learning Theory therefore, determines that the brain naturally includes a group of potential abilities such as self-organisation, the ability to analyse data, self-reflection and the ability for endless creativity and innovation (Jensen, 2005, 2008, 2010). Robin (2002) also identifies in his study, which also aims to promote Brain Based Learning

that preparing a successful teacher is one of the missions that educators should undertake. Developing thinking skills, including creative thinking skills, becomes a very important issue to learners, who are able to adapt much more efficiently in a rapidly changing world, as they need to analyse new information by specific approaches to benefit from them. This cannot be done without using high-order thinking (Catton, 2001).

Catton's (2001) study, which addressed 56 researchers, including research reports, reviews of descriptive research and theory, also included all levels of education starting from primary, middle and secondary level, up until undergraduate university education. Additionally, the study involved an analysis of the different mental levels of students, including gifted students and most of the creative thinking skills. The results of this study highlighted the following recommendations:

- Emphasise the techniques of creative thinking skills.
- Apply the creative thinking programme through specific training programmes such as Six Thinking Hats, De Bono's (1999) creative thinking programme.
- Teach creative thinking skills to help in enhancing the academic achievement
- Teach creative thinking skills that will improve the students' intelligence and performance in school examinations.

Thus, considering creativity in education becomes part of the educational reform effort, and it is now a fundamental issue within the academic domain (Craft, 2005; Morris, 2006; Ferrari et al., 2009).

2.2.7 Barriers to Creative Thinking

Creative thinking is not without its barriers. It is therefore imperative to identify what prevents creativity in order to seek appropriate solutions for them. According to Davis (1999, p.170) the 'challenge' in relation to the issue of creative thinking development 'is to understand, expect and be ready to cope with barriers to creativity from the environment or from inside oneself.' Davis (1999, p.165) further argues that the differentiation 'between creative and uncreative people lies more in barriers and uncreative attitudes than in differences in intelligence or thinking styles'.

Several researchers mention a number of sources for creative obstruction such as family, society educational environment and others in the culture or organization (Saleh, 2011; Al Ajmy, 2010; Davis, 1999; Fisher, 2008; Jarwan, 2009; Lipman, 2003; Fisher, 1995). An overview of these sources is as follows:

Personal Barriers, such as (1) low self-confidence, as it can lead to fear of failure and the risk of a challenge; (2) a tendency to conform, in order to keep up and comply with prevailing standards, as this reduces the imagination and expectations, which limits creative thinking; (3) excessive enthusiasm and a strong desire to succeed can lead the person to rush the achievement and increase the urgency of the results before the maturation stages, which needs more time; (4) habit-bound thinking, as some people prefer to do what they are familiar and used to do. While this is appropriate in certain situation, in other times it might stifle creativity and being able to 'think outside the box'.

Barriers in Families. There is no doubt that the family is the basic and most important social institution that is responsible for children's development and care. As a result, influences and relationships within the family, as well as parental treatment could potentially nurture or hinder a child's creativity. Moreover, the family's economic level might hinder the child. This may occur by parents not being able to afford certain toys or activities that may facilitate their children's development in every aspect of their personality, including potential intellectual and cognitive abilities. Lastly, in many cases, there is a larger (and in some cases, a sole) responsibility on the female in the upbringing of children, especially in the Arab countries (Al Ajmy, 2010; Jarwan, 2009).

Barriers in education. It is clearly established that creative thinking has become an essential element in many educational strategies and learning aims of several developed and developing countries such as United Kingdom, United States of America, Canada, Australia, New Zealand, Venezuela, Japan and China (Shaheen, 2010; Mercieca et al., 2006; De Bono, 1991). In addition, Arab and particularly Gulf countries give special importance to the issue of teaching and learning thinking skills. This is clearly demonstrated in the overall objectives document issued by the Arab Research Center (2006) for Learning, as the general goal is to provide the individual with all types of thinking skills (i.e. intuitive, creative, critical, scientific, logical, emotional, mathematical) in order to solve specific problems they may face by individuals and in society. This also can be observed through the several strategies set by The Arab Organisation for Education, Science and Culture, which aims to develop Arab education in different stages of academia (Tawfiek et al. 2008).

However, these goals and strategies are not always adhered to or implemented in practical terms (Jarwan, 2009). The NACCCE report (1999, p.9) explains that ‘Education throughout the world faces unprecedented challenges: economic, technological, social, and personal, policy-makers everywhere emphasis the urgent need to develop 'human resources', and in particular to promote creativity, adaptability and better powers of communication’. According to Robinson (2011), global education systems depend on two stakes: economic and intellectual. The former is built on ideas about businesses and trades’ efforts that have become old and useless, whilst the latter is established on the grounds of specific forms that consider the academic intelligence and ignore many abilities that are required and significant to creativity.

Moreover, Hoffert (2005) argues that there is no system of education that focuses on giving the abilities needed to creativity. According to Bergström (1991), creative thinking is not based on predictable thinking and therefore cannot be taught in a logical method. That is, the brain is a system, a dipole, comprised of a disorganization source referred to as a ‘chaos-generator’ and an instruction source also known as an ‘order-generator’, and between those sources ‘is the brain's neurophysiological "self", where the effects of these generators interact. It is this interaction which results in creativity’ (Bergstrom, 1999, p.163). Within modern Western education, the aim is to improve the instruction source of the brain and inhibit the disorganization source, which ultimately hinders creativity.

A prominent theory proposed by Gardner (2003, 2011) is the “multiple intelligence” theory, which shows that the individual has a number of abilities that may interfere to serve each other, but may also work alone in isolation from other abilities. He calls this ability

“intelligence” and proposes eight types of intelligence, each of which can be regarded as the nucleus for the creative abilities of an individual. Furthermore, Gardner believes all kinds of intelligence are able to function with one another to solve problems, or to give a multi-cultural product and appear in the form of creativity. This hypothesis has an important impact on education, whereby, if all students were treated the same, we would feed one type of intelligence/creative ability and ignore the other creative abilities. However, in order to maximise the full creative potential within children, the educational process should concentrate on blending forms of intelligence.

Craft (2003, p.119) also identifies certain barriers to creativity in education, particularly in England; however, in the researcher’s opinion, it is possible that these obstacles may be extended to any educational system in the world. The first of these barriers is ‘terminology’, as there is a contradiction between the concepts and a challenge to differentiate among them (i.e. distinguishing between innovation, creativity and imagination). This leads to a difficulty in dealing with the concept of creativity within education in general. Secondly, ‘conflicts in policy and practice’ is identified as a barrier, because the new instructions that encourage creativity in education have caused pressure among teachers due to it being built upon tightening and controlling the curriculum, teaching methods, funding and management of schools. Subsequently, this makes creativity for teachers and educational institutions a matter of ‘survival’. In addition, the dimensions of creativity in education are not clear enough for teachers to adhere to. The conflicts in policy and practice leads to ‘limitations in curriculum organisation’, whereby the time management, teaching methods, administration instructions within each subject that

educational institutions provide could be a matter of barriers to presenting or developing creative thinking abilities.

In contrast to Craft's (2003) aforementioned barriers, one may postulate that the situation of educational institutes in Arab countries is more conflicting and that it is difficult to ascertain what the actual barriers to creativity are. In reality, many researchers forewarn that educational institutions within Arab countries may find themselves in danger of significantly restricting creative thinking if they continue to waste the creative abilities of their individuals whilst not taking the initiative to remove the obstacles that prevent the investment of these energies (Al-Mushrif, 2003; TISS, 2007; Jarwan, 2009; Albergawi, 2010; Nophal, 2009; Saleh, 2011).

There are general and classroom barriers of creativity that have been documented in Arabic countries. For instance, the long curriculums that are filled with various subjects leave very little time for teachers to use any type of creative thinking techniques. Moreover, some teachers prefer to provide ready-made information to the learners, as a result of time constraints or because students are reluctant to ask questions as it may cause them embarrassment for not knowing the answer. However, some students think that the best way to succeed is to memorise the information and therefore there is no need to ask any questions (Saleh, 2011). This is consistent with what De Bono (1991, p.9) states, as 'education is too busy and its curriculum is too crowded with what it is already teaching'.

The researcher found in certain cases of this study, teachers that are working in educational colleges did not change the contents of their formal tests that they use for a long time.

Rather, they only changed the formulation of some questions, which makes these tests similar to legacy items that are inherited from student year group to the next. This means that no development will occur in the students' skills in general and not just in their creative thinking skills.

Jarwan (2009, p.180) states that schools and universities in Arab Countries are still generally similar to 'banks as they deposit the information in the students' brains and then take them back through the examinations…..' Saleh (2011) also explains that the teachers lack the necessary skills to provoke debate and discussion among students, which is an important aspect and should be available to stimulate students' creativity. However, there is no specific curriculum, guiding programmes, follow-up plans or programmes that can help prepare teachers on how to deal with this type of thinking and foster this ability in the students who have a creative potential. Most of the learning practice is conducted through the collective manner, which does not take into account the personal needs of the learner. Additionally, schools are isolated from the university and the gap between them is widening, both in isolation from society and in the labour market.

Furthermore, the methods used in the evaluation of learning outcomes and decisions are based on the final year results that the students achieve. This is one of the main obstacles for the learning and development of thinking skills and creativity, as it imposes a rote learning approach on the school and by the teachers, whose objective is to simply go through the literal texts of textbooks. This applies to institutions of higher education with some limited exceptions (Jarwan, 2009).

There seems to be universal agreement on the importance of the role of creative thinking in education for learners, but the problem in how to employ this role for the benefit of educational reform is debated amongst academics. This relates to the several barriers that may need more research to explore them carefully. However, as ‘education is a motor for change’, one of the important aspects of reform in education is to enhance creative thinking for every individual within the society (UNESD, 2005-2014, p.4).

Therefore, from the researcher’s point of view, it is important to acknowledge the gaps within this area of research, particularly in the context of Arab countries, but to also specify the factors that discourage creative thinking in educational colleges. This will provide a better change to teachers for their future performance within the classroom.

2.3 A Systematic Review of the Literature on Creative Thinking

A systematic review of the relevant literature was conducted in order to gain a deeper insight into creative thinking of pre-service teachers. In doing so, an extensive search using electronic databases, Arabic search sources and other search engines (i.e. Ethos, Google, Google Scholar, Questia) from the year 2000 to the present, provides the core findings of this literature review. Moreover, it consists of all the relevant studies of creative thinking identified through the use of inclusion criteria, which was then examined and coded. The review examines eleven relevant studies that were selected to shed light on the actual preparation of primary student teachers toward creative thinking skills, the influences that may encourage or discourage this type of thinking and the factors that are necessary to improve it. The objective, therefore, behind considering these studies will enable an

investigative research that will follow the systematic review. In general, there is a dearth of studies that focus on providing a comprehensive framework in preparing student teachers to think creatively and incorporate creative thinking skills in their classroom pedagogy. Thus, the search procedures that have been used to locate relevant articles are vital and will be outlined in the methods section of this chapter.

2.2.1 Systematic review strategy

This review adopts the systematic method, as illustrated by Petticrew and Roberts (2006), which includes a number of stages that are summarised in table 2.1:

Table 2.1: The systematic strategy stages connected with the research review

Petticrew and Roberts' strategy	The implication in this research
• Clearly specify the review question in consultation with the expected users	• how do student teachers prepare and learn to use creativity/creative thinking skills in their thinking and teach
• Determine the sort of research required to answer the question	• Each research meets the criteria that have been identified (see table 2.2)
• Carry out an exhaustive literature search to find these studies.	• Done using the key databases that considered the main interests for this review, which includes education, social sciences, arts & humanities, general like Google/Google Scholar, Questia and specific such as Ethos (see figure 2.4)
• Screen the studies found using inclusion principles to specify definitive studies for in-depth review	• The justifications of these criteria have been clearly mentioned (see the paragraphs after table 2.2)
• Critically appraise the included research	• Done throughout this chapter
• Synthesise the studies' findings	• Done throughout this chapter
• Communicate the results of the review	• See the discussion of this section and tables: 2.3, 2.4, 2.5

In order to identify the types of studies needed to answer the research question, a scoping search of six key databases (Proquest, the British Education Index, ERIC, the Australian Education Index, Scopus, Web of Science, and PsycInfo) was executed. In this, along with other resources such as Ethos, Google Scholar, Questia and Arabic sources, the keywords and phrases used were the following:

- Creativity
- Creative thinking skills
- Student teachers' preparation
- Student teachers and creative thinking skills
- Primary student teachers and creative thinking skills
- Enhancing creative thinking skills
- Enhancing student teachers' creativity/creative thinking skills

The researcher also took into account keyword synonyms, such as 'pre-service teachers/prospective teachers' and 'developing/fostering/promoting creative thinking skills'. A search using the keyword 'creativity' yielded thousands of studies. To narrow this down and ensure the researcher gained relevant results, the following search Policy and Practice Information and Co-ordinating Centre (EPPI-Centre) (2010, p.7), which mentions: electronic database searching, hand searching of key journals, searching through specialist websites, using general search engines on the internet such as 'Google' and 'Google scholar' and asking personal contacts, authors and experts in the field. Consequently, a

manual search asking for personal contacts, particularly for Arabic studies, was conducted. The titles, abstracts, and in some cases, the full documents were then examined in order to select appropriate articles for inclusion. This was based on specific inclusion criteria. The systematic review question developed continually according to five points mentioned by Petticrew and Robert (2007) which are;

(1) Population: primary student teachers (in all studies identified).

(2) Intervention: type of act conducted to reform, develop, or explore the factors of obstruction.

(3) Comparison: whether there are any facets of comparison,

(4) Outcomes: the results drawn from any type of act, and

(5) Context: an explanation of the framework that was brought specifically to the particular context, and whether it is useful or not.

The above points explained in the results and the discussion of the systematic review, the details in table 2.3, and throughout this chapter.

2.2.2 The inclusion principles to identify studies for in-depth review

According to EPPI-Centre (2010), obvious criteria and records, where specific studies fit such criteria, makes it clear to those users compiling a literature review of what research is informing the conclusions. Table 2.1 outlines the criteria of inclusion and exclusion.

Table 2.2: Inclusion and exclusion criteria

Criteria of inclusion	Criteria of exclusion
• Studies including student teachers' creative thinking skills	• Research before 2000
• Studies involving student teachers' creativity in primary or kindergarten education	• Research not in either English or Arabic
• Research from 2000 to the present	• Studies not involving student teachers' creativity/creative thinking skills
• Studies examining the factors enhancing student teachers' creativity/creative thinking	
• Studies investigate training programmes to develop pre-service teachers' creative thinking skills	

It should be noted that the decision to restrict the research from 2000 and onwards was two-fold: firstly, the primary search conducted for this paper showed that after 1999, research into creativity/creative thinking increased markedly, particularly in developing countries. It is therefore reasonable to posit that studies after this data will give a better view of the latest and most recent findings and research. For example, a search using the SCOPUS's database (Figure 2.1) from 1962-2012 using the key words 'creative thinking skills' revealed an analysis of how many academic documents matched the keywords, with a clear rise beginning in 2000. Moreover, Figure 2.2 illustrates the number of documents for the same time period in both developed and developing countries, showing a larger amount in USA and UK. In Figure 2.3, it is clear that the highest percentage of studies in creative thinking was in social science, which is the main focus of this review. It should also be

noted that similar results were found when searching with all of the keywords that are defined throughout this review.

***Figure 2.1**: Result analysis from 1962-2012 (creative thinking)*

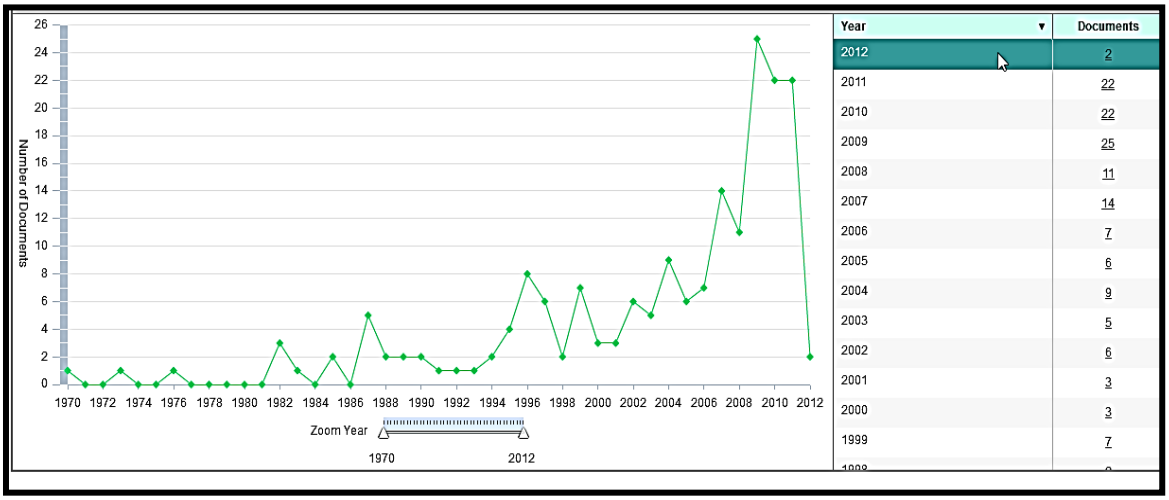


***Figure 2.2:** Numbers in developed and developing countries (creative thinking)*

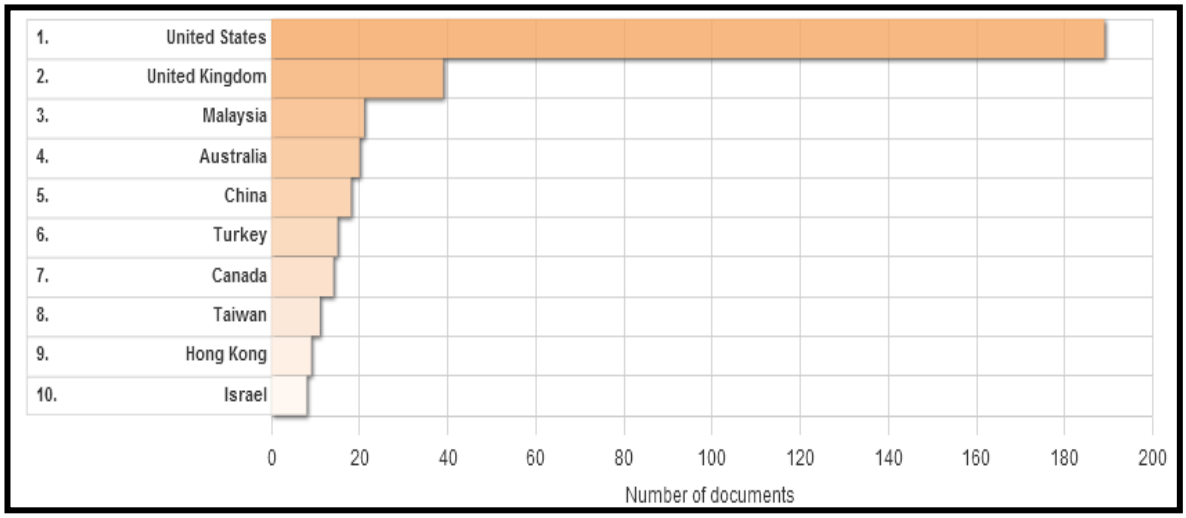
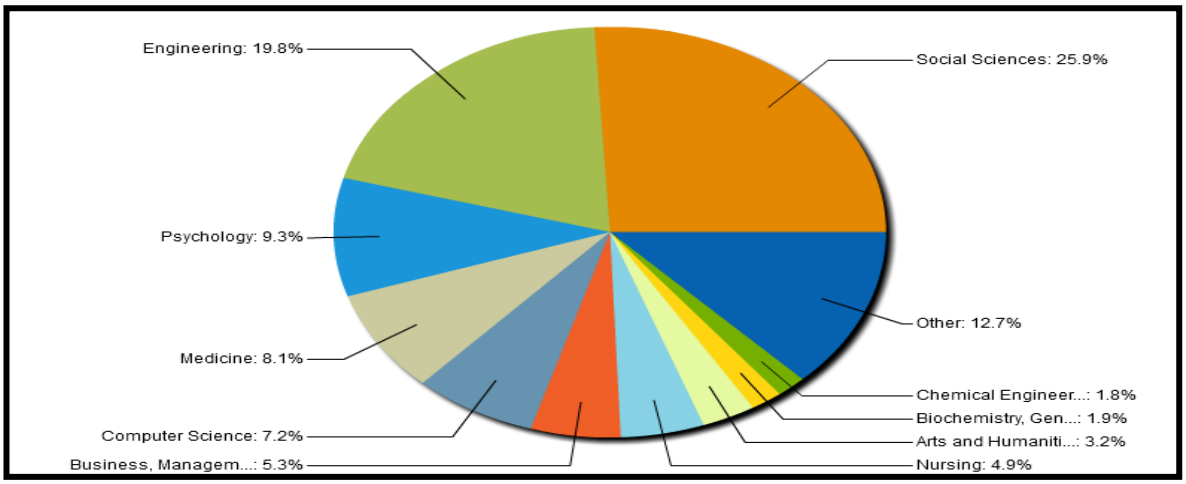


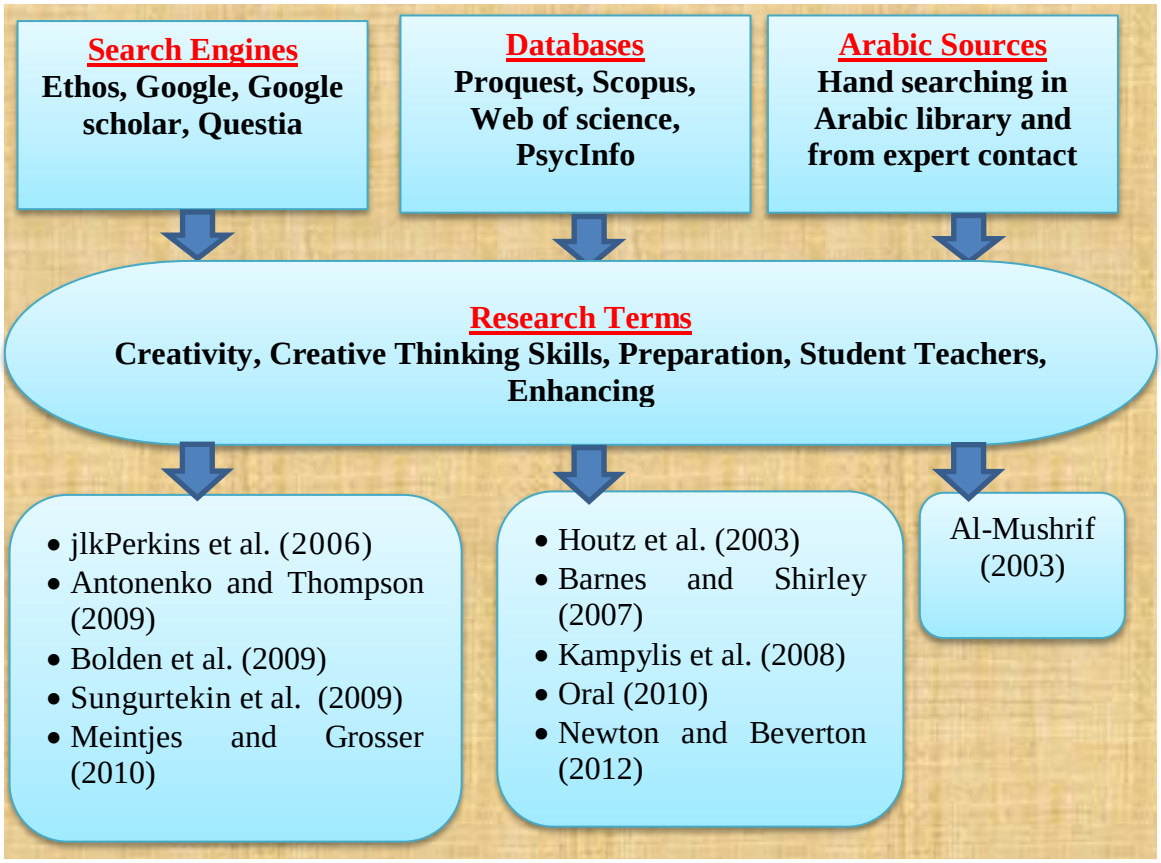
***Figure 2.3**: Percentage of research in creative thinking (various fields)*



The second reason for post-2000 research is because this review includes the Arabic context, which Tawfeik et al. (2008) highlight, in this part of the world, the Arab Organisation for Education, Science and Culture was keen to formulate a set of strategies that target the development of Arab education across all levels of academia. Interestingly, such strategies are documented to start after 1999, including the Arab Strategy for Education Prior to Primary School (2000), the Arabic Strategy for Distance Education (2000), The Arabic Strategy for Developing Higher Education (2005), the Strategy for Development of Arab Education (2006) and the Arabic Strategy for Developing Creativity in Arabic Higher Education (2008). It is also necessary to mention that the hand searching, expert contact and electronic search for Kuwait (the context of the current research) resulted in relevant literature that considered creativity from different perspectives. However, the researcher could not find in such documents any specific study that considers the student teachers' creative thinking. As a result of the meticulous searching process, a total of 11 papers were found and selected for inclusion in this systematic literature review.

Figure 2.4 outlines the source for each of the papers. Once the studies had been identified as matching the inclusion criteria, they were then analysed in accordance with the structure shown in table 2.3, which present the outside parameters of the reviewed studies. One of the review exclusion criteria that have been clearly identified for this research is not to draw upon any existing literature that does not include student teachers' creativity/creative thinking skills. Nevertheless, before applying this condition, it is worth noting that there were many studies that addressed in-service teachers all around the world, which clearly shows that this area (student teachers' creative thinking skills) still needs to be explored in order to fill the gap and answer the questions that this review draws attention to.

Figure 2.4: *Sources of the included studies*



2.2.3 Results of the systematic review

It is important to first present the general characteristics of the reviewed studies, in order to synthesise the studies' results with the main focus of the review issues. The following is summary of the features of the 11 studies included in the in-depth review (all information about the studies below explained in details in table 2.3).

Participants' characteristics

In general, the student teachers were the main focus of all studies reviewed, with the exception of one study, where the focus was exploring two creativity measurements to identify an individual's creative style. There was only one study where all of the participants were from kindergarten education and in the rest of the studies, six considered primary education, whereas three focused on other issues relating to student teachers and creativity. In addition, the sample sizes of the studies were all different, ranging from eight participants in one study to 207 pre-service teachers in another.

Geographical location of the studies

In terms of geographical location, the majority of the studies included in the in-depth review were from developed countries, specifically UK (n=3) and USA (n=3). The remaining studies were in different developing countries; namely Turkey (n=2), Egypt (n=1), Greece (n=1), and South Africa (n=1). It was also evident that the literature lacked in the area of student teachers' creative thinking skills in general, and specifically in Arab

countries. This further highlighted the research gap and encourages the need to initiate and investigate research within the context of the Gulf region (see table 2.3 and figure 2.2).

Aim(s) and focus of the studies

All of the studies that have been selected for this review either consider student teachers' creative thinking skills or emphasise the importance of creativity in the classroom and a skill that needs to be improved. Some of the studies specifically explored the potential of creative abilities in order to initiate creativity, whilst others concerned themselves with developing particular creative thinking skills in student teachers. In addition, one study investigated the individual creative style by exploring two creative measurements and three studies were interested in pre-service teachers' creativity conceptions. Furthermore, other topics that were addressed included attitudes and pedagogical changes amongst teacher students. The main considerations for two of the studies were in specific dimensions of creativity or in a specific subject. It was further evident that no study considered any type of investigation of the factors that may encourage or discourage creative thinking skills in the preparation programme of student teachers' education.

Research instruments and design

A large portion of the studies (n=7) adopted a quantitative methodology for data collection. Within these studies, one utilised a descriptive design while another was a group experimental design. Moreover, two of these studies provided follow-up data, as one was a practicum project and the other, an action research design. Four of the studies implemented questionnaires as the main research tool, with observation, interview, and a checklist as

secondary instruments. Additionally, two studies depended on Torrance's test in a different form and two other applied scales (Meintjes & Grosser, 2010; Oral, 2010). As for the remaining studies, five of them created their own tools or design-specific situations, such as Perkins et al. (2006), whereby the researchers built a bridge between the in- and pre-service teachers within a technology project. However, according to Crotty (2003), the association between the research instrument and the research methodology is dependent upon the question that this research is trying to answer. Table 2.3 provides all the details mentioned above.

Table 2.3: Overall descriptions of the studies that included in the systematic review

Author (s) Date	Participants N	Country	Aim	Focus	Design	Research instruments	Follow up	Major findings
Houtz et al. (2003)	116 student Teachers	USA	Explore the relationship between two measures of creativity style for a sample of student teachers to answer the question; In what paths do the individuals present their creativity?	Individuals' creative style	Quantitative	-The Kirton Adaption-Innovation Inventory -The Basadur Creative Problem Solving Profile	No	-Higher scores on Kirton's inventory were correlated with the generator profile on the Basadur profile ($r = .36$, $p < .01$) -The KAI competence scores, proposing a liking for wide universal ideas contrary to narrow, precise ones, was correlated with the Basadur Conceptualizer scores ($r = .26$, $p < .01$)
Perkins et	80 pre-	USA	Enhance	Fostering	Practicum	Computer	Yes	The most

al. (2006)	service teachers 40 K-12 teachers (public and private schools)		creativity and preparing student teachers for real classrooms	creativity through technology project	pilot study will be followed longitudinally Two survey self-reported for both in and pre-service teachers	aided instruction (CAI) Computer based hyper studio lessons		important benefit for both in- and pre-service teachers from a creativity point of view was that the project stimulated more combinations of earlier learning and new technology aptitudes in future teachers
Barnes and Shirley (2007)	-10 schools -300 primary children -34 student teachers -9 tutors	UK	Investigate the attitude and pedagogical change amongst teacher education students	Outside experiences and generate creative thinking	Action research project consisted of four experience shard between the research's participants	-Observation -Meta-analysis -Reflective assignment	Yes	-There are major confrontations for teachers' education, especially for new teachers, in terms of competence to recognise their own creativity and to subscribe to building their curricula in order

								to support their pupils' creativity - There is a lack of cooperation between tutor/tutor, tutor/student, and student/student
Kampylis et al. (2008)	-70 in-service primary teachers. -62 pre-service teachers	Greek	Draw attention to in-service and pre-service ' conceptions of creativity	Pre- and in-service teachers' conceptions of creativity	Quantitative	-Self-report questionnaire - Questionnaire (teachers' conceptions of creativity questionnaire)	No	Teachers feel that they did not train well to gain the confidence that would make them able to realise the particular expectations of creativity that already exist in their role as teachers
Antonenko and Thompson (2009)	8 pre-service teachers	USA	Understand future teachers' definitions of creativity,	-Pre-service teachers' definition of creativity	Qualitative	-One-hour semi-structured interview -Researcher's notes	No	-The creative product as a component of the creativity definition was absent in the

			and their views on the role of web design in developing creative skills	-The role of web design as a method of developing creative potential		-Checklist of the web design		participants' definitions, except for some mentions from four participants -Web design is considered a procedure of poorly defined problem solving that educators can blend into the curriculum to create joint content knowledge with the construction of a tangible product -All web design steps are important in improving and comprehending creative potential
Bolden et al. (2009)	38 pre-service	UK	Explore and	Remark on the	Quantitative	Semi-structured	No	-37 participants pointed out that

	primary teachers		document pre-service primary teachers' conception s of creativity in mathematic s teaching in the UK	appropriaten -ess of the concept of creativity among pre-service primary teachers		interview Closed and open-ended questionnaire supplemented with data from semi-structured interview		stimulating creativity in primary mathematics classrooms is difficult -31 participants stated that mathematics is a subject that offers little or no room for freedom of expression, imagination, and independence -The conceptions of creativity need to be addressed and developed in pre-service training
Sungurtekin et al. (2009)	130 pre-service primary teachers	Turkey	Identify whether there are significant differences	The role of creative drama for pre-service teachers'	Quantitative descriptive research and comparing viewpoints	Questionnaire prepared by the researchers	No	-No significant difference according to gender -89.2% of the

			according gender in the viewpoints of the participants and the contributio n of creative drama	personal and professional improvement				participants stated the necessity of a ‘drama in primary schools’ course
Meintjes and Grosser (2010)	207 pre-service teachers	South Africa	Set up the creative thinking skills of a group of South African prospective teachers and decide the contextual factors that may participate	Creative thinking skills among a specific group of pre-service teachers with regard to contextual factors	Quantitative pilot investigation study with an ex post facto design	-Abbreviation Torrance Test for Adults (ATTA) -Partial Least Squares (PLS)	No	Contextual factors influence creative thinking skills differently and there is a wide need to develop these skills in pre-service teachers

			in improving their creative thinking abilities.					
Oral (2010)	140 pre-service primary teachers	Turkey	Examine the role of the four creativity dimensions in selecting Turkish pre-service teachers	The four dimensions of creativity	Quantitative	Torrance Test of creative thinking-Figural Form A	No	Some level of creativity (although not very high) has been included in the university entrance examination
Newton and Beverton (2012)	48 pre-service primary teachers	UK	Identify pre-service teachers' concepts of creativity within the curriculum for English	Creativity in the subject of English	Quantitative and qualitative design	-Questionnaire -Follow-up focus group discussion	Yes	-77% of the participants agreed that English was a creative subject -23% of the participants said it was sometimes creative -Many subjects, according to the

								participants, offer opportunities to be more creative than English -The participants' conceptions of creativity still need to be addressed in order to be encouraged later in the classroom

Overall results

The main results from this review can be summarized as follows:

- The majority of the studies that were included were from in-depth reviews in developed countries (UK-USA).
- No study explored the student teachers' preparation toward creative thinking skills within the training programme;
- No study considered the factors that encourage and discourage this type of thinking in teachers' education colleges;
- The greater part of the studies used quantitative methods for data collection (n=7); two of them were pilot studies.
- Only one of the seven was a descriptive design, and one was a group experimental design.

2.2.4 Discussion - What elements do the reviews draw attention to?

The central issues that are underlined within the selected studies are: the definition of creative thinking skills at this level of education (student teachers in primary grades), the role and importance of such skills, as well as the factors involved in hindering or developing pre-service teachers' creativity. Table 2.4 illustrates whether each study provided these dimensions or not.

Table 2.4: Linking the studies with the main issues of the review

Author(s)/ Date	Preparations plan	Definition	The Importance	Developing or inhabiting factors
Al-Mushrif (2003)	YES	YES	YES	No
Houtz et al. (2003)	NO	NO	YES	NO
Perkins et al. (2006)	YES	YES	YES	NO
Barnes and Shirley (2007)	YES	YES	YES	NO
Kampylis et al. (2008)	YES	YES	YES	NO
Antonenko and Thompson (2009)	NO	YES	YES	NO
Bolden et al. (2009)	NO	NO	YES	NO
Sungurteki n et al. (2009)	NO	NO	YES	NO
Meintjes and Grosser (2010)	YES	YES	YES	YES
Newton and Beverton (2012)	NO	YES	YES	NO
Oral (2010)	YES	YES	YES	NO

With regard to the preparation plan, almost all the researchers within these studies introduced specific activities personal and professional improvement that they believed should be incorporated into the student learning preparation stage, in order to develop especial skills in creative thinking. For example, spatial, physical, kinaesthetic, and musical activities (Al-Mushrif, 2003), fostering creativity through technology project

(Perkins et al. 2006), outside experiences and generate creative thinking (Barnes and Shirley, 2007), creative drama (Sungurtekin et al. 2009).

One study considered the factors involved in hindering or developing pre-service teachers' creativity (Meintjes and Grosser, 2010), whose quantitative pilot investigative study referred to how particular cultural and contextual factors (i.e. social environment, family, economic and physical conditions) could influence the creative behaviour and production of pre-service teachers. Furthermore, the researchers in the majority of the selected studies only considered the definition of creativity in accordance to the purpose behind their particular research (i.e. Perkins et al., 2006; Antonenko and Thompson, 2009; Bolden et al., 2009; Sungurtekin et al., 2009; Newton and Beverton, 2012). This may sometimes limit the meaning and the developing elements into specific frames, as they would only explore the concept of creative thinking from their own aims or identify it in terms of a particular subject.

For instance, Perkins et al. (2006) state that divergent thinking is the very substance of creativity and it can be stimulated in the student teachers by encouraging them to synthesize what they know to produce a unique product. Perkins et al. (2006) also restrict the meaning of creativity to one dimension, as they consider hypermedia programmes that connect teachers within the classroom with student teachers, with the educational institute to be a central component in developing this creativity. Han et al. (2003) also mention that divergent thinking may refer to individuals participating in some of the creative functions, but that it is not necessarily applicable or required in all domains. Other studies have tried to explore creativity from a different perspective,

such as Houtz et al. (2003), who assert that adopting a creative style in the classroom is a relatively new subject within creativity research, as it explores the question of how people present their creativity as opposed of investigating how much creativity they can exhibit.

In addition, Meintjes and Grosser (2010) are concerned with the impact of specific factors upon creativity. By confining their research to South Africa, they state that within such a mixed and diverse society, it is important to consider how the culture and contextual factors can directly influence the creative behaviour among pre-service teachers. Oral (2010) also highlights the influence of the Turkish educational system on creativity, describing it as 'highly centralised', which in turn has a direct impact on educational institutes. For instance, one Turkish university emphasizes the necessity to consider four dimensions of creativity - 'fluency, flexibility, originality, and elaboration' – as a criterion for the entrance examination when selecting student teachers applicants. In contrast, some studies provide an experiment programme for kindergarten student teachers in creative thinking, such as Al-Mushrif (2003), who considered creative thinking to be theoretical, empirical conceptions and skills, which led to an adaptation of existing activities in order to develop potential creativity and creative production within the groups that participated in the study.

Kampylis et al. (2008, p.18) reviewed studies on the in-service and prospective teachers' concept of creativity between 1991-2008, and identified creativity within the primary education framework to be, 'the activity (both mental and physical) that occurs in a specific time-space, social and cultural framework and leads to a tangible or

intangible outcome(s) that is original, useful, ethical and desirable, at least to the creator(s)'. Thus, the authors believe that pre-service and in-service teachers need to understand and identify the types and meanings of creativity from their own perspective, which will in turn, enable them to structure development activities and assess students' creativity. The researcher in this current study concurs, believing student teachers need to absorb the meaning of this type of thinking, understand its role in their teaching and how they can develop it in their thinking, ultimately leading them to use it effectively in their teaching.

A gap in the investigation can be recognised from this review, as there were few studies that considered providing a comprehensive framework to explore the student teachers' preparation to include creativity in their thinking and teaching. However, what these reviews do demonstrate is the crucial dimensions in terms of conducting productive interventions or investigations in this area. These elements should be acknowledged accordingly and linked together as main components of a devised framework, which can be summarized in the following section.

Definition of creativity and it components

Consider the participants' understanding for the meaning of creativity and remove any confusion over what comprises creative thinking. Thus, certain questions need to be addressed, such as how does one recognize it in oneself and others? Or how can it be facilitated, encouraged and assessed?

Types of creativity

Once a clear definition of creativity has been provided, it is important to identify the various types of creativity. As Kampylis et al. (2008, p. 18) mention, many researchers view the main types of creativity as a 'special talent and so forth' or 'self-actualising and so forth'. However, for a deeper insight, they refer to Tylor's (1959) stages of five types of creativity, namely: 'expressive creativity; technical creativity; inventive creativity; innovative creativity; and emergentive creativity', which are 'useful representation of its multiplicity and as a framework of reference to investigate teachers' conceptions on creativity'.

The creative contextual and personal factors

The subsequent aim is to ascertain what the main factors are in influencing an individual's creative behavior and production, whether positively or negatively. These can be categorised by contextual factors, such as 'social environment, family, economic, and physical conditions', and personal factors, such as 'personality, intelligence, knowledge and experience' (Meintjes and Grosser, 2010, p. 364). Moreover, the culture and ethos that are implemented within an educational institute may also be considered as an important category that might hinder or develop creative thinking skills.

Environmental aspects surrounding creative thinking

Within the educational domain, it is imperative to decide on how teaching materials (i.e. learning tools, whether documents or electronic devices) can be used to effectively

develop creative thinking. To sum up, the purpose of this systematic review was to specify research studies that could address the question, 'how do student teachers prepare and learn to use creativity/creative thinking skills in their thinking and teaching?' The definition of creativity, its role and importance within student teachers' training programmes, as well as highlighting aspects to enhance creative thinking skills were all explored in a systematic manner. This was done to specify the main dimensions within the area of pre-service teachers' creativity for future research, particularly in terms of preparation domains. Additionally, the objective of this review was to initiate an investigative research that follows as a result of the systematic review. Consequently, the elements pertaining to this topic, more specifically, the definition of creative thinking, the types of creativity, personal and contextual factors and environmental aspects surrounding creativity, will all be used alongside other relevant literature (related to theories and concept) as the main components in devising the suggested model to enhance the creative thinking of student teachers.

2.4 Theories and models that explain creative thinking

The theories and models that consider creativity thinking, along with the objective of improving this type of thinking in the education field, will be explored in this section. The literature focus will continue to include the systematic literature review and the practical work that is associated with these studies.

Treffinger et al (2013) state that many psychologists and philosophers have postulated their "theories" of creativity. However, these theories differ considerably in their extent and approaches, and none of them may be considered as an extensive and convincing

theoretical interpretation of creativity. This is consistent with Rzadkiewicz's (2009) statement, in which the argument of the individual's creativeness will remain the same because there are still no absolute answers to demonstrate a person's creativity. Having said that, there are existing theories and models to consider that may enhance our understanding of creativity. These theories attempt to explain the creative personality and creative processes from different perspectives (Rzadkiewicz, 2009). In the researcher's opinion, these theories and models can be beneficial references in building the basic principles of how to develop creative thinking abilities. In contextualising this, one of the objectives of the present research is to propose a theoretical model for the development of creative thinking in the teachers' educational colleges in Kuwait. Thus, this study will critically evaluate the theories and models that can be used to achieve this aim.

What follows is a brief explanation of the existing theories and models that link to the current study, in terms of the main elements that the literature and the systematic review identified (i.e. definition, components, and type of creativity, the contextual and the environmental aspects of creative thinking).

2.4.1 Theory of psychoanalysis

Even though Sigmund Freud is regarded as the spiritual father of the theory of psychoanalysis, he did not provide a complete theory to interpret the phenomenon of creativity. Nevertheless, academics have attempted to use the psychological dynamics and general concepts of his theory in explaining the actions and processes of creativity (Weisberg, 1993). The primary drive of creative works from the standpoint of Freud is

that the individual internal conflicts are unresolved and remain suppressed at a subconscious level. If the individual has not been able to express their desires freely, then those desires should be launched in other ways or be compensated. Therefore, creativity, according to Freud, is a healthy form of compensation (sublimation) using the unconscious motivations that do not satisfy the objectives of productivity (Starko, 2005).

Within the creative domain, psychoanalysis postulates that the creator lives away from reality in a fake activity, and that creativity continues to play a delusional entity initiated by the creator when he/she was a child. Chris (one of Freud's followers) (Starko, 2005) claims that creative individuals are able to recreate a state of mind similar to the mentality of childhood, where ideas from an unconscious mind are easier to reach than those of the conscious mind. According to Clancier and Kalmanovitch (1987), Freud also thought that creative action in adult artists was similar to the child when they were involved in fun or play. Jung also stressed the importance of personal experience and unconsciousness in a framework of creative production (Rzadkiewicz, 2009; Starko, 2005). According to Jung, a creative person is someone who able to indulge in the collective unconscious (Rzadkiewicz, 2009; Starko, 2005).

Freud and his followers have been criticized for their interpretations of the creative process, which are often described as exaggerated, lacking logical evidence and having a limited interest from a methodical perspective for several reasons. These include the absence of neutral scientific evidence led to experimental studies supporting the viewpoint of psychologists' followers of psychoanalysis in the treatment of creativity or

their interpretations. Furthermore, the inaccuracies in their interpretation of recreating childhood experiences is not unique to psychoanalysis, as it is usual for creators and non-creators and does not need the subconscious level to recall such memories (Harman and Rheingold, 1984; Starko, 2005).

However, it is important to consider the main idea of this theory for the benefit of the present study, particularly in developing the student teachers' creative thinking skills. That is, the notion of accepting fantasy ideas and creating appropriate healthy environments to encourage and indulge in creative imagination. This concept needs to improve in student teachers, as it should be able to encourage their students to use their imagination and in turn, lead to creative production, ideas or achievement (NACCCE, 1999).

2.4.2 Behavioural theory of creative thinking

The behaviourists would argue that creative work is produced when an individual is working in order to obtain a response to a positive stimulus, and that satisfaction is achieved once they reach a new solution to the problem, as opposed to a request for external rewards (Starko, 2005). Clearly, behavioural theory emphasizes on the composition of links between the stimulus and response, the importance of reinforcement in the occurrence and strengthening of these particular links. Thus, according to this theory, it could be the development of creative thinking through reinforcements.

This theory views the individual as an important element in the creative process. That is, they have made the human being similar to the level of a machine in that it responds automatically to the stimuli that are driven from physiological engines of spontaneous creativity and vitality. Additionally, because the behaviourist theory looks mechanical and ignores the role of personality factors and components in the process of creativity, this theory has been deemed by many academics to be negative and ineffective in this particular field (Jarwan, 2009; Starko, 2005; Al-Mushrif, 2003).

Nevertheless, this theory emphasizes the value of reinforcements in developing creative thinking; therefore, the current study can consider the importance of diversifying stimuli and link it to the appropriate reinforcements in the environment surrounding the learner.

2.4.3 Humanist theory

The Humanist Theory focuses on the nature of humanity, whereby the creative motivation is derived from sound psychological health and the core of the human being. Creativity in this theory is the outcome of a full mental development, which is not limited to only geniuses and the talented, but is also present in the ordinary people (Starko, 2005)

In this respect, Maslow (1970) describes creativity as a necessary potential within human nature, wherein it is ability that is given to all human beings since birth, in the condition of a free society that is released from stress and frustration factors. He identified two types of creativity as follows:

- Special creative ability, which relies on talent and continuous hard work.
- Creativity as a mean of self-realization. Maslow sees that the ability to express ideas without self-criticism is a necessary goal in self-realization creativity, and that this capability is equivalent to the creativity implemented by innocent and happy children (Starko, 2005; Maslow, 1970).

In addition, Rogers (as cited in Starko, 2005) claims that creativity is a product of humanitarian health growth, and that the first distinctive feature of creativity is openness to experiences. This means that creative individuals are free from the psychological defenses that may prevent them from gaining experience of their environment. The second feature is the emphasis on internal assessment, which relies on personal judgment and special consideration for creative products. The third feature is the ability to play the elements and concepts, which Rogers explains that creative individuals should be able to play with ideas, imagine possible compositions and estimating assumptions (ibid).

Despite the interest in this theory, and more specifically in the humanitarian aspects, academics argue that they give little importance to the scientific aspects and other procedural matters (Charlotte, 1971). However, it can be said that this theory is very important in terms of preparing student teachers in primary schools to teach their students how express their ideas without self-criticism. Moreover, it should also enable student teachers to consider the internal and external parts of their students by providing them with various opportunities to reach their self-realization, and ultimately be creative in different ways.

2.4.4 Psychometric theory

The psychometric theory is formulated on a set of assumptions and principles in studying the creative phenomenon, which is built by Guilford and then developed by psychometrics scientists (Craft, 2002). These principles explained by Sternberg (2006b) and Guilford (1950-1986) are outlined as follows: There are two basic types of thinking: convergent and divergent thinking. The current intelligent tests (IQ) are designed to measure the convergent thinking that call to give specific answers, but the divergent thinking skills cannot be measured using these tests, as they require open answers. As a result, they require a new test to be devised for this purpose. Creativity - like intelligence – is a concept that should be subject to search and experimental measurement. It is located more or less in individuals in general, and then it is measurable and educable and is not limited to very few people. Sensitivity to the problems, fluency, flexibility, originality, elaboration and calibration are among the most important abilities or skills that make up the creative thinking. All of these skills are not a subject of measurement in the known IQ tests.

In addressing these principles, Craft (2002, p.6) draws attention to the criticism of Torrance's tests of creativity, as its 'measuring intelligence-related factors rather than creativity as such, and for being affected too easily by external circumstances.' However, measuring tools of the psychometric theory proved to be an effective instrument in underlying potential creativity (Craft, 2002). That is, this research is not focused on evaluating the student teachers' creative thinking skills; rather it seeks to consider the factors that influence the creative thinking potential of them, which needs

to be encouraged. Therefore, from the researcher's viewpoint, the psychometrics' principles are very important in terms of building a fundamental conception of creativity in order to enhance the student teacher creative thinking abilities.

2.4.5 Problem solving theories

A number of researchers studied the creative phenomenon in the context of problems that are solved, as they saw the creative process as a means of resolving such unusual problems (e.g. Amabile, 2012; Sternberg, 2006a; Gruber, 1989; Schank, 1988; Guilford, 1986). Although there are many researchers that emphasise this approach, the current research will focus on Guilford (1986), Sternberg (2006) and Amabile's (2012) theories, because Guilford and Sternberg put together the fundamental elements for developing creativity in education and all their theories and models have wide implications, particularly in education (Craft, 2002; Jarwan, 2009; Al-Mushrif, 2003).

In addition, because Sternberg's theories and models of creativity (a three facet model of creativity, 1988; investment theory of creativity (1991-1995) in Sternberg, 2006a; 2006b) are considered creative thinking among graduate students and adults, it is appropriate for this study because the sample is similar. Thirdly, Amabile's (2012) componential theory explains the importance of creative aspects in the development of creativity and how these components interact in the complexity of an organization. This also represents the interest and context of the current research (i.e. two colleges of education).

2.4.6 Guilford's theory and model

The views of Guilford (1950; Guilford et al, 1962) are among the most important points that have emerged within the theories that explain creativity using the problem solving method. According to Guilford, creative thinking in the correct manner is divergent thinking, and not vice versa. This means that divergent thinking is not necessarily creative thinking, but rather its meaning is based on fluency, flexibility and originality, as the divergent processes play a key role in creative thinking.

The fluency in this regard, is to issue a stream of associated responses, and to be determined quantitatively in light of the number of these responses or the speed of issuance. In terms of originality, this is specified qualitatively in light of the scarcity of responses or as a lack of it being unusual or popular. Lastly, flexibility is also determined qualitatively and depends on the diversity of these responses.

For Guilford, consistency plays an important role in creative thinking; for example, in mathematics, creativity begins with a plan, in music with a background idea, with general structure in the story and the novel and begins with the subject in drawing. As a result, a simple model for creative thinking was devised, which Guilford (1986, p.95) based upon his theory of creativity entitled 'a structure-of-intellect problem-solving model (SOIPS)'. According to this model, the first step in solving any problem starts when the nervous system or the 'communication system' of the individual receives external stimulant from the environment (E) or internal stimulant from 'the person's body or soma (S)'. This may be in the form of emotions and feelings, which are then exposed to the stimuli or 'inputs' for the process of 'filtering' in the lower part of the

brain through a tissue network that acts as a gateway control in the crossing of all the stimuli coming to the upper brain where perception and knowledge are found.

Guilford also emphasizes the importance of the role that memory plays in the process of 'filtering', as the stock memory includes some previous concepts and tendencies that block the road in front of the individual's awareness and perception of certain stimuli or problems. This is known as the selective 'attention' activity. The stimuli irritating to the nervous system, which allows it to penetrate the gateway then alerts the individual to realize there is firstly, a problem, and secondly, to recognize the nature of the problem. Following this, the individual begins a search operation in their reservoir of knowledge to find the right solution. If they cannot find a solution, they resort to external sources for most of the information and ideas produced by the processes of memory. Guilford also refers to some of the problems that are difficult to solve because the individual did not comprehend or grasp what was required properly, as they insist on continuing to try and reach a solution to the problem that has been misunderstood from the outset.

Although this theory is relatively comprehensive, it is not free from debate among academics. Mackintosh (1998) mentions that a number of criticisms were directed to Guilford's methodology, in that he only used one statistical analysis, data and procedures of his own, as well as adopting and circulating a theory of his own. Some researchers argue that Guilford SOIP model got more than what it deserves in the creativity literature (Carroll, 1993).

However, Guilford's efforts are still considered more comprehensive in the field of creativity in comparison to the majority of other theories. His model (SOIPS) has led to

a wide contribution and implementations in various fields, especially in education (Al-Mushrif, 2003). Moreover, it has contributed in expanding the research in the field of creative thinking, particularly among students who do not provide creative production, as well as the tests formulated by Guilford, which now represent the basic standards in this area.

The researcher in this study has considered some ideas and elements from the SOIPS theory and model, such as the use of divergent thinking, the role of fluency, originality and flexibility factors in creative processes, which includes his basic ideas that help in solving the problem.

2.4.7 Sternberg's theories and models

In his theory, Sternberg (1988) explains three facets in which creativity occurs due to the integration and merging of three creative dimensions. They are intellectual abilities or intelligence, thinking styles and personal characteristics. Sternberg and Lubart (1955) in their theory also added more components through theory. These components include 'environment and motivation' (Sternberg, 2006a, 2006b). Within these theories, they demonstrate that creativity appears in different ways and can take various shapes. According to Sternberg,(1988) the creative person does not necessarily have the same amount of these components, as these features interact with one another and in different ways in relation to creative performance.

In his three–facet model of creativity, Sternberg (1988, 2006a, 2006b) sees creativity through the interaction between the mental functions (intelligence), thinking style,

personality, motivation and environment aspects. A detailed breakdown of this is as follows:

Intelligence/intellectual abilities: In accordance to Sternberg's understanding of creativity, it is not in isolation from understanding the mental processes. Intellectual processes therefore, can be carried out in a highly creative way or in a less creative way depending on the degree of originality and quality in execution. The cognitive processes related to creativity are included into three types:

Meta-cognitive components: higher mental processes that are used in planning and control, or Sternberg's so-called 'legislative' processes, which includes: recognizing, identifying and formulating the problem, inventing strategies for solution or representing the problem mentally to reach the final solution.

Performance components: it is the mental processes responsible for implementing the instructions of the above cognitive components.

Knowledge-acquisition components: the operations that are used in obtaining and saving new information or knowledge. As Sternberg (2006a, p.88) explains, '(a) the synthetic skill to see problems in new ways and to escape the bounds of conventional thinking, (b) the analytic skill to recognize which of one's ideas are worth pursuing and which are not, and (c) the practical–contextual skill to know how to persuade others of—to sell other people on—the value of one's ideas'.

Thinking style: This category refers to the method or technique whereby directing intelligence work and the amount of intelligence necessary for creativity will maximise

creative thinking, but it is not a sufficient condition for it occurrence. Sternberg used the same expressions that are found in modern government structures to illustrate the functions of thinking styles. Thus, five manifestations are described for the thinking styles of an individual, all of which vary in terms of their relationship to creativity:

Mental functions performed by the thinking styles and functions similar to government authorities: legislative; the individual in this style prefers to put forth their own rules and establish their own structure and content on a particular situation. They deal with the open and non-ready problems, preferring jobs and activities that include legislation. *Executive;* Those who exhibit this thinking style like to follow instructions and examine what is there in order to choose a way that makes things work. Executives deal with specific problems in advance as they like to complete the image or content within the construct or structure, and prefer to execute activities that have an operational nature (e.g. mathematics problem). Furthermore, they seek to apply rules and laws in solving problems. *Judicial;* within this style are those that like to assess the systems and structures, and prefer to make judgments on the content and structures. Moreover, they are inclined towards work that requires criticism, opinion and judgment on things and people. Sternberg believes that creative people possess the legislative style solo or in combination with one of the other styles, because the legislation is naturally a creative activity.

The shape that a particular thinking style adopts is described by Sternberg in accordance to government forms (i.e. monarchic, hierarchical, oligarchic, and anarchic). Each style has specific traits, but Sternberg thinks that the anarchic style of thinking

may be more related to creativity, as it frees the individual from the existing obstacles and takes them to the problems that require a discontinuity from the familiar rules and principles. In terms of the trend of thinking style that may be advanced or committed, Sternberg sees that a degree of open-mindedness is necessary for creative work.

The thinking style level is an influential factor in thinking creatively, as it may be limited or holistic, locally or globally. It is therefore important that creative people have a trend towards the holistic level.

The extent of thinking styles in their openness to others or narrow-mindedness toward them means individuals are divided in this respect to: 1) Antisocial: characterized by planning, commitment to the task entrusted to him or her, the weakness of social sensitivity, isolation and lack of awareness of personal relationships. 2) Diastolic; characterized by social sensitivity, the trend towards others and ease of handling and working with them. The creativity is not limited to one type, but to some cases and tasks, it needs more focus away from others. In summary, Sternberg deems that the creator not only needs mental abilities but also thinking styles, which can lead these abilities.

***Personality*:** is an important component similar to the thinking style and intellectual abilities in the creative process. Sternberg believes there are specific attributes that can foster a creative action, such as the desire to evolve, the ability to change and overcome obstacles, the internal motivation/intrinsic, and willingness to take on reasonable risk. However, Sternberg (2006b, p.7) also points out that none of these attributes are fixed. One can decide to overcome obstacles, take sensible risks, and so forth'.

***Motivation*:** there are several researchers (e.g. Eysenck, 1994; Hennesse and Amabile, 1988) in agreement with Sternberg, that intrinsic motivation is essential for creative work more so than the prospect of gaining external rewards. Accordingly, Sternberg (2006, p.7) states that 'motivation is not something inherent in a person: One decides to be motivated by one thing or another'.

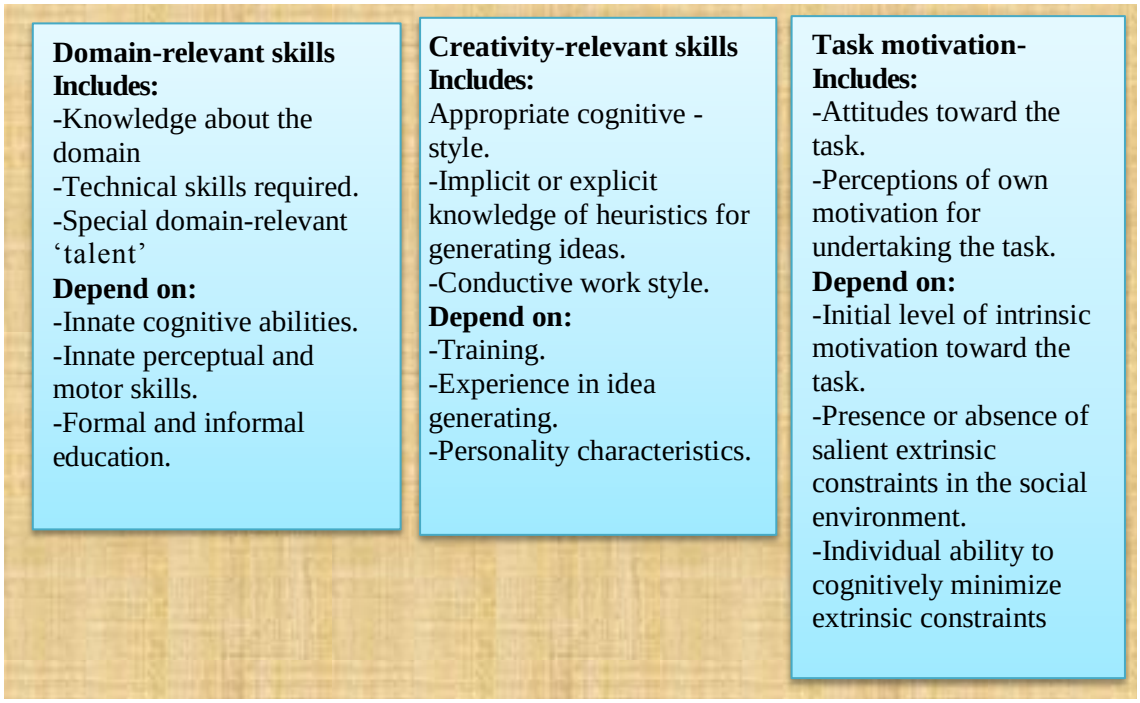
***Environment*:** Sternberg (2006b) further explains that the individual may have the motivation and the necessary aptitudes for creative work, but the absence of an appropriate environment that supports him/her may lead to suppressing the creativity in that person.

All these aspects can be used to develop student teachers' creativity, and in turn help them to understand how to prepare their student to use their creative thinking skills more effectively.

2.4.8 Amabile's theories and models

In reference to the importance of environmental and social factors within creative work, Amabile (2012) asserts that these aspects play a crucial role in evolving or stifling creativity. Figure-2.5 illustrates the internal components of a creative performance from different perspectives. This is sorted into three specific categories, which are: domain-relevant skills, creativity-relevant processes and task motivation.

Figure 2.5: *Components of creative performance (Amabile, 1983, p.362)*



The first two components (domain-relevant skills, creativity-relevant processes) identify what individual can do, whereas the task motivation component specifies the practical application of how and what they will actually do. With regards to the external components, these comprise of all surrounding elements, or as Amabile (2012, p.4), refers to it as, 'the work environment or, more generally, the social environment'. According to Craft (2002), the results of the studies that investigated the institutions' atmospheres that successfully facilitated the development of creativity highlighted that the participants in these organizations: 'Feel challenged by their goals, operations and tasks'. 'Feel able to take initiatives and to find relevant information'. 'Feel able to interact with others'. 'Feel that new ideas are met with support and encouragement'

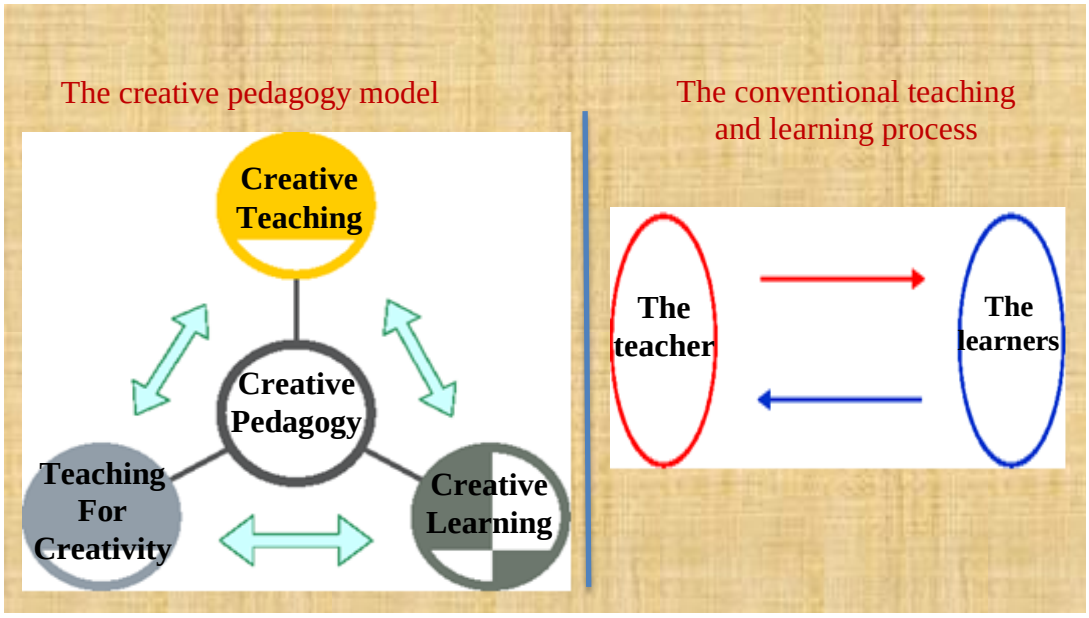
‘Feel able to put forward new ideas and views’. ‘Experience much debate within a prestige-free and open environment’. ‘Feel uncertainty is tolerated and thus risk-taking is encouraged.’ Thus, the researcher for this study will use these points as a general checklist of the environmental aspects for the departments that are under investigation within the current research. Ambile (2012) also believes that external and internal components of creativity interact with one another in terms of creative performance, and that any defect in any one of the components may be a barrier factor for creativity.

2.4.9 Lin’s pedagogy model

According to Lin (2011), developing creative thinking depends on the teaching methods that are used in the classroom. The creative pedagogy model is put forward to describe practices that enhance creative development through three interrelated elements: creative teaching, teaching for creativity and creative learning. Rather than a situation in which teaching and learning are two parallel processes that rarely meet, the three interconnected elements complement and result in each other, rendering it a resonant process.

A supportive climate for developing creative abilities and qualities is created through the interaction between inventive and effective teaching (by the creative facilitator), and creative learning (by the active learner)’ (Lin, 2011). Figure-2.6 demonstrates the differences between conventional teaching and learning process with the creative pedagogy model.

Figure 2.6: *The learning process in two different types (Lin, 2011)*



Lin (2011) states that there are several creativity theories, including inconsistent creativity definitions, which in turn provide different research approaches towards creativity. Nevertheless, the approach to creativity in education has its distinctive affairs such as the relationship between creativity and knowledge, curriculum and suitable pedagogical policies to promote creativity in the classroom (Craft, 2005).

2.5 Developing creative thinking

According to Craft (2002), creativity research started to concentrate on enhancing creative thinking from the 1950s and the focus on the need for the development of creativity in education began one decade after (i.e. 1960s), which has continued since. Nevertheless, researchers differ with respect to the development of creativity, as some argue creative works happen in rare moments and the creative process can only be developed in a combination that includes individual's creative abilities, the problems

and social environment together. They also affirms that enhancing creativity in education depends mainly on the assistance that should be provided from all elements surrounding it, such as friends, guides, teachers and friendly teams, alongside the availability of clear concepts of creativity and intentional endeavours (Feldman, 1999; Dodd, 2004; Puccio, 2006; Csikszentmihalyi, 1996 Barron, 1988; Gruber and Davis, 1988; Hennesse and Amabile, 1988; Parnes, 1970). The opposing view among researchers however, is the claim that creative thinking in education is a normal operation and that it is available for every thinking tool, with no difference between an adult and young person. They think that the creative process can be developed, trained and motivated under the assumption that creative abilities exist in every individual (Robinson, 2011; De Bono 2007; Craft, 2003; Goleman et al., 1992; Fisher, 1995 Torrance; 1977; Maslow, 1970).

In contrast, there are differences between researchers in how to teach creative thinking in education (Swartz and Parks; 1994; De Bono, 1991), which are demonstrated in three methods. The first method is the direct method, where teaching thinking skills is clear and simple, providing the student with definitions, knowledge, the stages related to thinking skills, methods and then introducing some of the exercises. The advocators of this method claim that thinking abilities are like any other skill, in that all subjects have a rational form and need to be taught directly and separately (Nickerson, 1988; McPeck, 1981). Secondly, the indirect methods are where the student studies the specific content in which they are exposed to all aspects of the skill required and the possibilities before recognizing the skill itself. The proponents of this trend argue that the indirect method

promotes thinking through the problem solving strategy, which grows as a result individual progression, and centres around implementation and unification (Nisbet, 1993; Bransford et al. 1987). Finally, the mixed method merges the two previous approaches together when there is the will and expertise of the teacher who can combine thinking and disciplines together, whilst also focusing on improving discipline issues, understandings, knowledge and comprehension (Beyer, 1998; Nickerson, 1988).

Each method had it advantages and disadvantages, but in the researcher's view, the mixed method is more applicable for the student teachers' training programme. This is because teachers must be able to identify all principles of creative thinking and have a clear understanding of the abstract concepts, whilst also being aware of how to employ them on various topics in their training programme (Nickerson, 1988).

These differentiations have also created many rankings in stimulating creativity, such as the individual methods (designed for the self-motivation of the individual either by self-learning or with the help of a counsellor, coach or teacher) and the assembly methods (e.g. brainstorming approach, creative problem-solving style, synectics program and combination of all or one of these approaches) (Stain, 1975, 1974).

Several researchers emphasise the influence of various factors in creative behaviour, product and process, such as personal characteristics, society and culture (Hennessery and Amabile, 2010; Craft, 2000; Csikszentmihalyi, 1996; Sternberg, 1995). Thus, they highlight the need for 'systems view of creativity' and therefore, it is important to clarify that the educational colleges that are under investigation in this study represent a type of organization that contains different and tangled elements. This means that the

development of creative thinking needs to be directed to all these elements in terms of the interacting manners.

2.6 Definition of terms used in this research

As this research seeks to focus on a specific area of study within education, a brief definition has been given for certain titles that will be used throughout this thesis.

2.6.1 Basic Education

Basic education represents the two years in kindergarten level and the five years in primary stage of education in Kuwait.

2.6.2 Teacher Training programme

Represent the training programme that comprises of the theoretical teaching/learning/training and one-semester of practical application. This includes BEC-PAAET and KUEC, as both have the same type of training programme with different procedures and various programme elements.

2.6.3 Tutors

Those represent the teachers/professors at the five primary departments in Kuwait Educational Colleges.

2.6.4 Student-teachers

Represent the pre-service teachers who enrolled at the five primary departments in Kuwait Educational Colleges (KUEC and PAAET-BEC) as training teachers for four years in order to gain a teaching degree in their specialty.

2.6.5 Creativity and creative thinking

Having reviewed the literature, it could be seen that there is a positive correlation between creativity and creative thinking (Clegg, 2008; Fisher, 1990; Baer, 1997). From this perspective, this research will address creativity and creative thinking as interchangeable terms and on the grounds that they are different concepts but consist of closely related features of one idea. The current study will use the following composite definition:

Creativity is a process that can be formulated into two ways. Firstly, as ordinary thinking or 'possibility thinking', which makes the individual become 'sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses' (Torrance, 1974, p.8). It also means 'refusing to be stumped by circumstances, but being imaginative in order to find a way around a problem or in order to make sense of a puzzle' (Craft, 2000, p.4). This will be beneficial to the individual as well as the society. Secondly, it is 'extraordinary creativity' when formulating hypotheses about any deficiencies, testing and retesting these hypotheses and possibly modifying and retesting them, and finally communicating the results' (Torrance, 1974, p.8). This leads to generate a 'new

knowledge which has a major impact on an existing area of knowledge, the boundaries of which are monitored by experts within that field. It is the validation of novelty and usefulness of any act, by the experts within a field that qualifies it as 'creative' (Craft, 2003, p.114). Both these forms of the creative process need suitable environments that can raise the mental process and also lead to original and useful outcomes (Jarwan, 1998).

2.7 Chapter summary

This chapter has provided an extensive breakdown of the relevant existing literature pertaining to creative thinking, specifically within the scope of education. The systematic review in the first section of this chapter demonstrated the important dimensions that need to be considered for enhancing creative thinking in student teachers' colleges. This included the definition and components of creative thinking, the types of creativity that are articulated in existing literature, the creative contextual and personal factors and the environmental aspects. The second section discussed the main issues related to creative thinking, particularly within education. This covered concepts, definitions, the importance of this form of thinking and the barriers that prevent or discourage it in the educational systems.

Despite the lack of agreement over the concept and definition of creativity, there is a clear acknowledgement amongst educators and scholars regarding the importance and need for the development of creative thinking in all educational institutions' stages (both ordinary and extraordinary). In addition, it is evident through a review of theories pertaining to creativity, that there are elements among these theories that can be taken

advantage of in terms of suggesting the principles of the theoretical development models of creativity. This includes areas such as encouraging imagination and supporting the diversifying of stimuli to link them to the appropriate reinforcements in the environment surrounding the learner, as well as being aware of the individual's internal and external components of creativity. The following chapter focuses on describing the methodology and design used in this research.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

The previous chapter showed research gaps in knowledge about creative thinking, particularly with regard to factors that encourage or discourage this type of thinking in pre-service student teacher training programmes. This chapter presents the overall research methodology that has been adopted and justifies the use of the case study methodology and multiple research instruments (interviews, focus groups, observation and documents). It outlines the research problem, participant selection, research limitations and sample strategy. The epistemology, the validity and trustworthiness of the data collection, and the ethical considerations are also explored in this chapter.

3.2 Statement of the problem and research gaps

The main purposes of this research are firstly, to identify the factors that may affect the development of creative thinking in student teacher education colleges. The second purpose is to draw attention to the requirements when considering creativity as one of the main elements in teacher training programmes in Kuwait. Thirdly, after a review of the relevant literature and analysis of the results of the practical investigation, the aim is to propose appropriate recommendations and a theoretical framework that can contribute towards the development of creative thinking skills in teacher education colleges across Kuwait.

In order to achieve these goals a fundamental question will be addressed:

- What is the role of creative thinking in primary teacher education colleges in Kuwait?

To answer this central question, the following sub-questions are to be addressed:

1. How do the pre-service teachers and tutors in both colleges recognise the role of creative thinking in their preparation and training?

2. What are the key factors that have affected the development of creative thinking in pre-service student teacher education institutions?

3. How can creative thinking in these institutions be developed?

Having planned the research question, as well as conducted a comprehensive review of the existing literature, the researcher approached the problem from two angles: gaps in creative thinking research (student teachers' creative thinking) and particular factors related to the context of the study. A systematic review of the literature showed that although there is a growing body of research on student teachers' creative thinking in developed countries (i.e. UK and USA), there is a large gap in the research in developing countries, especially Arab Gulf countries (see the first section in Chapter 2, Figure 2.2). In addition, from the comprehensive review of the existing literature, it seems that even though this topic (creative thinking/creativity) has been mentioned in many academic studies since the 1950s and even before this, there has been very little research on identifying the main factors that clarify the development of creative thinking in teaching colleges. From the eleven studies that were reviewed, it is further

evident that there is a lack of guidance with regard to providing a framework for the enhancement of creative thinking in teacher education colleges, particularly in developing countries. Although a number of research studies considered in-service teachers' creative thinking from different perspectives, they all seem to ignore the preparation phase for student teachers, especially primary student teachers, in terms of the main factors that might encourage or discourage this type of thinking.

Therefore, in order to bridge this important information gap, and to achieve the main research aims, this study seeks to construct a theoretical framework for the development of creative thinking in teacher training colleges in the Kuwaiti context.

3.3 Brief description of the setting

It is interesting to note that the sample of this study is fairly representative of the overall population, as these two institutes are the main and only government education colleges. That is, these are the only two colleges within Kuwait that train and allow student teachers to teach from kindergarten through secondary school. As this research is not intended to evaluate how these colleges are run, it is more appropriate to use symbolic characters for each college and department when referring to them for confidentiality purposes (i.e. College A and College B). In addition, to provide a context for the observations in this research, a short description of the various departments will be given.

Kuwait is a small country with hot weather and very crowded streets, especially during rush hour. As a result, students take a long time to move from one lecturing facility to

another, not because of the distance, but because of the traffic. Both colleges have a main building and departments that comprise mainly of classrooms, resource rooms, laboratories, staff rooms for each department, libraries and the dean's office. Additionally, there are separate buildings adjacent to the college for cater to the increasing number of students every year. In the researcher's view, the facilities resemble large-sized secondary schools.

This research will be limited to five departments at each college, specifically those from the primary school programme: Islamic, mathematics, science, Arabic and English. Once a student from either college (A/B) successfully passes the required modules and field training courses in any of the five subjects included in this study, he/she will be qualified to teach the subjects at the primary level. Both colleges adopt a credit scoring system for the teaching courses.

3.4 The nature of research methodology

Patton (2002) mentions three main domains that define the characteristics of qualitative research, which are considered in this research project. The first domain is design strategies, which should include naturalistic inquiry, emergent design flexibility and purposeful sampling. The second domain is related to data collection and fieldwork strategies, whereby the data should be qualitative and gathered in a qualitative manner, and should include conveying personal experiences and engagement, empathic neutrality and mindfulness, and dynamic systems. The third and final domain is analysis strategies, which comprise of unique case orientation, inductive analysis and creative synthesis.

Therefore, it can be said that this research is qualitative in nature. Many researchers (i.e. Crotty, 2003; Bryman, 2004, 2012; House & Howe. 1999; Henn et al., 2005; Patton, 2003) assert that a qualitative method helps in investigating a particular phenomenon (creative thinking) in its natural settings (teacher education colleges in Kuwait), and attempts to interpret the data based on various meanings and experiences which individuals bring to them (teachers and pre-service student teachers). This also means that the qualitative approach is suitable for the type of data that the researcher plans to gather. Another reason this method is appropriate is that it can depict complicated details of the phenomena, and is convenient with regard to providing understanding of the phenomena, particularly with regard to what may already be known about it (Strauss et al., 2008).

The main criticism about qualitative research according to some researchers (e.g. Crotty, 2003; Bryman, 2004, 2012; House & Howe. 1999; Henn et al., 2005; Neuman, 2006) is related to its reliability and validity, because the research depends mostly on individual interpretations, which may vary from one participant to another. Thus, the researcher in this study has considered all the opposing opinions when analysing the data and has adopted certain elements of the critical social perspective to address specific aspects of creative thinking (this will be explained in more detail in the following sections).

3.4.1 Epistemology and ontological position of the research

According to Cohen et al. (2007), empirical research in education is constructed in positivistic, interpretive, critical and feminist methodologies. Additionally, the

quantitative and qualitative approaches are two methodologies that are implemented when undertaking social research, which characterise and adhere to the positivist and interpretivism epistemological positions respectively.

Constructionism/constructivism is considered to be the ontological position of the study, and interpretivist represents the epistemological standpoint. This for the following four reasons. One, this position and standpoint resonate well in gathering the information from the perspective of the participants and dealing with people's views and opinions (teachers and pre-service teachers). Two, according to Bryman (2008, 2012) the interpretivistic paradigm, requires understanding and explaining the world through the testing of the interpretations of the participants in that world, and the researcher will in turn interpret these interpretations according to the theories and literature associated to discipline. The social phenomena are constructed through the everyday individuals' interactions (Neuman, 2006) which are continuously changed (Bryman, 2012). Hence, the daily connection between the teachers and the pre-service teachers in the context and setting of this research can be helpful in getting in-depth information and reach the research aims. Three, this research considers the social construction, which focuses on 'individual' interpretations and uses the qualitative hypothesis-generation methods. This is in contrast to using the social structures, focusing on social facts or considering the quantitative hypothesis-testing methods, which are regularly used within positivist approaches (Silverman, 2001).

3.4.2 Conceptual framework of the research

As the objective of this study is to understand the situation with regard to creative thinking skills from the perspective of the participants, it means that the participants' opinions, ideas and experiences (whether they are student teachers or tutors) are the most important aspect of the research. The study may adhere to the interactionist perspective theory because the two basic principles of this theory are in line with the fundamental position of this study, and it provides a social interpretive approach (*; Blumer, 1969, Denzin, 1969; Erving, 1990). These two principles are: Human behaviour is a product of the way we interpret the social world on a daily basis (the daily interactions between teachers and students). The social world is created and recreated by people that interact with one another and live their lives; accordingly, the way in which people interpret and give meaning to the behaviour of others is a significant factor in understanding the social world (interpretations of the social world in this research can be obtained through many aspects such as the classroom environment, the teaching strategies, the administration policies, and the education system among others).

Moreover, the interaction theory considers the existence of and changes in symbolic orders via social interaction (Denzin & Lincoln, 2011; Silverman, 2001); this theory is therefore useful within the creative thinking framework of this study. There are two

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* http://www.sociology.org.uk/as4i4c3.pdf (accessed 21st November, 2014).

positions that represent the theoretical assumptions underpinning the approach to creativity in education: the first view is that 'creativity can be developed', and the second view is that 'all individuals have the potential to be creative' (Lin, 2011, p.150). In contrast, as one of the most important aforementioned aims of this research is to suggest recommendations that can facilitate the improvement of creative thinking in teacher education colleges, the framework for creative thinking dimensions can provide a more holistic reflection of the promotion of creativity through education.

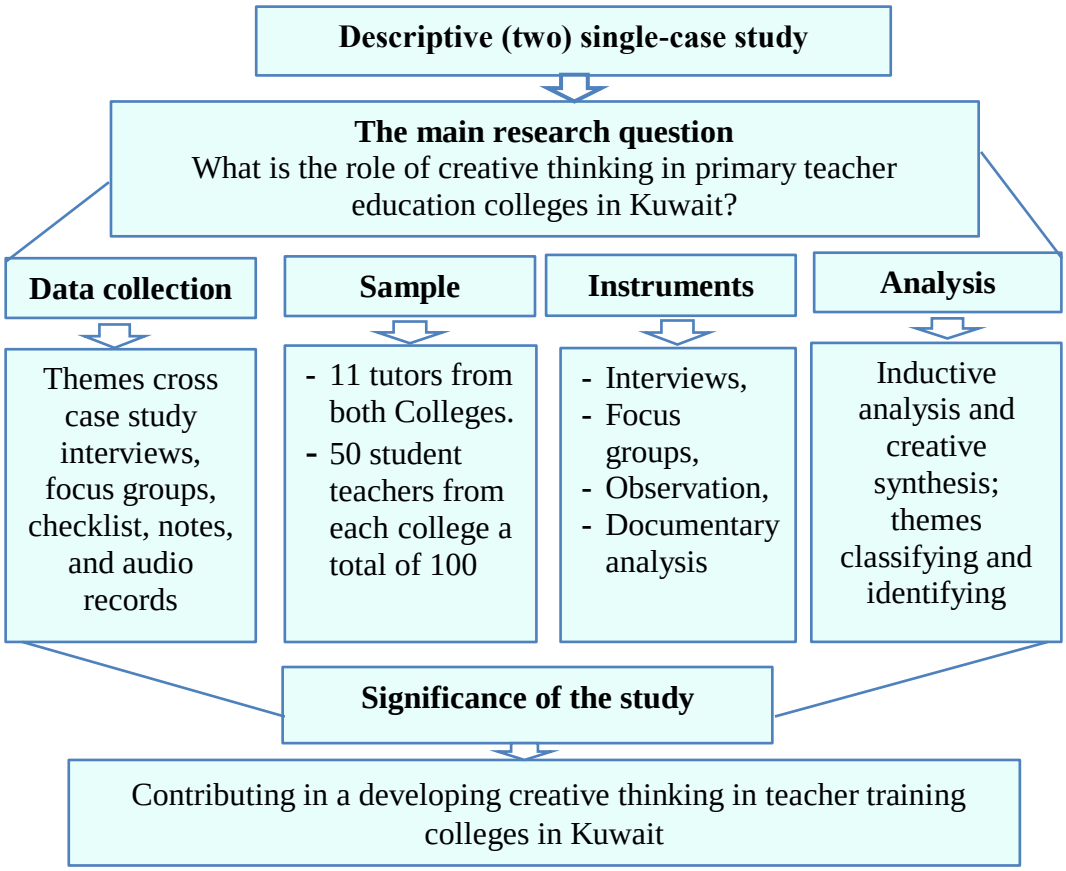
3.5 Research design

Tellis (1997) and Yin (2009) point out that there are three types of case studies: exploratory, explanatory, and descriptive. According to Yin (2003, p. 6), in exploratory case studies, 'fieldwork and data collection are undertaken prior to the final definition of study questions and hypotheses'; this is different from what was followed in this study. Yin (2003, p.7) added that explanatory case studies aim to propose some types of clues to possible cause-and-effect relationships; however, a single case does not provide for true exploration. Therefore, this research implements the descriptive (two) single-case study design comprising four data collection methods, namely, semi-structured interviews (with tutors), focus groups (with student teachers), observation, and analysis of documents.

This research adopted the inductive analysis strategy as it helps understand the richness of comprehensive information from a small sample (Patton, 2002). According to Patton, inductive analysis helps the researcher to avoid prior assumptions before important aspects that need to be considered; in an inductive analysis, the researcher starts from

initial observations and then continues to build general patterns. The aim of the researcher is to understand the patterns in the setting as the outcome of the analyses of data gathered from the field work. Figure 3.1 shows the outline of the research design.

Figure 3.1: *Research design*

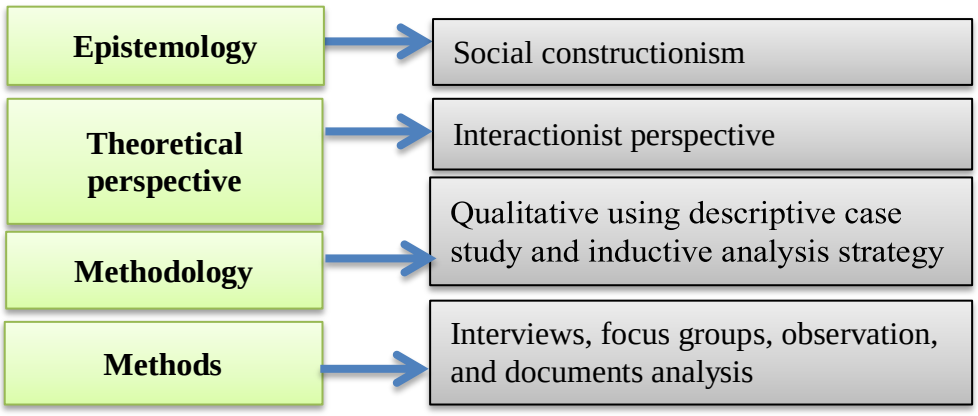


This design was adopted in light of the main and specific purposes of this research project (see 3.2 Section in this chapter) and the ontological and epistemological basis of the study (see 3.4.1). Yin (2009) claims that descriptive case studies are usually used to provide answers to questions built on theoretical constructs.

Patton (2002, P. 56) additionally points out that ‘theories about what is happening in a setting are grounded in and emerge from direct field experience rather than being imposed a priori as is the case in formal hypothesis and theory testing’. Hence, the descriptive case study design is useful for the researcher as it offers greater insight into understanding the situation being studied (creative thinking in teacher education colleges). According to Neuman (2006), the interpretivist perspective is often used to study social reality in order to critique and then modify or change it. This is in line with the objectives of this study, which are, identifying recommendations to overcome the obstacles that discourage the development of creativity and suggesting a context-specific creative thinking framework.

Furthermore, the methodology that has been applied depends on the ontological and epistemological perspectives of this research (constructionism/constructivism and interpretivism), which support the use of the case-study design and justify the adoption of interviews and focus groups as key qualitative instruments for data collection. Figure 3.2 outlines the framework of this study, based on the four elements of Crotty’s (2003) research framework.

Figure 3.2: *Framework of this research based on Crotty's four elements*



Use of the descriptive (two) single-case study design has multiple benefits that relate specifically to the nature of this study. Moreover, the results that are extracted from case studies provide rich explanations of the situation and offer the chronological sequence of a situation (factors that encourage and discourage creative thinking in teacher education colleges A/B). According to Denscombe (2010, p.55), case studies 'work best when the researcher wants to investigate an issue in depth and provide an explanation that can cope with the complexity and subtlety of real life situations'. Furthermore, it merges characterisation of a situation with its analysis and focuses on understanding situations from the point of view of the individual or group (Hodkinson & Hughes, 1995). Case study has specific features that justify use as a research design, and these features will be explained in the following section.

3.5.1 Strengths and limitations of the research methodology and design

Hodkinson and Hodkinson (2001, p.3) have mentioned several strengths of case studies, which can also be seen as the strengths of this research. For one, case studies help in

understanding ‘complex inter-relationships’, and ‘can facilitate rich conceptual/theoretical development’. These two points concur with the views of Kemmis (1980), who emphasizes on the fact that case studies are a powerful tool that considers the softness and complications of a case, and reflects the truth.

Moreover, Yin (2009) mentions that the most important purpose of using case studies in research is to illustrate the causal connections found in real-life interventions, which is also compatible with the conceptual framework of the present research. This is in line with another point of Hodkinson and Hodkinson (2001, p.3): ‘case studies are grounded in “lived reality”’.

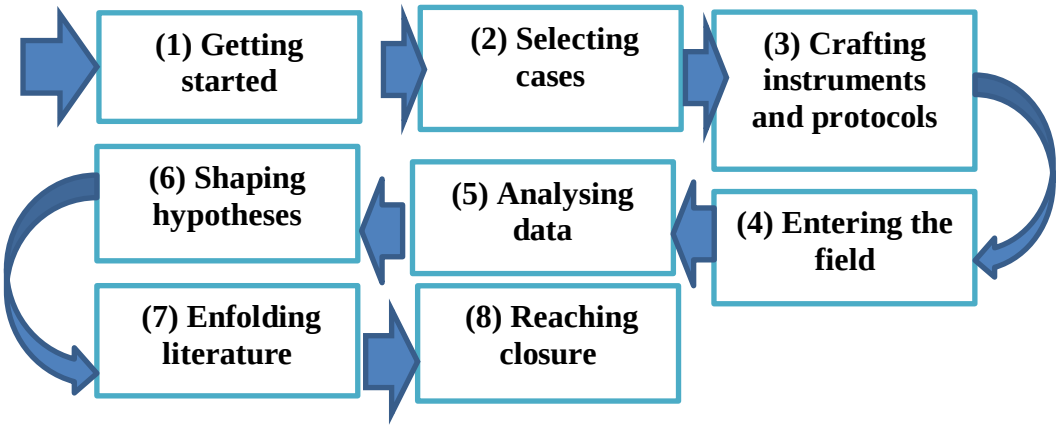
Furthermore, according to Stake (1995), the case study approach considers the singularity and complexity of a simple case, enabling the researcher to understand it in the context of significant events. According to this idea, the case study methodology can allow for unexpected and unusual explorations (Hodkinson and Hodkinson, 2001, p.3). Eisenhardt (1998) also explains that case studies can be used to describe a phenomenon, examine a theory, or produce a theory, whilst Denscombe (2010, p. 54) highlights that ‘one of the strengths of the case study approach is that it allows the researcher to use a variety of sources, a variety of data types, and a variety of research methods as part of the investigation’.

In contrast, the limitations of the case study approach have been reported by several researchers. For example, Denscombe (2010) and Hodkinson & Hodkinson (2001) mentioned that generalisation of findings within case studies is often difficult. However, in order to overcome this issue, this research uses multi-method triangulation; according

to Eisenhardt (1989, p. 538), 'the triangulation made possible by multiple data collection methods provides stronger substantiation of constructs and hypotheses'. Denscombe (2010) additionally refers to ethical issues in the case study methodology, whereby the individuals, institutions and documents used may lack the precision usually expected from social science research.

However, these concerns (generalisation, ethical issues, etc.), according to Denscombe (2010), can be avoided when the researcher considers the importance of abating doubt, explains the ways in which the case study is close to or dissimilar from others of its kind, and uses rigorous constructions (Yin, 2009). Based on an evaluation of prior research and exploration of the available methodologies, it was clear that the case study approach was the best one for this area of research. In addition, as Eisenhardt, (1989) asserts, the case study approach predominantly focuses on generating a specific theory. He provides eight points to represent the procedures in order to build the theories within case study research (Figure 3.3). This study will refer to these points and seek to implement those relevant and appropriate to the nature of this topic.

Figure 3.3: *The procedures to build theories from case study research (Eisenhardt, 1989)*



According to Eisenhardt (1989), these procedures give credence to the case study method, particularly if the researcher considers retesting and evaluation within each step, and moves forward and backward when necessary in order to build theories that can be explored in detail.

On the other hand, according to Yin (2009), the case study research design includes five sections: research questions, propositions, unit (s) of analysis, the logical connection between the data and the propositions, and the rules for interpreting the results or findings. As this research did not consider addressing previous propositions (previous propositions not in line with the idea of building a theoretical framework), only three of these sections will be addressed: research questions, unit(s) of analysis, and the rules for interpreting the findings. Each section will be explained below in the context of this research.

3.5.2 Research questions

Due to the descriptive nature of this study, the question/sub-questions aim mainly to investigate the existing practices in teaching creative thinking in education colleges in Kuwait, how creative thinking is recognized by teachers and pre-service teachers with regard to their interactions in the education system, and which factors are related to encouragement and discouragement. It can be seen that the main research question and the sub-questions focus on two types of investigation—'what' and 'how' (see section 3.2 in this chapter)—which makes the case study strategy the most suitable for this research.

3.5.3 Unit of analysis

Yin (2009) states that in a case study, a 'case' could be formulated in different frames, for example, administration, organisation, individual, society and event. In this study, each college represents a single case. As asserted by Yin, it is essential to specify the units of analysis in the case study. In addition, Bryman (2012) states that the sample of the research can be the unit of analysis. Hence, the sample of the study will be considered as the units of analysis, which include the teachers, the pre-service student teachers from the five departments of each college (A/B) (Islamic, mathematics, science, Arabic and English), and the head of the special education department.

A number of themes and concepts are established in light of the research question and sub-questions (see section 3.2 in this chapter) and intensive review of the existing literature (chapter 2). The case study design according to Yin (2009) enables the

researcher not only to add the units of the analysis but also to identify these units in order to revisit them as new findings during data collection. Table 3.1 shows these types of units, concepts, and the six themes that guided the investigation.

Table 3.1: Units of analysis and research themes

<table>
<tr><th colspan="2">Units in both colleges (A/B)</th><th>The investigation's concepts and themes</th></tr>
<tr><td rowspan="2">(A/B)</td><td>The five following departments:
• Arabic
• English
• Science
• Islamic
• Mathematics</td><td rowspan="3">1.Teaching strategies and classroom environment;
2.The concept of creative thinking.
3.Administration policies and educational system.
4.Students' competences.
5.Barriers to enhancing creative thinking.
6.Factors to develop creative thinking skills.</td></tr>
<tr><td>• Five teachers from each department in both colleges.
• The head of each department to get the access for some relevant documents and observation sessions.
• 50 student teachers from each college.</td></tr>
<tr><td>(B)</td><td>• The head teachers of the special-education departments</td></tr>
</table>

3.5.4 Rules for interpreting the findings

As the qualitative methodology represents the nature of this research, the rules for interpretation of the findings depend on identifying and comparing patterns through the inductive approach and creative synthesis strategy, which are guided by analysis of the

data instead of specific rules (Patton, 2002). More details about the data analysis and the procedures for interpreting the findings are provided in section 3.8.

3.6 Sample strategy and participants' selection

The fieldwork for this study began from the 30th of October 2012 and continued till the end of February 2013. This short-term period limited the research in terms of timing and available support; moreover, the project was relatively small-scale and depended mainly on the researcher's capabilities. As Neuman (2006) states, the sampling in qualitative research should focus on how the sample illustrates the issue under examination instead of the representative sample; in this way, the sample can be chosen quickly while ensuring that it is suited to the research aims and is appropriate for extracting in-depth information from a small population. This decision was made based on the restricted sources for this research (only five departments from two colleges).

Purposive sampling was used in this study. Specifically, heterogeneity sampling, which is also referred to as judgement sampling, essentially focuses on specific characteristics of a population that are of concern and that will best provide in-depth information and answers to the research questions (Patton, 2002; Tongco, 2007). Neuman (2006) asserts that the purposive design is justified in investigative research aimed at in-depth exploration of situations. Moreover, Tongco (2007, p.151) points out that the type of sampling depends on the quality of information needed for the research, the sources, availability to the people, and the time available to obtain this information.

For example, when information from every individual in the community is potentially valuable, it is advisable to use random sampling; when time and resources are too

limited for random sampling, purposive sampling should be used but with caution; when information is held by only certain members of the community, purposive sampling should be considered. Based on this, it seems that purposive sampling is more applicable to this study because the information required is available with certain people and not all members of the school community. That is, it is available with teachers who deal with the reality of teaching and can distinguish the role of creative thinking and the factors that help development or hinder this type of thinking, and teachers also have experience in this field. Kleiber (2004, p.99) states that 'sampling for focus group research should be done purposefully. In many cases, purposeful sampling from the target population is the goal. Participants should have experience with the topic or research question and feel comfortable sharing what is on their mind'. Student teachers are the target in the teaching and training process; therefore, they can present their views and determine their attitudes towards the subject of the study. In addition, time is limited with random sampling, especially if the researcher needs volunteers and cooperation from the participants in order to obtain accurate information.

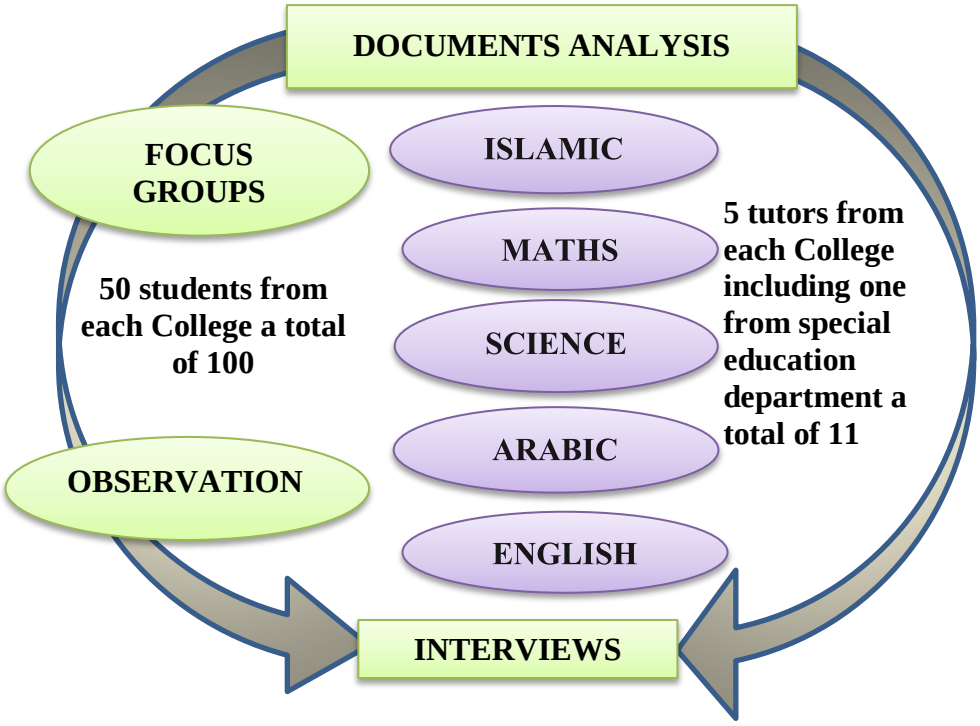
On the other hand, according to Rubin & Rubin (1995, p. 72), the number of participants in a qualitative study does not depend on statistical frames, but on the 'completeness' of the research plan and the comfort with which the researcher understands the multi-faceted phenomenon under study. Thus, the participants were all teachers and students from different departments in both colleges (Islamic, mathematics, science, Arabic and English). One teacher from each of the five departments was selected from each college. In addition, the head of the special

education department of College B was also included in the study sample, which made a total of 11 teaching staff (three female and two male from Collage A, one female and five male from College B). The teacher selection significantly depended on their cooperation with the researcher with regard to volunteering to participate in the interview and observation.

Moreover, it was necessary to find teachers who were willing to provide relevant documents that could be used to analyse the subject content and find its relation to creative thinking, and encourage the students to participate in the research. The researcher also adopted other specific criteria for choosing the teachers. This included only selecting teachers with a minimum of five years of teaching experience whose main profession was the subject being taught, and whose essential duty in the college was teaching and training. With regard to the teacher trainees, a total of 50 from each college were selected: 10 from the third and fourth year (5 from the third and 5 from the fourth year) for the five focus group interviews.

According to the above arguments, purposive sampling seems appropriate, as the participants (teachers and pre-service student teachers) are familiar with the topic and have all the information needed to answer the research questions. For example, the teachers as research participants, with their positions and high qualifications within the education system, have practical experience with creative thinking and its role in education. Figure 3.4 depicts the sample size and its distribution with the research instruments.

Figure 3.4: *Depiction of the sample and research instruments*



According to Rubin & Rubin (1995), the qualitative methodology is flexible and repetitive in nature; it can be modified and changed, and developed according to recent or new findings or discoveries throughout the period of data gathering and analysis. In agreement with Ezzy (2002), this means that sampling for the research can be conducted based on whether the researcher feels that the research has reached saturation. Before data collection, the initial steps of this case study included a checklist prepared by the researcher (Appendix A: Checklist of initial steps before fieldwork), in order to gain a broader view of the contacts that this project should consider; this step revealed that there was a section for special education in College B. Therefore, the researcher added an interview with the head of the Department of Special Education to the ten interviews that were already scheduled. This decision was made because this

section includes professors specializing in special education for gifted and creative and special needs students, and therefore, they could verify whether this section plays a role in the development of creative thinking for all the departments under study. One aspect of the sample that needs to be highlighted is the gender of the student teachers who are preparing to teach in primary schools. That is, under the feminisation rule in the State of Kuwait, all primary schools are required to have female teachers as part of their teaching staff (Al-Mia et al., 2005). As a result, this research deals specifically with female participants.

3. 7 Research instruments for data collection

Creswell (2013) explains that applying multiple sources of data collection (i.e. triangulation) can significantly help the researcher to validate and crosscheck findings. The methods utilised in this study sought to accomplish this by interviews with the tutors, a focus group with the student teachers, observation of the selected participants through specific sessions (teachers and students), and analysis of the teaching materials (This included any supporting materials that might clarify each department's policy with regard to creative thinking).

3.7.1 Semi-structured Interviews

Within educational research, interviews can be conducted in four ways in order to support four essential aims: scheme interview, interviewing to understand the social context of learning, case studies, and interviewing directed at educational improvement (Tierney & Dilley, 2001). This research utilized case study interviews to explore a

specific aspect of improvement, which was the student teachers' creative thinking, and as Yin (2003) asserts, qualitative interviews in case studies represent a very important tool for obtaining information. Bryman (2008) states that interviews can be used as a method to collect data in quantitative and qualitative research; however, qualitative interviews are a convenient instrument for this research as it examines complex relationships (teachers, students, administration policies, and education systems) and seeks an in-depth understanding of all the elements available in each college (Rubin & Rubin, 1995). King and Horrocks (2010, p.3) proposed three guidelines for generic qualitative interviews, which were in line with the type of interviews conducted in this research. These lines are 'flexible and open-ended in style', aim to 'focus on people's actual experiences more than general beliefs and opinions', and are based on the belief that 'the relationship between interviewer and interviewee is crucial to the methods.'

Codó (2008) highlights three different types of interviews that can be conducted: unstructured interviews, non-directive questioning to semi-structured interviews, and highly-structured interviews with a moderately directive style. This study utilises semi-structured interviews, which were primarily conducted with the 11 teachers.

Semi-structured interviews, according to some researchers (i.e. Rubin & Rubin, 1995; Warren, 2001), employ interpretive and constructionist approaches. These approaches depend on consultation about the interpretation, different descriptions of the topic (creative thinking in teacher education colleges), the conceptions about various factors (creativity in teaching strategies, classroom environment, etc.), and the production of explanations through the interaction (between the participants). The researcher as an

interviewer created the shape and the component of the explanation and interpretation instead of being subjective or misrepresented (Rubin & Rubin, 1995).

This type of interview (the semi-structured interview) allowed the researcher to manage the teachers' time effectively and to allow for opportunities to diverge slightly off topic in order to explore related and relevant issues from the participants' perspective, and it allowed them to develop ideas and speak in a more flexible manner. It also helps the researcher to divert the conversation, examine more explanations, and obtain straight expressions from the participants to produce their opinions of the participants, while continuing on the path of the questions. Moreover, using the semi-structured form of interview ensured effective maximization of time in the case of the focus group.

As mentioned earlier, six dimensions of specific social interactions between the participants related to creative thinking represent the guide for investigation in semi-structure interviews. These dimensions directed the questions in the interviews, and it partly follows the order in Rubin & Rubin's (1995, p. 159) model: 'tree-and-branches' (see Appendix F: Teachers' structured and semi-structured interviews); the order in this model helps researchers to cover and explore various issues related to creative thinking while staying consistent with the questions. The order has been modified, particularly in terms of the questions' forms and numbers in order to concentrate on specific issues, especially in the focus group interviews. Several researchers state (i.e. Eisenhardt, 1989; Ezzy, 2002; Patton, 2002; Bryman, 2012) that any change or modification made in the instruments during field work is considered as an initial data analysis process, as each process is affected by another process. They mention that these types of modifications

are acceptable in qualitative research because they are useful in intensifying the core of the study, give the researcher a good opportunity to decide on the suitable sampling strategy, and also help to include the participants' interpretations in the researcher's interpretations in the data analysis process.

Each interview was conducted face-to-face with the teacher in their office and lasted between 60 and 90 minutes. Audio recordings of the interaction were obtained so that they could be transcribed accurately for the analysis (Silverman, 2006). It should also be noted that structured interviews and closed-ended questions were also utilised initially in order to obtain information related to demographic variables (Appendix F: Teachers' structured and semi-structured interviews).

Several researchers emphasize that there should be certain limitations in face-to-face interactions (i.e. interviews and focus groups), such as the time required to set up appointments and preparation to complete all the procedures (Bryman, 2008; Codó, Holstein & Gubrium, 2003; Rapely, 2001). The present study faced this limitation, as the participants (tutors and student teachers) had very limited time and very busy schedules. Another difficulty was that these interactions were affected by many factors, such as stress and the tension of teaching and other factors that may affect both the researcher and respondent. Nonetheless, the interviews with the tutors were conducted fairly smoothly, with similar casual discussions between colleagues within the college. The tutors expressed their concern about and eagerness in sharing their perceptions and experiences of certain factors that would encourage or discourage creative thinking skills in their institution.

3.7.2 Focus groups

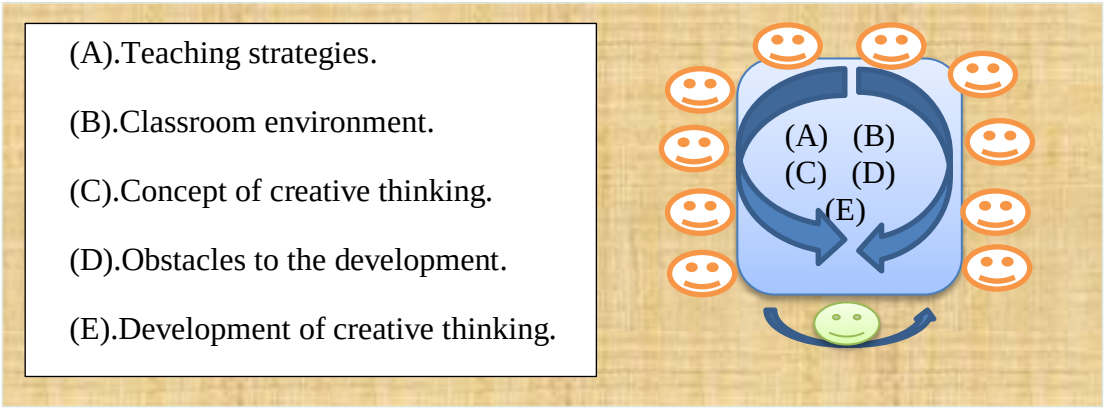
A focus group is a '…carefully planned series of discussions designed to obtain perceptions of a defined area of interest in a permissive, non-threatening environment' (Krueger and Casey, 2008, p.2). The researcher conducted the focus groups with the student teachers after conducting the classroom observation sessions. The researcher made sure that the students' discussion in the focus group did not affect them during the observation and that they were able to express their ideas and were ready for intensive discussion regarding the main issues in the classroom, especially about the concepts and themes of their interaction and the role of creative thinking in their preparation. If the focus group approach is used correctly, it can yield high quality decision-making discussion and can provide substantial and reliable information (House and Howe, 1999).

Five focus groups were held, with 10 student teachers in each group. This size was appropriate for the researcher for efficient management, as all the participants could get involved without allowing one of them to dominate and control the course of the discussion (Liamputtong, 2011). In addition, using the focus group technique as a primary method for the study was useful in exploring specific issues related to creative thinking through personal interactions with each participant, which gave the participants more flexibility in the discussion and lowered the control exerted by the researcher (Burgess et al, 2006). However, Wilkinson (2004) asserts that managing a focus group needs qualifications related to interviewing skills and information or knowledge about the dynamics of group activity. The present researcher has three years of experience as

a part-time tutor at Arab Open University, Kuwait Branch (Appendix J: Researcher's experience in higher education); working with student groups and focusing on self-learning issues was a part of the teaching process which gave the researcher several group skills and knowledge about the dynamics of group activity. The allotted time for each session was between 60 and 90 minutes. The researcher highlighted specific issues for discussion (for more details see Appendix H: Focus group interviews).

The focus groups were also managed successfully as the student teachers shared the same background, experiences and culture. This, according to Liamputtong (2011), helps the participants in a focus group to relax and talk more openly with one another. Figure 3.5 illustrates the seating arrangement, the number of participants, issues with interaction that were highlighted in discussions, and the direction of the discussions during the focus groups.

Figure 3.5: *The focus group layout*



3.7.3 Observation

Denscombe (2010) mentions that there are two types of observation: systematic and participant. Both types make use of direct observation, and as Gall et al. (2007) explain, participant observation requires the researcher to be entirely involved throughout the observation protocol and become a participant in the culture or context being observed. Other types of observations can include complete observation, which is when the researchers distance themselves from the participants so there is no interaction with those being observed and there is no need to become a part of the context. The complete-observation approach was used in this study as a critical and secondary source of data. This approach was adopted because it allowed the researcher to comprehend and witness important behaviours in their actual setting (Patton, 2002), such as teaching strategies that the teachers instil in their lessons and teaching, whilst also observing the extent to which these strategies can improve creative thinking. It also aids in gathering data on non-verbal behaviours, which is not possible with other methods of data collection, for example interviews (Bailey, 1994).

The aim of this observation was not an evaluation of the situation; rather, it was to identify the main factors related to teaching strategies, classroom environment and student interaction, and thus explore how these elements can be linked to enhance creative thinking skills. This research had several limitations related to observation. Gall et al. (2007) have referred to some of them: the observation process takes a long period of time (time consuming), and it is difficult to observe complicated forms of participant behaviours as they might change their behaviours during each session. Thus,

the researcher considered two steps in order to overcome these difficulties: first, identify precisely the aims of the observation, and second, make notes about the participants through the actual interactions of the participants to avoid prejudiced interpretations or ideas (Gall et al. 2007). A checklist prepared was by the researcher to identify the aims of the observation and to record important notes related to these aims. In addition, two types of lessons were scheduled for observation (the teaching methods and content knowledge), which added up to a total of 10 lessons at each college (an audio recording device was used for this purpose) (See Appendix I: 1-Checklist for the classroom environment). The checklist investigates the general climate of the classroom and whether the observation considered the main points that Craft (2002) outlines, which are:

- The students appear provoked by their aims, procedures and missions.
- They are capable of ambition and taking up initiatives, and discovering related knowledge, facts, and ideas.
- They engage with the subject and with each other.
- They can express their new ideas and views with encouragement, support, and freedom.
- They practice freely discussion in unclosed surroundings.
- They are encouraged to take risks by the provision of a tolerant atmosphere.

These points can be observed through the teaching strategies of the lessons, the aims of the lessons, the types of interactions, and the discussion between the teachers and students.

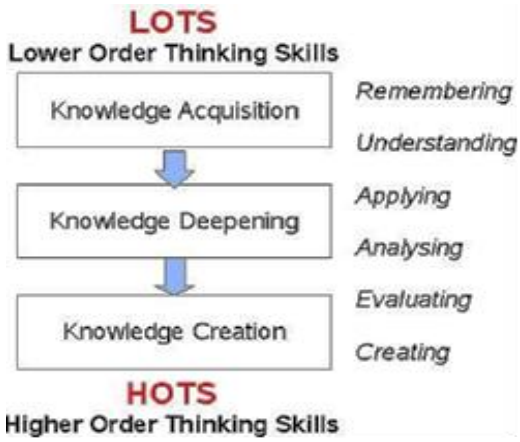
To conduct the observations in the class, the researcher obtained permission from the deans of each college (A/B), tutors and student teachers (see Ethical section 3.10 in this chapter).

3.7.4 Documents

Documentation can be considered as an alternative source to questionnaires, interviews or observation, or according to some researchers, can actually be used as an independent source of data altogether (Denscombe, 2010). The researcher used documents' analysis as a critical secondary source of data in order to explore the teachers' and each department's documents. The purpose was to determine if there was any information that may be hidden or was overlooked with the other data collection methods (i.e. interviews and observation). As Yin (2009) opines, the researcher should consider that these documents are written for other audiences and different objectives than those of the research. The documentation used in the present research consisted of the introduction, goals, aims and objectives of the five departments and all the written material (i.e. student information guide, module schemes and syllabuses, assessment material, and statistical information about the students). This information was reviewed and analyzed to determine the role of creative thinking in the education system of each college. The assessment materials (tests) for the five subjects were analysed using Bloom's revised taxonomy (See Appendix I: 2-A: The categories of Bloom's revised taxonomy). Bloom's revised taxonomy was further developed by Bloom's students, Lorin Anderson & David Krathwohl (2001), to include *remembering*, *understanding*, *applying*, *analysing*, *evaluating*, and *creating*. The questions (in the tests) that can be

classified under creative thinking need to reflect higher-order thinking (HOT). According to Churches (2009, p.9), the target of teaching and learning strategies in the 21st century is to increase students' abilities from lower-order thinking (LOT) skills to HOT skills. Figure 3.6 shows each level of Bloom's revised taxonomy.

Figure 3.6: *Bloom's revised taxonomy in Churches (2009, p.9)*



3.8 Data analysis

Several researchers (i.e. Neuman, 2006; Patton, 2002) indicated that data analysis in qualitative research requires specifying patterns in the data; accordingly, the inductive approach and creative synthesis strategy were used to analyse the data obtained from semi-structured interviews, focus groups, observation and documents. The procedures followed in this study were used to synthesize the characteristics of content analysis and the thematic analysis features. The justification for the combination of these two approaches of analysis is that content analysis allows for statistical generalization whereas this research seeks theoretical generalization. According to Ezzy (2002),

content analysis is not useful for new emerging classifications. Moreover, the small sample that was selected on purpose did not allow for this type of statistical generalization of the results. Therefore, this research considered using the logic pattern-matching approach, which includes content analysis and thematic analysis (Yin, 2009). Content analysis is small scale and requires some documents appropriate for this type of analysis (i.e. tests and statistical information about the students enrolled), while thematic analysis is used widely for interviews, focus groups and observation.

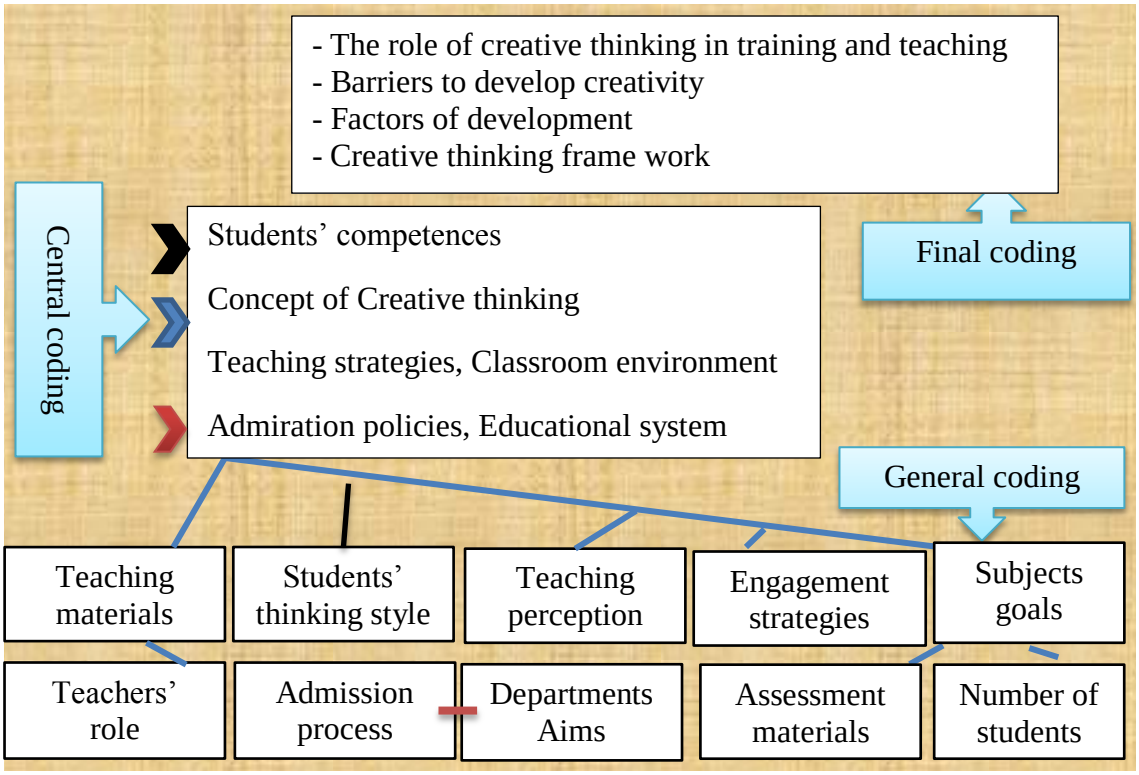
The researcher preferred to organize the data manually throughout the analysis, including transcription (from interviews and focus groups) and coding (themes), in order to ensure control of the data. As Seale (2010) indicates, using computer-assisted programmers in analyzing data is useful with regard to coding, restoration of the data, speeding the work, conceptual representation, etc. However, these programs do not support the discussion or thematic analysis, which is important and needed for in-depth explanation and interpretation of this research (ibid). Moreover, the data in this research are in Arabic, which makes it difficult to use programmes such as NVivo (version 10) as they do not support the Arabic script. In addition, the time needed for collecting, coding, and analyzing data is almost the same manually as well with computer assistance. In the (two) single-case studies here, the researcher analysed each case independently and then conducted cross-case analysis. Thus, the analysis was conducted in two steps. The first stage was within-college (A) analysis, wherein the researcher documented and summarised all the data collected from each college and then reviewed the data to ascertain what themes, if any, emerged. When a possible

factor was identified, it was recorded along with its characteristics. The second step of analysis was between-case analysis, wherein any similarities or differences in the factors across the colleges were acknowledged and again analysed. As Patton (2002, P.41) states, inductive analysis and creative synthesis involves 'immersion in the details and specifics of the data to discover important patterns, themes, and interrelationships; begins by exploring, then confirming, guided by analytical principles rather than rules, ends with a creative synthesis'. In each case study, inductive analysis and the creative synthesis strategy were adopted as qualitative data analysis methods.

The researcher considered the Ezzy (2002) and Neuman (2006) sequence process in coding and categorizing the data because it is compatible with inductive analysis and the creative synthesis strategy, that is, it starts from general exploration and ends with creative synthesis. The Ezzy (2002) and Neuman (2006) process starts with general/open coding (primarily data classification) and ends with creative synthesis/selective coding (conceptual categories); central/axial coding is somewhere between general/open coding and creative synthesis/selective coding and is required to achieve the final conceptual classification. The objective was to look for repetitive regularities, particularly in the semi-structured interview and focus group data, find common patterns, and then sort the data into categories, whilst taking into account internal homogeneity and external heterogeneity.

Figure 3.7 shows the levels of coding according to the Ezzy (2002) and Neuman (2006) process (open, axial, and selective).

Figure 3.7: *Example of theme forming*



The researcher reviewed all the groups several times in order to check the accuracy, ensure that the groups were consistent and accurate, and then create categories. In addition, the data were grouped and analysed in order to create a profile for the factors that affected the development of creative thinking in pre-service student teacher education colleges, and to develop recommendations that could improve this type of thinking among pre-service teachers.

After gathering the data from the primary instruments (interviews and focus groups), classifying it, and coding it together thematically with the other secondary data methods (document analysis and observations), the researcher identified specific patterns that

appeared from the data and converted them to a theoretical form so that they were meaningful for the reader. The themes were finally linked to the literature in order to interpret the results. With regard to the documents, they were analysed using a content analysis approach, which considered the colleges' writing materials in connection with the creative thinking dimensions (see Table 3.1 in this chapter) and the concept of higher- and lower-level thinking as defined in the categories of Bloom's revised taxonomy in the cognitive domain (Appendix, I. 2-A: The categories of Bloom's revised taxonomy, B).

3.8.1 Researcher's personal position

According to Clandinin & Connelly (2000), the researcher's concerns are formed by his/her experiences. In this study, the researcher's relevant experience was as a teachers' supervisor, and as a teacher in higher education; this led to an interest in investigating the preparation programmes for student teachers. To this end, the researcher is due to take up a position in one of the main colleges of education in Kuwait, where she hopes to contribute to the development of creativity, especially in the primary student teachers' training programme. From the above background, it can be seen that the researcher's position and aims centre on contributing or adding to the knowledge, rather than evaluating or judging (Bogdan & Biklen, 1998). It cannot be denied that these experiences will influence her interpretation of the phenomenon under investigation; nevertheless, this influence will enhance her productivity, and help to speed the project's completion (Bryman, 2008, 2012). The researcher followed specific procedures both before and during data collection (explained in this chapter), in

order to build a rapport between the participants and herself, and to clarify the role of each participant. In addition, the use of multiple methods helped in gathering diverse of information from various sources, which, in turn, helped in showing any contradiction in this information.

3.8.2 Presentation of the data

As this research is qualitative in nature, the presentation of the data needs to be suited to all the research procedures (Patton, 2002). The narrative logic was chosen as the presentation strategy for the data in this research, as an uncomplicated method is required given that the data in qualitative research are already complicated and the use of complex methods would create a lot of difficulties (Chenail, 1995). There is a growing and deserved curiosity in the narrative strategy (Gilbert, 2002; Polkinghorne, 1995) 'because narrative is the type of discourse composition that draws together diverse events, happenings, and actions of human lives into thematically unified goal-directed processes' (Polkinghorne, 1995, p.5). According to Gilbert (2002), *narrative* is similar in meaning to the word *story*; thus, the researcher utilized the narrative-logic strategy to ensure the readers' interest by giving examples in the same manner as telling a story. This helps the researcher to specify the configurations of the unorganised data, set up interpretation for some situations which need more explanation (Gilbert, 2002), and include thematic examples as simple sentences (telling a story) for the readers.

3.9 Limitations of the methodology

One of the limitations of this study is the use of the case study approach as a qualitative methodology, because it could result in a great amount of complicated data, which in turn may lead to confusing constructs (Yin, 2009). However, this disadvantage was overcome by carefully considering the rules for assessing the quality of the case study, including the process and product. In terms of the process, this refers to trustworthiness and authenticity, while the latter (product) refers to the narrative presented (Lincoln & Guba, 1990). These rules will be explained in detail in the discussion of the trustworthiness and reliability of the study.

In addition, one may argue that the data collection methods show a level of biasness and weakness; however, a counter-argument for this is that the use of triangulation of multiple strategies (interviews, focus groups, observation, and document analysis) overcomes the aforementioned weaknesses.

3.10 Trustworthiness and reliability of the study

There are several strategies that some researchers have recommended, in order to increase the trustworthiness and reliability of qualitative research (Denscombe, 2010; Denzen, 2009; Krefting, 1991; Patton, 2002, Rubin & Rubin, 1995). This includes triangulation of the methods of data collection, multiple investigators, various contexts and different theories. They also refer to other examples of strategies, such as transparency, systemic consistency, Comprehensive description, dependability and conformability assessment, and a detailed description of the research methods.

Triangulation of the methods of data collection ensures the consistency and comprehensiveness of this research in terms of the components and the design. At the design stage, the utilization of multiple measurement instruments (interviews with tutors, focus groups with student teachers, document analysis and observation) ensures the trustworthiness and reliability of this research in several ways.

First, it helps in reducing the weakness of individual methods and thus gives the researcher the opportunity to obtain comprehensive answers for the research questions. Second, it helps the researcher to be neutral while ensuring the richness of information from the research data collected (Patton, 2002). Third, it lends credibility and trustworthiness to the qualitative study and also highlights various elements of the phenomenon (creative thinking) (Neuman, 2006). At the research's components stage, consistency is ensured by maintaining careful logical links between the three main research processes (literature review, multiple research instruments, and discussion of the findings). Moreover, the transparency of this research was ensured by providing a clear explanation of the data collection process through precise records of the research procedures and developments (Rubin & Rubin, 1995).

To ensure the validity and reliability of this study, the researcher analysed and interpreted the data by using actual quotes from the interviewees' responses; she also avoided making prior judgements. Moreover, it is imperative to display the data objectively and to engage with the participants effectively by using various field strategies (like those used in this research, such as interviews with tutors, focus groups with student teachers, document analysis and observation). In addition, the researcher

employed Lincoln & Guba's (1990, p.53) four rules to examine the product of the case study and in writing the case study report:

- Resonance: considering the 'degree of fit, overlap, or reinforcement between the case study report as written and the basic belief system undergirding that alternative paradigm which the inquirer has chosen to follow'
- Rhetoric: connect to the structure, form, and presentation
- Empowerment: the characteristics of the case study report
- Applicability: the ability to help readers to apply the findings of the case study to their own context or situation.

These rules ensure valid consideration of the product and can therefore lead to the establishment of a good process. Moreover, the case study in this research was uncomplicated in order to ensure the readers' engagement, interest and involvement. Furthermore, the researcher provided a structured final report that was organized well and depicted the development of essential ideas and rich quotes from the participants, which ultimately certified that it comprises of coherency and collaboration units (Lincoln & Guba, 1990; Stake, 1978; Zeller, 1987).

3.11 Ethical issues

The ethical issues and the protection of rights and well-being need to be considered from the initial steps of any research (Mason, 2002). There is also a pre-condition at Newcastle University when conducting any research involving human subjects, which is that the research instrument(s) must be approved by the Ethics Review Committee.

Additionally, following the British Educational Research Association's ethical guidelines (BERA, 2004, 2012), an application was made to the Ethics Review Committee in October 2012, asking for approval to conduct the research under the authority of Newcastle University. A copy of the application has been provided in Appendix B of this thesis. Approval was granted to proceed with the research on the 9th of January 2013, and further approvals to continue were also granted. Thus, the researcher took care of all the ethical issues pertaining to the anonymity of the participants and the institutes that were investigated. All the participants were asked to sign a consent form (Appendix C & Appendix E) and were given a debriefing sheet (Appendix D), which gave them a clear description of the purpose of the study, all the relevant information on this research, details about their rights, and their contributions in the study. This included participation in the interviews, provision of the required/available documents, the use of the audio recordings, and the observation sessions. The researcher preferred to conduct the observation before the interviews for several reasons which were explained earlier in this chapter (Section 3.63: Observation). Moreover, the participants were informed that they could withdraw from the study at any given time, to ensure that their contribution was voluntary (Neuman, 2006).

The participants were additionally assured that their identification would not be provided in any part of the report or any other published studies. The researcher also informed the participants that any information given by them would be kept strictly

confidential and would not be divulged to other people at any stage of the research or after the study.

3.12 Summary

This chapter has described the approach and research methodology framework implemented for the project. It explains the epistemology and the rationale behind adopting a purely qualitative methodology, and provides a statement of the problem and questions, the study design, and the research context including the student teachers of five educational departments under two institutions. This chapter also sheds light on the instruments used in data collection, including observation, documents, interviews with tutors, and focus groups with student teachers, and finally, issues related to the trustworthiness and reliability of this qualitative research.

CHAPTER FOUR: FINDINGS

4.1 Introduction

This chapter presents the results obtained from the main research questions and sub-questions. The data from semi-structured interviews and focus groups formed the main evidence to explore the research questions. Observation and documentary analysis supported these primary data, providing details on demographic characteristics and policies related to creative thinking in the (two) single case studies. The data analysis was formed around the following main question and its three sub-questions:

- What is the role of creative thinking in primary teacher education colleges in Kuwait?
    1- How do the pre-service teachers and tutors in both colleges recognise the role of creative thinking in their preparation and training?
    2- What are the key factors that affect the development of creative thinking at pre-service student teacher education institutions?
    3- How can creative thinking in these institutions be developed?

The data will be presented according to the narrative-logic strategy, which aims to specify the configurations of the unorganised data, set up the interpretation for some situations which need more explanation (Gilbert, 2002), and present thematic examples as simple sentences (telling a story) for the readers. The general background of the participants from each college will be provided separately. The three sub-questions will

be addressed individually for each college (A/B), first, to identify the role of creative thinking from the participants' perception, second, to identify the factors that have negatively influenced the development of creative thinking among student teachers in teacher-training colleges, and third, to explain how creative thinking can be developed in student teachers according to the research participants' views.

4.2. Findings from the (two) single case studies:

Six domains of interest were established in light of the research questions and the extensive review of the existing literature, to determine how the findings from each college would be analysed (pre-determined themes). These concepts and themes are: (1) teaching strategies and classroom environments, (2) the concept of creative thinking, (3) administration policies and education system, (4) student competencies, (5) barriers to enhancing creative thinking, and (6) factors related to developing creative thinking. In addition, five issues were highlighted for data collection from focus group discussions: (A) teaching strategies, (B) classroom environment, (C) the concept of creative thinking, (D) obstacles to the development of creative thinking, and (E) the development of creative thinking. Based on the Ezzy (2002) and Neuman (2006) process of coding (see chapter 3, pp. 136-137) and inductive analysis and the creative synthesis strategy, several themes emerged and are presented later on according to their relation with the research questions and the pre-determined themes and issues for each college separately.

4.3 Research participants in case study 1 (College A)

The participants from College A were five tutors and fifty student teachers, which included ten student teachers from each of the five primary section departments of this college (mathematics, science, English, Arabic, and Islamic).

4.3.1 Teachers' backgrounds in College A

The teachers in College A are highly qualified; all of them hold a doctorate in their specialised subject in addition to their expertise, which is no less than five years of experience in the field of teaching and training. Some of the teachers participating in the study have additional duties in several positions at the college, which may potentially provide more robust findings in terms of how they can contribute to identifying the factors that encourage or discourage creative thinking from different aspects of the college. For confidentiality reasons, the researcher will use only the department name to protect the identity of the teachers and to present their background. Table 4.1 provides information about each teacher with regard to their qualification and teaching experience and duties.

Table 4.1: Information about the participant teachers from College A

Name	Teaching experience	Qualification	Teaching experience in College A
Arabic Teacher	***Ten years***	***MA and Ph.D. in teaching Arabic***	***Ten years***
Science Teacher	***Nine years***	***MA and Ph.D. in teaching Science***	***Nine years***
Mathletics Teacher	***Twelve years***	***MA and Ph.D. in teaching Math***	***Twelve years***
English Teacher	***Eighteen years***	***MA and Ph.D. in teaching English***	***Ten years***
Islamic Teacher	***Twelve years***	***MA and Ph.D. in teaching Islamic science***	***Eight years***

4.3.2 Student teachers from College A

The student teachers have enrolled in a four-year bachelor's course of education, and upon completion, they will be eligible to teach in primary schools specializing in one of the five subjects included in this research. The four years include one semester for practical teaching, which usually takes place in the fourth year. Ten students from each of the five specialized subject departments were selected to form five separate focus groups. All the participants are female due to the feminisation rule in the State of Kuwait (Al-Maa et al., 2005).

4.4. Research sub-question 1 for case study 1 (College A):

How do the pre-service teachers and tutors in College A recognise the role of creative thinking in their preparation and training?

The research results from College A's departments will first be presented using the data from interviews of the teachers, focus groups with student teachers, and observation, followed by the written documents.

4.4.1 Teacher interviews:

Findings regarding the limited and unimplemented role of creative thinking in the teaching and training programme were obtained from the five teachers from College A. Analysis of the data collected from the teaching staff interviews and the student teachers with regard to the role of creative thinking revealed three themes linked with the pre-themes (administration policies and education system): *number of students, the communication system, and teacher contribution*.

Administration policies and education system

According to the teachers, the education system in Kuwait does not encourage the development of creative thinking, as there is no or little communication between colleagues of different departments in terms of exchanging experiences and ideas to enhance creativity, or even between teachers in Colleges A and B. Although the college is keen on pursuing and gaining academic accreditation and has a written plan and goals

for this purpose, the teachers think that adoption of creative thinking does not appear in this. The math, English and Arabic teachers asserted similar concerns:

Although the college is on a quest to get academic accreditation, the interest in creative thinking does not fall within the operational objectives (Arabic Teacher).

The five teachers agreed that there is a contradiction between the written objectives and their practical application, which has led to the failure in achieving the desired results (gain academic accreditation). The teachers felt that the number of students had increased as a result of the admission policies, which in turn affected the quality in all learning aspects. The teachers in the five subjects claim that there is an urgent need for sensitization programs and effective assessment of the competency levels of the students before accepting them at the university.

There is no connection between the schools and university in terms of preparing the students for university life and higher education. This makes them continue to think in the same ways that they used in secondary school, and as a result, we have been confronted with a lot of difficulties with regard to changing their thinking and learning styles (English teacher).

There are no tracking records for the students from secondary schools that help in preventing any future problem or that can be used in following up on the improvement of his or her abilities (mathematics teacher).

Another concern is that the number of students has increased dramatically in all disciplines, which according to the teachers, is due to the following reasons:

- *The government has raised the salaries of teachers, which has led to increased interest in the teaching profession. However, [for those wanting to train to be a teacher at this college] this is without the presence of suitable checks to measure competencies and interests that are required for each specialty (science teacher).*
- *A decrease in the number of in-service teachers has led to greater pressure on the colleges of education to accept any pre-service teacher, even without them possessing any comprehensive development in the preparation programmes (Arabic teacher).*
- *The secondary outcomes are not appropriate with the level of the university, and the latter's policies do not consider specific criteria in registering or selecting students according to the competencies required for a particular discipline" (English teacher).*

The mathematics teacher mentions that:

There are also cultural and social reasons that greatly influence the decisions by females within our society to pursue the teaching profession. This is because most families see that teaching provides the best career environment for women (feminine environment); they therefore put pressure on females in their family to choose teaching, despite the lack of actual interest in this field of study.

The above statements indicate that the teachers associate the role of creative thinking with external factors, such as increase in the number of students and the lack of needed communication between experts within the education system in general.

In addition, teachers have little room to contribute with regard to addition or modification of the curriculum according to their vision or their creative ideas.

Within the college, the various departments are responsible for constructing 70% of the curriculum and allow the teachers to create the remaining 30%, provided that it is consistent with the objectives of the course and the conceptual framework of the college (Arabic teacher).

The science teacher states:

Efforts in the development of creativity in the field of science are dependent upon the personal efforts of the teacher, which not only rely on their own views of teaching in general, but also the culture of the college. There is no clear application or encouragement of the development of this kind of thinking.

The concept of creative thinking

Two themes emerged with regard to the concept of creative thinking: *teaching goals* and *student abilities*.

When the teachers were asked about their perception of teaching, specifically with regard to their specialised subject, and whether they had a particular definition for creative thinking, their views varied. Although they have their own concept of creative thinking, their role is mainly seen to involve providing the necessary knowledge and interacting with students in order to achieve the learning goals.

The Arabic teacher says:

Teaching needs skills… let me first clarify teaching as a concept; it is delivering the information, feeling, knowledge, values and attitudes with an attempt to simplify and interpret them to the student. This is the general definition. In the Arabic subject, we look forward to making the student grasp the scientific side of the subject, including the grammar and the artistic essence of the language.

The Arabic teacher felt that creative thinking could be achieved *through the use of collaborative learning. However, there is an initial weakness in the students' abilities in the Arabic subject with regard to their original experience during their earlier stages (primary stage), which would make it difficult to incorporate collaborative learning.*

The science teacher believes that:

Teaching depends on the teacher's perception of teaching; if it is viewed as just a career, he or she will depend only on traditional methods, which do not include diversity in style and modern methods of teaching. But if it is seen it as an art that involves skills, they will use the most important teaching strategies that develop all the students' abilities including their creative thinking skills.

Furthermore, the science teacher had a specific opinion about creative work:

It is not necessary that the new idea came from a new method in order to consider the result as creative work, as creativity can be possible by linking previous experience with the practical reality. This is the problem with our students—their previous experiences still influence their thinking, making it difficult for us to change the style of

thinking that they have, as well as improve the cognitive level. Some professors prefer to pay attention to scientific knowledge instead of other aspects of teachers' training.

The Islamic teacher asserts:

To me, teaching in general represents an Islamic message and commitment…Islamic subjects are similar to other subjects and teaching should help a students' all-round comprehensive development: mentally by providing the knowledge, emotionally by clarifying the importance of this knowledge, and behaviourally by applying the practical skills.

The Islamic teacher further stated that *creative thinking is connecting the previous experiences with the present experiences in order to reach new results, solutions and ideas or to invent something new. Islamic religion calls for the development of thinking in general; therefore, teachers can use the internal motivation of the student and connect it with the religious principles to improve creativity.*

The mathematics teacher believes that:

Teaching in general is the process of interaction between teacher and student. It is a process that consists of three stages: planning, implementation and evaluation…. Mentally preparing for the lesson helps the teacher to identify other frameworks that could interfere in the subject, and therefore, enhances good interactions without straying from the general framework of the lesson.

The mathematics teacher added:

We do not have a special education department; however, there is a thinking skills module for which any student can register optionally. Our main concern is to teach the specialized subjects and teaching methods.

Although the teachers agree that creative thinking is important, they stress the fact that there are many difficulties in developing this type of thinking within the college. This will be discussed in detail within this chapter, including recommendations to overcome these barriers from their perspective.

4.4.2 Student teacher focus groups

On analysing the data collected from the focus groups with regard to the role of creative thinking, one theme was identified and linked with the pre-highlighted issue (the concept of creative thinking): *modules available for specialty subjects*.

The concept of creative thinking

The statements of students in the five departments (50 students) affirmed that creative thinking is not clearly identified in their teaching and training, and that the college does not consider it as an essential element, although that it is an important type of thinking. The following are examples of the student teachers' statements when asked about the concept of creative thinking:

- *We don't have any modules in our specialty about creative thinking.*
- *I was introduced to creative thinking through a private training session outside the university so that I could develop myself as a primary teacher.*

Other students added:

- *Even though we have some information about creative thinking, we still don't know how to use it in our thinking and teaching.*
- *There are many modules as part of our major course; I believe that some are unnecessary, and that it would be better to add some modules that help us to understand creative thinking and prepare us to use this type of thinking in our teaching.*

Out of the fifty students in College A, only one student said that she had registered for the optional thinking skills module:

I registered for one of the optional modules; it was about thinking skills in general. To be honest I registered just to raise my grades, and I don't know how to use these thinking skills in my teaching.

The above statements and themes show that teachers and student teachers recognise the role of creative thinking and consider it as a secondary element in teaching and training programmes.

4.5 Research sub-question 2 (College A):

What are the key factors that affect the development of creative thinking in pre-service student teacher education institutions (College A)?

Analysis of the data collected from pre-service teachers through the focus groups and the teacher interviews with regard to the factors that have affected the development of

creative thinking revealed several themes connected to the pre-determined themes and issues (teaching strategies and classroom environments, student competencies, and barriers to enhancing creative thinking); these themes will be presented in the following sections.

4.5.1 Teacher interviews

Three themes appeared in the discussion of the teaching strategies and classroom environment with teachers: *teaching materials, number of students and students' thinking style*.

Teaching strategies and classroom environment

The teachers from all five departments agreed that lecturing was one of the most important strategies, especially for students in their first year of college. The mathematics teacher clarified:

It is difficult to use a collaborative learning strategy with first-year students as they still need more time to get used to the university environment and the new types of learning styles. Therefore, lectures and giving notes is needed in their case.

The teachers clarified that there are many barriers to providing a variety of teaching strategies, such as the continuous increase in the number of students, the general weakness of the students in their specialty, the inefficient use of available materials (e.g. smart hall and boards), and the lack of needed locations to conduct the necessary practical training, especially for the Arabic and science primary departments.

On the other hand, when observing the teaching methods lesson, the researcher noted that student teachers also focused on giving the information directly (lecturing). The science teacher argued that students still follow the same teaching style because of their previous and present experiences in how to teach. During the interview, the science teacher explained that:

The origin of the problem is the teaching methods at the secondary level. So we need to build bridges of cooperation between schools and universities, in order to help the student to avoid this confusion.

The science teacher further mentioned the experiment conducted in training the students to think critically, by being able to criticise the lessons using a prepared checklist and specify the main elements of good teaching practice. The science teacher thinks that the student teachers' concepts and ideas are still limited and heavily influenced by their previous experiences, which relies on the transfer of information in the traditional manner, without any diverse teaching techniques that foster HOT skills.

The teachers in the five departments assert that crowded classrooms affected the activities, as some classes have over 60 students.

The Arabic teacher elaborated on this:

It is difficult to adopt a variety of strategies or connect knowledge and creative thinking with such a large number of students enrolled at the university... the university should reduce the number of admissions and initiate capability tests to improve the efficiency of the students.

The mathematics, Islamic and science teachers also expressed their views on this issue:

The number of students continues to increase, especially after 2010. In our classroom, there were previously no more than 20–25 students; now we find more than 45 students in small classrooms, making it difficult to adopt a variety of strategies in teaching (mathematics teacher).

In contrast, the English teacher felt that

The number of students might have an impact with regard to considering each student's skills individually, but what strategies are used within the classroom depends on specific aspects such as students' motivation toward their specialty.

Student competencies

The obvious themes linked to the students' competencies are *the low level of specialisation competences* and *the absence of desire toward the specialty*.

All the teachers commented on the students' competencies: they felt that there was a lack of desire among the students, who register for a course only because of availability, and not their ability.

For example, the Arabic teacher stated that *the majority of students have a high level of weakness with regard to the main skills related to a speciality such as spelling and grammar, which places the teachers in the position of re-building their basic knowledge instead of developing new types of skills*.

The English teacher stated:

We should prepare the student teachers to be creative in their teaching methods because it is our responsibility as an education college. However, it is evident that these students have a large gap between their core knowledge and the main elements required; so our initial focus is to draw attention to the most important aspects.

The science teacher said:

In some majors, the students do not have the desire and the capability to continue in a specific specialty, and they register to be teachers only because they are pushed by their families. Some of them have ability in different fields of knowledge, but need to discover their skills. So in my view, both the university and families should take responsibility, the families by guiding their children appropriately according to their abilities and desires, and the university by modifying admission policies so that students register according to their abilities and desires, which ultimately serves the educational outcomes, especially in the teaching profession.

The science teacher further points out that the low level of student competencies can be seen clearly in the assessment process:

We do not only depend on the tests in assessing the students' performance. There are different types of methods such as e-portfolio, presentation and written reports about the lessons they attend. I found that students do not put in good effort in these types of assessments as they mainly use readily available information from books or web sites without trying to provide a variety of ideas.

The mathematics teacher had similar concerns:

There are some students who show limited potential when we assess them through our distinctive types of evaluations. For example, in an e-portfolio assignment, a lot of students do not rely on themselves for preparing their work; this can be seen when they make presentations for their assignment papers. We know that they already need to pay more attention to their basic knowledge; therefore, we try to help them by providing different methods of assessments.

The English teacher believes that

The large number of students in the classroom may not affect diversification of the strategies of teaching if students have the motivation and desire toward their specialization, but if the weakness is related to an unwillingness and lack of suitable capabilities required for the specialization, then we will find it difficult to develop their skills in general, not only with regard to creative thinking.

The above quotes explain that the teachers relate the development of creativity with the internal motivations of the students, which may be minimal because of the lack of potential or actual desire and interest, in addition to the continuous increase in the number of students, as a result of which the classrooms are crowded and it is difficult to use diverse teaching strategies.

Barriers to enhancing creative thinking

Four themes emerged with regard to the barriers to creative thinking: *admission policies, teaching materials, students' motivation, student thinking style* and *culture of the community.*

The Arabic teacher states that:

- *Arabic specialization needs particular abilities, including literary and artistic taste. Therefore, the university must prepare admission tests and efficient interviews to measure students' skills, in order to classify them according to their interests and potential.*
- *There are no proper measures in place to identify the students' competencies. Despite its presence in some of the disciplines, the results are not taken into account when accepting a student for the course or to determine their level of efficiency.*

Additionally, the Islamic teacher also identifies the same problem:

There are admission interviews, but it is a formality and irrelevant. The students' low level of motivation leads to lower desire to develop their skills.

It could further be understood from the teachers that the college has a variety of materials and facilities such as smart halls and boards, internet access and other useful technologies. However, these facilities are not utilised during the student teachers' preparation and training programmes. On the other hand, there is a lack of important sources (i.e. audio labs and science laboratories), particularly in the primary section, which can be used to improve the students' general abilities, including creative thinking skills. For instance, the mathematics teacher asserted that:

Although there are diverse and modern materials, they are not used effectively. For example, the smart hall and board are not used usefully either by students or by teachers—actually, it is not active.

The science teacher concurs, stating that:

In the primary section, despite the diversity and abundance in the learning materials provided, they are unfortunately inadequately used in the teaching and learning process. On the other hand, there is a lack of science laboratories, which are needed for practical experiments. They keep promising to equip these places, but nothing has been done yet.

Moreover, the teachers believe that the culture of the community represents an essential barrier to creative thinking. The science teacher for example says:

The culture of the community is one of the most important obstacles to the development of creativity, as families put pressure on the girl to choose the teaching profession for cultural and social reasons, even though they may not be interested. It is difficult to be creative in something you don't like or you don't have abilities in.

4.5.2 Student teacher focus groups

The two main themes that emerged when discussing the teaching strategies and classroom environment with student teachers are *lack of diversity in teaching strategies* and *the teachers' attitudes toward their students.*

Teaching strategies and classroom environment

The student teachers felt that 80–90% of the teaching strategies employed by the teachers focused on lecturing the students, making it predominantly one-sided and teacher-focused. The findings of the focus group interviews reflected the following statements on the issue of teaching strategies and classroom environment:

- *During my training at the university, most of the strategies used by the teacher depended on lecturing us or giving the information out as if they were telling us a story…at the same time, we are all busy writing and underlining the important information that we need to pass the exams or to keep ourselves awake.*
- *We will teach at a primary level, which means we need to experience all types of teaching strategies in order to use them with our children. This cannot be possible if our teachers mainly use the boring lecturing method most of the time.*
- *Teachers rarely use different strategies in the various lectures. It is boring if we just attend to get our grades.*
- *To be honest, most teachers at the university don't like students who ask many questions as they sometimes think it is a way to waste time in class or that the student is just trying to impress the teacher.*
- *There are some students who ask many questions with the intention to waste time. This is because the lessons are boring and the teachers do not add anything to what is already in the handbooks that they give us.*

However, some students felt that these lectures were important strategies for specific subjects, such as when certain rules from religious texts need to be explained; however, when relating this strategy to the learning process, such as when learning mathematics, one student stated:

I think we need lectures in the first two years of our study because in those years, everything is new and teachers have the appropriate knowledge to lead us on the right path.

Another student partially agreed, stating:

Yes, it is true that lecturing is important, but not all the time. A good teacher is someone who can use good teaching strategies that combine a variety of activities, such as lecturing in topics that need clarification and interpretation but also applying other methods with subjects that require understanding and implementation.

Barriers to enhancing creative thinking

Five main themes emerged with regard to the barriers to enhancing creative thinking from the student teachers' perspective: lack of diversity in teaching strategies, inefficient use of available materials, negative classroom environment, discrepancy between the theoretical and practical aspects, and inadequacy of assessment materials.

The majority of student teachers emphasized on the importance of improving teaching strategies, and considered a lack of diversity in the teaching methods to be the essential factor in discharging creative thinking, including other factors such as teachers' attitudes in terms of dealing with students' questions and discussions, which result in a

negative classroom environment. The following statements represent the main obstacles to creative thinking based on the student teachers' opinions:

- *Despite the diversity of assessment methods (e.g. assignments, presentation, writing or critiquing articles, creating an e-portfolio, etc…), it focuses largely on the tests (getting higher grades in the exams) in determining students' success.*
- *There is no link between the theoretical aspects and practical aspects in the teaching and learning process. We feel confused during our practical course because we find that many learning theories or principles are not applicable in the training schools.*
- *Some professors make us feel like we are stupid if we start any discussion, even if it is related to the subject of our study.*
- *Some teachers still treat us like school children.*
- *Some teachers know nothing about using technology in teaching and instead just read from the book.*
- *Even if we have materials, the teachers prefer the old ways of teaching.*

4.5.3 Observation (College A)

Based on the specific checklist for observations (Appendix I: 1-Checklist of the classroom environment), it was evident from the findings that the overall atmosphere in the classroom does not encourage open debate or opportunities to ask questions, and neither does it allow the students to utilise their imagination or put forth ideas outside

the scope of the lessons. Table 4.2 presents the key findings made during the observed lessons using the checklist for general classroom environments.

Table 4.2: Observation notes from the lessons (College A)

Subjects	Aims	Procedures	Discussion	Questions
Islamic **Arabic** **English** **Mathematics** **Sciences**	-LOT. -No connection -No diversity -Repeated	-Routine/ repeated -Narrative -No links	-Limited - Rarely -One direction (from teacher to students)	- Repeated - limited -Rarely

The following is an explanation of the above notes:

- The lessons' aims were somewhat lacking with regard to the diversity of the teachers' goals, and primarily focused on LOT skills. A similar observation was made with regard to some of the lessons delivered by the student teachers. There were some classrooms with smart boards, but both teachers and students rarely used them.
- The procedures of the lessons followed a specific routine: start with a greeting, check the attendance, lecture, and end the topic. There were no opportunities for students to use divergent thinking skills or problem-solving strategies.
- The sequence of lessons delivered by the teacher with regard to the teaching methods and content depended on a continuous narrative, without any

connection between the topics within the dimensions of creative thinking (imagination, fluency, flexibility, originality and elaboration).

For example, a mock science lesson was taught by a student teacher; this was a role-play activity, where the student teacher adopted the role of a primary school teacher and her peers played the role of primary school students:

The student teacher (as the primary school science teacher) takes a deep breath and then asks the students to breathe too.

The student teacher then says *'We breathe because we are living organisms; can you tell me what the organisms are?'*

She then moves a plastic tree and waits for the answers.

The lesson continued in this manner, with the teacher either providing the answers to the class or guiding them to reach the correct answers. The discussion after the lessons was very short due to the lack of time, as two teaching role-play activities were presented in the same lecture.

- To ensure the student teachers understood the content, the discussion part of the lesson was limited to specific questions related to the topic that was being taught.
- Almost all the questions required LOT skills. The discussions between the students themselves and between the students and teacher were very weak and even non-existent in some lessons. In the teaching methods' lessons, the

feedback from the teacher about the sample lesson was very short because there was more than one sample in one session.

4.5.4 Documents (College A)

The documents from College A included the student guide, statistical information about the students enrolled, the schemes and syllabuses of the modules, as well as the tests and assessment materials.

Student guide

The credits required to graduate from Colleges A are as follows: Islamic: 136 credits, Arabic: 135, English: 135, Mathematics: 135 Science: 136. The students' guide (2011–2012, p. 109) for all the five departments showed that they do not include specific compulsory modules related to creative thinking; the only one available is optional, which was provided as part of the general and cultural modules and not included as a specialist core module. Table 4.4 shows the types of modules and the required credits for each specialty in College A.

Table 4.3: Types of modules and the required credits (College A)

Specialty	General cultural modules	Specialist core modules	Vocational core modules	Practical course
Islamic	**33 Credits;** Compulsory 21 Optional 12	**43 Credits;** Compulsory 40 Optional 3	**48 Credits;** Compulsory 45 Optional 3	**12 Credits;**
Arabic	**33 Credits;** Compulsory 21 Optional 12	**42 Credits;** Compulsory 39 Optional 3	**42 Credits;** Compulsory 39 Optional 3	**12 Credits;**
English	**33 Credits;** Compulsory 21 Optional 12	**45 Credits;** Compulsory 39 Optional 6	**48 Credits;** Compulsory 45 Optional 3	**12 Credits;**
Mathematics	**30 Credits;** Compulsory 21 Optional 9	**45 Credits;** Compulsory 39 Optional 6	**48 Credits;** Compulsory 45 Optional 3	**12 Credits;**
Science	**30 Credits;** Compulsory 21 Optional 9	**46 Credits;** Compulsory 43 Optional 3	**48 Credits;** Compulsory 45 Optional 3	**12 Credits;**

Statistical data of the students enrolled (SSECE, 2011-2012)

The number of students enrolled on each of the courses differ somewhat. For instance, the numbers of students in the scientific disciplines, such as Science and Mathematics, are less than the numbers in literary disciplines (e.g. Arabic and Islamic); whereas those registered for English are lower in comparison to other fields of studies. In general however, the numbers of students in all disciplines have increased dramatically (SSECE, 2011-2012). Table 4.4 shows the percentages of increasing in the students' numbers during 2011-2012.

Table 4.4: Percentage increase in the number of students who enrolled for the five subjects in College A

Specialty	(2011-2012)
Islamic	60%
Arabic	50%
English	30%
Mathematics	30%
Science	20%

Tests and assessment materials

All the departments use a variety of assessment materials, such as assignments, presentations, articles, e-portfolios, lesson samples, quizzes and the final tests. Nevertheless, the departments consider the mid-term and final exams to be the primary sources of assessment, with a higher portion of the students' grades being based on these exams (20%, midterms and 40%, finals). In addition, the departments consider e-portfolios to be the second important assessment (20%), followed by presentations (10%).

The researcher subsequently reviewed a number of samples from the five subjects (2011/2012) using the revised Bloom's taxonomy (Anderson & Krathwohl, 2001), to determine the frequency of verbs in the questions of the tests and provide percentages according to the following:

- Remembering: LOT = (1)

- Understanding: LOT = (2)
- Applying: medium order of thinking (MOT) = (3)
- Analysing: MOT = (4)
- Evaluating: HOT = (5)
- Creating: HOT = (6)

The reviewed sample test paper (2011/2012) consisted of five papers and eight sections that included various question formats such as essay, identification, multiple-choice, lists, problem, and situation and decision. All the subjects were analysed using the revised Bloom's taxonomy, which showed that almost 90% of the questions required LOT (content and methods). The results also revealed that all the test questions depended on memorising information, even those questions that were formed as problems (i.e. 'what can you do in a particular situation…'), which only required writing specific points, and not using problem-solving skills.

Moreover, the researcher noticed that words such as 'imagine' were used in two of the tests, but were not intended to spark the students' imagination because the answer only required the memorisation of particular information (i.e. 'Imagine you are a teacher, and you have a student who makes many mistakes while reading in the class; What are the educational elements you should consider when correcting these errors?). Table 4.6 shows the percentage of questions requiring LOT for the five subjects.

Table 4.5: Percentage of test questions requiring lower-order thinking (College A)

lower-order thinking				
Islamic	**English**	**Mathematics**	**Sciences**	**Arabic**
91%	88%	85%	89%	92%

Table 4.6 provides an example of analysis of the test questions for one of the five subjects in terms of the usage of each verb.

Table 4.6: Example of the test questions analysis (2011/2012)

The content knowledge			**The teaching methods**		
Verbs	**Thinking order**	**Repeats**	**Verbs**	**Thinking order**	**Repeats**
Mention	LOT (1)	9	Locate	LOT (1)	3
Demonstrate	LOT (2)	11	Identify	LOT (1)	2
Explain	LOT (2)	7	Classify	LOT (2)	3
Remember	LOT (1)	5	Solve	MOT (3)	2
Determine	LOT (1)	5	Link	LOT (1)	2
Label	LOT (1)	4	Select	LOT (1)	3
Show	LOT (1)	1	Outline	MOT (4)	1
List	LOT (1)	5	Use	MOT (3)	1
Select	LOT (1)	6	List	LOT (1)	3
Use	MOT (3)	2			
Find	MOT (4)	1			
Solve	LOT (2)	7			
Total		**60**	**Total**		**20**

With regard to the content, 31 out of 60 (52%) test questions required LOT (1), 25 (42%) questions required LOT (2), 3 (3%) required MOT (3) and 1 (2%) required MOT (4). No questions required HOT.

For the teaching methods, 13 out of 20 (65%) of the test questions required LOT (1), 3 (20%) required LOT (2), 3 (15%) required MOT (3), and 1 (5%) required MOT (4), similar to the findings for content. No questions required HOT.

Analysis of the test questions for all departments under investigation in the current study showed similar results as those shown in Table 4.6, which illustrates that the majority of the test questions mainly require LOT.

4.6 Research sub-question 3 (College A):

How can creative thinking in this institution be developed?

4.6.1 Teacher interviews

All the teachers refer to the importance of cooperating with the Ministry of Education to raise the students' competencies from earlier stages of education, and the role of this cooperation in developing creative thinking. They assert that, if parents wish for their daughters to pursue a career in teaching, it is necessary to raise awareness about the importance of allowing them the freedom to choose their specialization according to their abilities and desires.

Moreover, some teachers suggest including modules throughout the four-year course that link creativity with the content and methodology of teaching and learning.

However, the science teacher also emphasises on the importance of *providing accurate content for these modules of creativity*. He also believes that these modules should be *provided by specialists who can connect the core knowledge in each subject with creative thinking skills and train the students on how to use these skills in their thinking and teaching.*

In addition to removing all the barriers that are mentioned earlier, the teachers asserted the importance of *expanding the learning environment by opening the door between private universities and the two government colleges of education as this is considered by them to be the main resource for all development aspects in general.*

The Islamic teacher also believes that:

Inner conscience, commitment and self-motivation are the main elements of any type of development. Therefore, we need to consider these elements in our teaching and training.

Further, the English teacher highlights the importance of *removing the contradiction between the written objectives of the college and their actual application in practice. She also refers to the need for effective application of the development required in various aspects, which ultimately would help in the development of creativity.*

The Arabic and mathematics teachers have similar views: they feel that the new generation has the potential to develop their abilities and improve their performance; hence, they need to be in an encouraging environment with efforts focused on achieving this, either by the professors or the education system within the college in general.

4.6.2 Student teacher focus groups

From the student teachers' viewpoint, removing some unnecessary modules and replacing them with useful modules would help understand and use creative thinking skills and could be one of the important steps that the college needs to consider. They also refer to the importance of reconsidering the assessment methods, the teaching strategies and the practical side of the training programme. The following statements reflect their opinions:

- *If they want us to teach our children creatively, we need to know how to do this theoretically and practically.*
- *Examinations are not considered a measure of our abilities; it does not show what we actually have or what we can do.*
- *We will teach at a primary level, which means we need to experience all types of teaching strategies in order to use them with our children. This cannot be possible if our teachers mainly use the boring lecturing method most of the time.*
- *There are modules on how to deal with students with special needs, but no items were found in our specialty teaching with regard to dealing with distinguished or creative children and how to develop their skills.*
- *I think they should use the technology provided effectively to diversify teaching strategies.*

4.7 Research participants in case study 2 (College B)

The participants from College B were six tutors and 50 student teachers, including 10 students from each of the primary section departments of this college (mathematics, science, English, Arabic, and Islamic).

4.7.1 Teachers' backgrounds in College B

The teachers in College B are also highly qualified; all of them hold a doctorate in their specialization, in addition to their expertise, which is no less than five years of experience in teaching and training. Some of them hold positions in decision-making and management within the college. Moreover, there is a special education department in College B, but it specialises in the teaching and training of special education teachers. There is no connection between this department and the five other departments investigated in this research, as will be clarified later in this chapter.

Therefore, in College B, six interviews were conducted, with the five teachers from the five specialised subject departments, as well as the head of the special education department (SEDH teacher). This was to discuss all the elements in this research, particularly the point of view of the SEDH teacher with regard to creative thinking for the five other departments under investigation. Table 4.7 provides information about each teacher with regard to qualification and teaching experience.

Table 4.7: Information about the participant teachers from College B

Name	Teaching experience	Qualification	Teaching experience in College A
Arabic Teacher	***Twenty years***	***MA and Ph.D. in teaching Arabic***	***Seven years***
Science Teacher	***Nine years***	***MA and Ph.D. in Science***	***Five years***
Math Teacher	***Eight years***	***MA and Ph.D. in teaching Math***	***Five years***
English Teacher	***Eighteen years***	***MA and Ph.D. in teaching English***	***Ten years***
Islamic Teacher	***Fifteen years***	***MA and Ph.D. in teaching Islamic science***	***Eight years***
SEDH-teacher	***Eighteen years***	***MA and Ph.D. in Special Education for gifted and talented Students***	***Ten years***

4.7.2 Student teachers in College B

Fifty students were interviewed in College B. These students have enrolled for a four-year bachelor's course in education qualification and will teach at the basic education level, specializing in one of the subjects included in this study upon completion of the course. Ten students from each of the five subjects were selected to form five focus groups.

4.8 Research sub-question 1 (College B)

How do the pre-service teachers and tutors in College B recognise the role of creative thinking in their preparation and training?

Similar to the findings for College A, the findings for College B's departments will be presented in the following order: observation and interviews, and then written documents. They will be presented in relation to the research questions and the pre-determined themes and highlighted issues.

4.8.1 Teacher interviews

Based on analysis of the data collected from the teaching staff interviews and the student teachers with regard to the role of creative thinking, four themes were identified and linked with the pre-themes (administration policies and education system): *number of students, the absence of or inefficient admission policies, the communication system, the culture of the college, and teacher contribution.*

Admission policies and education system

Similar to College A, the teachers from the five departments in College B explained that the main issue concerning the administration policies is related to the policy itself (admission policies), which they believe has a strong influence on their teaching and all aspects of the education system within the college.

Unfortunately, we find students are enrolled in or transferred to the Arabic specialty when they cannot continue in other disciplines. The discipline becomes a receiving station without any goal or desire or eligible capacity. Therefore, you can see more than 60 students in a small classroom. Even if we want to develop the students' creativity skills, it would be too difficult, if not impossible (Arabic teacher).

The Islamic teacher also thinks that:

The large number of students influences the activities and causes the attention span to decrease during the lessons.

The English teacher adds:

The large number of students greatly affects the level of performance in the classroom—either the teacher's or students' performance. In addition to the nuisances that occur, the large number of students in a small classroom reduces the oxygen level, which makes the students feel idle. It also can be a barrier for any type of development, and it can even be a barrier to delivering the information to the students.

The English teacher further asserts that:

The acceptance of students in the college, especially in the English language specialty, is not based on correct academic standards. Previously, there was a test to accept the student, but unfortunately, this has been removed. Now everyone can become an English teacher! Without exception! This leads to a significant increase in the number of students, crowded classrooms, big pressure on professors and low level of student motivation.

The science teacher thinks that:

The lack of standards in validating selected students in different disciplines, coupled with the urgent need for scientific disciplines in the field of teaching has led [the college] to the acceptance of students randomly, just to fill the gap. We have large numbers of students who need to double their efforts to help them develop their cognitive skills in this specialized area.

The math teacher shared similar views:

The number of students in my classes has become more than 50. This is because the admission policies for specialized subjects do not depend on the criteria of scientific thought, but rather, acceptance often occurs as a result of favouritism or preference. Fifty students in small classrooms, for example, will not provide the students with the ability to work actively and the teachers will face difficulties in applying diverse teaching strategies. It will also be difficult for the teachers to assess the students' understanding of the subject matter or interactions in the classroom.

The science teacher also feels that all the admission policies in the college are just *a formality and do not represent the standards that can effectively serve the level of teaching at the college or students' creative thinking. In the science subject, for example, they [the college] organise an interview [with the students], but I really don't know why because they already gave us specific questions to ask and the instruction is to accept everyone according to their grades.*

The mathematics teacher further says:

There are significant restrictions from the administration on the teacher, which curb the liberty of the teachers in addendum or amendment to the content of the subject.

In addition, all the teachers confirmed that there was no cooperation or communication between colleagues within the college or between the two colleges of education in Kuwait (A/B) with regard to formulating a plan to develop creative thinking. The English teacher says:

Cultural week is the only type of communication we have between the teachers from all departments in the college; however, attendance is very poor. We meet as colleagues, but we do not discuss anything in terms of education and learning.

The SEDH teacher also states:

The education system does not encourage the development of creative thinking. For example, our department prepares teachers to [specifically] teach special needs and creative students, but unfortunately, the other departments and those in [College A] do not benefit from the experiences and specialists that we have here, even though we all serve in the same education system, which is supposed to provide the country with qualified teachers.

The concept of creative thinking

Two themes emerged with regard to the concept of creative thinking: *the absence of required materials* and *student abilities*.

The teachers from all five departments feel that there is no clear concept of creative thinking in the college, either generally or in their specialist subjects. They point out that the consideration of creative thinking in their college mainly depends on personal effort from the teachers.

The researcher queried the teachers regarding their perception of teaching in general and if they have any specific definitions of creative thinking. Some of their responses were as follows:

The Islamic subject is rigid and the field of creativity is limited in it topics. It may be in Tajweed (intonation), which needs some supplementary materials that are not available. Unfortunately, in our college, for example, to improve the Tajweed, I wish I could have a voice studio (Islamic Teacher).

The Arabic teacher referred to her own extensive experience in teaching and heading departments in several Arabic countries, including Kuwait:

There was a general weakness in the child-rearing methods and in the teaching of the Arabic language, specifically starting from the early stages, which continues, even up to the university level.

This, according to the Arabic teacher, *becomes a common issue between the teacher and the learner.* With regard to his definition of creative thinking, he believes that *it is possible to develop creativity in students through the effective use of technology, direct interaction with the students, preparation for the lecture, and participation in various brainstorming sessions before, during and after the lecture.* The Arabic teacher further explained that the response to these strategies is in conflict with difficulties related to the inefficient use of technology by student teachers and some of the teachers.

The mathematics teachers added:

To be honest, the concept of creative thinking is not clear in our college, and in my opinion, this is because the general level of students' abilities in their specialty need more attention.

4.8.2 Student teacher focus groups

On analysing the data collected from focus groups with regard to the role of creative thinking, one theme was identified and linked with the pre-highlighted issue (the concept of creative thinking): *modules available for specialties*.

The concept of creative thinking

When the student teachers were asked if they had a clear concept of creative thinking in the College of Education, both generally and in their specific departments, they gave the following answers:

- *There is no attention to creativity in our course. We are here just to pass the exams and to get the teaching certificate. I invented a device for reducing marine pollution, and if the concept of creativity is considered in our college, they would cooperate with me to complete and develop my project or at least direct me on how to benefit from this in my study.*
- *How can they expect us to know anything about creative thinking if we don't have any specific module about it? Even if some of us register for the optional module, I don't think it will be enough to teach us how to use it in our teaching.*
- *Our knowledge about creativity comes from personal studies, which in my opinion, need to be properly channelled into our training in the college.*
- *I know that there is a special education department in our college, but we don't take any modules from them.*

- *I think for me, in the Arabic specialty, creativity is important because we are studying Arabic poetry and literature…to be honest with you, we say this word 'creativity' as a word of encouragement, but what is it? And how do we use it in our teaching? We don't know.*

From such statements, it is apparent that the students collectively agree that creative thinking in these five departments is not considered as one of the main elements within the teaching programme.

4.9 Research sub-question 2 (College B)

What are the key factors that affect the development of creative thinking in pre-service student teacher education institutions (College A)?

Analysis of the data collected from teachers' interviews and student teacher focus groups with regard to the factors that affect the development of creative thinking revealed several themes, which will be presented in the following sections.

4.9.1 Teacher interviews

Several themes appeared when the teaching strategies and classroom environment were discussed with teachers: *teaching materials, number of students, students' level of motivation, knowledge and skills*.

Teaching strategies and classroom environment

The SEDH teacher refers to the importance of *having a general culture in the college that supports diversity in the teaching strategies, in order to develop creative thinking. This cannot be done without the collective effort of all the departments.*

When the teachers were asked about their teaching strategies, the Islamic teacher stated:

The strategies and teaching methods are many, and depend on the teacher or doctor, whether they wish to use them or not. To be honest, our environment in Kuwait does not encourage creative teaching in general. I mean, for me, in the beginning, I applied a variety of strategies, and even authored a book, but I found that the majority of the students' level of knowledge was very weak, so the right decision would be to keep simplifying the topics to meet the thoughts or the cultural level of the students.

The science teacher stated:

The level of teaching in our college is very weak; we are supposed to enable our teachers to teach successfully. This cannot be done with this ineffective use of materials, very old and overloaded curriculums, and low student motivation and competencies.

However, the Arabic teacher had a different perspective: *I think that the technology is not used properly, and there is also financial abundance, but unfortunately the finances are also not used appropriately.*

Similarly, the mathematics teacher expressed his concerns about technology:

Technology could be used negatively or positively, and this also depends on the teaching strategies that the teachers prefer to use. To be honest, in my experience working in several Arabic counties, the traditional teaching strategy is often used. You find the student restrained between the teacher and the handbook. Also, in our college, the teachers mostly use the lecturing approach as a main strategy due to the low level of students in their area of specialization.

The English teacher also held similar views:

The students do not use the technology correctly. The internet, for example, has been used in a negative way by the students; they get information easily and use this without any editing or understanding of the content. They pay to get the grades effortlessly.

It seems that teachers feel the lack of diversity in the teaching strategies to be specific obstacles; some of them are related to the students while others are associated with the college itself.

Student competencies

The main themes connected to student competencies are *the low level of basic skills of the students* and *lack of specialisation competencies.*

With regard to the student competences in their abilities to progress throughout the course; the teachers feel that there is a low effort from the students, due to the previous weakness in the basic grades. The English teacher, for instance, explains:

We were supposed to start from where the others ended, but what is happening is that we are starting from ground zero. Our students' level in the area of specialization is very weak; they still depend on the teacher [teacher-centred class], and the accusations continue by the Ministry of Education and the Colleges of Education over who is responsible for this weakness. This makes teachers focus on developing the students' level of knowledge more than improving the quality of teaching and training.

The mathematics teacher also states:

The mathematics topics are cumulative; in other words, the students must be grounded in the subject to learn mathematics. Sometimes, for example, as it happens here in the college, students come in at the university stage, but have not even mastered the multiplication table. This weakness has existed from the primary and intermediate school levels. I mean, when we ask some students about 8 multiplied by 7 they answer 78. The reason here is also due to the teaching methodology followed in the earlier levels and that students depend entirely on the calculator; this is not right because there are mathematical operations that need to be learnt.

It is quite clear from the teachers' opinions that the students' competencies are extremely low as a result of the quality of earlier stages in their education, and this, according to the teachers, is the main obstacle to enhancing creative thinking.

Barriers to enhancing creative thinking

Four themes emerged with regard to the barriers of creative thinking: *absence of or inefficient admission policies, lack of teaching materials, low level of student*

competencies and motivation, absence of communication within the education system in general, and the culture of the community

The barriers to the development of creative thinking from the teachers' perspective are reflected in the following statements:

Arabic teacher:

- *The inappropriate use of funds for the benefit of educational reform*
- *Improper use of technology by the teacher and the student teachers*
- *The students' low level of knowledge in the area of specialization*
- *The ineffective admission policies*

Islamic teacher:

- *There is no cooperation between the college and the Ministry of Education in terms of following the development of the students' creative thinking skills.*

English teacher:

- *There is no cooperation between the two colleges of education in Kuwait in terms of professional development and colleagues' experiences when exchanging ideas related to creativity.*

SEDH teacher:

- *There is no exchange of experiences between colleagues in the five departments with regard to the development of creative thinking. In addition, the five departments do not take advantage of the special education department for the development of creativity.*
- *The lack of a clear vision for the development of creative thinking in the policies of the college.*

Science teacher:

- *The curriculum is inadequate and does not cater to this development, and the teachers have limited freedom in terms of adding or modifying the topics of the syllabuses.*

Mathematics teacher:

- *Many students have a low level of motivation because of their weakness in the area of speciality in general, which makes them concentrate on ordinary achievements that are far from any creative aims.*

The teachers from all the departments of College B also shared the same concerns as those from College A with regard to the role of community culture in discouraging creativity. This was primarily related to families directing their female family members towards a specialization irrespective of their actual desires and abilities, based on religious, social and sometimes economic considerations.

4.9.2 Student teacher focus groups

The same two main themes emerged from College B's student teacher focus groups when discussing the teaching strategies and classroom environment: *lack of diversity in teaching strategies* and *the teachers' attitudes toward their students.*

Teaching strategies and classroom environment

During the focus group sessions with the student teachers, the responses affirmed much of what was observed regarding the teaching strategies and classroom environment; the themes that emerged are *teaching styles, teachers' attitudes*, *teaching materials,* and *students' attitudes.*

- *We feel like we are still in secondary school; the teachers want us to memorise the information and then unload it all at the exams. Where is creative thinking in this?*
- *The style of discussion in the classroom in most of the sessions relies on threatening us with grades (points); they ask questions and expect specific answers that exist in their own minds.*
- *Even when they ask for our opinions, some of them get angry if we disagree with their views or express any opinion that is contrary to what is in their mind.*
- *I can say that almost all the teachers don't use diverse teaching strategies. Lecturing is the only type they use, and some of them only read from the handbook and that is it.*

- *I agree that the majority of teachers use lecturing as the main strategy, and even if they use the computer they are still lecturing us. It is really boring.*

Thus, the students from all five departments unanimously agreed that the teaching strategy used was predominantly lecturing, with 90% citing the teaching style as narrative lecture.

Some students felt that the lectures were important, but not all the time:

- *In mathematics there are some rules, instructions and concepts for which we need to have detailed explanations from the professor so we can use them, but I think that many other strategies could be useful instead of the boring narrative style.*
- *Yes we need to understand some rules or laws. For example, in the Islamic subject, we need this strategy but it gets boring; we lose attention especially if there is no affective discussion during the lecture.*

Some students provided various reasons for the lack of diversification in teaching strategies:

- *I think the classrooms are also very small compared to private universities. We find here that it is truly basic, ill-equipped, and that the administration does not seek to keep up with the times and does not help diversify the teaching strategies.*
- *Even if some teachers want to use a new strategy, the large numbers in these small-sized classrooms make it difficult.*

- *To be honest, a lot of us are happy with this routine, as most of the students want to finish their study and work, and creative teaching is not in their interests.*

It is once again evident from the students' and teachers' views that the teaching strategies are extremely limited, and that the classroom environment is discouraging for creative thinking. This is due to a number of obstacles.

Barriers to enhancing creative thinking

The student teachers from the five departments agree that the *lack of diversity in teaching strategies, low level of encouragement from teachers for discussions and ability to express their ideas and opinions, lack of required materials,* as well as *the absence of variety in the assessment methods* form the main barriers to developing creativity in the classroom. The following statements elaborate on these barriers from the students' perspective:

- *The same strategies are used by all the teachers; they either read to us or explain the topics with a similar routine every time.*
- *The teachers do not encourage discussions that go beyond the scope of the lesson that has been prepared, and they prefer to focus on the topic of the lecture only.*
- *Some teachers ridicule our ideas, which make us not want to express them again out of fear of being rejected or the teacher's reaction.*

- *I know that after we graduate and move to actually working in primary schools, they will demand that we teach the children using their creative thinking. But how can we do this when they don't train us to do so?*
- *There is a lack of materials in our college. For example, the library is not equipped with up-to-date books and modern technology. The classrooms contain only the basic equipment (tables and chairs) in comparison to College A or private colleges.*

4.9.3 Observation (College B)

The checklist for observation (Appendix I: 1-Checklist of the classroom environment) clearly indicates that the general environment of the classroom does not encourage creative thinking. Table 4.8 shows the notes that were made during the observed lessons using the checklist for the general classroom environment.

Table 4.8: Observation notes from the lessons (College B)

Subjects	Aims	Procedures	Discussion	Questions
Islamic **Arabic** **English** **Mathematics** **Sciences**	- Simplifying -No Consideration	-Same steps -No connection	-Limited -One issue - Rarely	-Direct -Limited answers -Focus on LOT

The following is an explanation of the above notes:

- The main aims of the lessons are understanding and simplifying the information; there is no consideration for HOT.
- The instructions of the lessons were limited because they mostly used the same steps—explain the idea and then ask questions about it to check whether the students understood it, and then continue with the lesson in the same manner.

An example from a mathematics lesson highlights these issues (content):

The Lesson: Perplexity Numbers

Teacher: *Put your pens down. I will give you everything later. Concentrate with me: I will give you an example so we can reach the final result*

(He is writing an equation on the board while explaining what he is doing)

While he was writing, some of the students were still writing everything down with him despite his instruction not to do so while some of them followed his instructions. Then, he wrote three tasks on the board:

- *Calculate the perplexity numbers.*
- *The period of increasing and decreasing.*
- *What is the relationship of perplexity numbers with S values?*

He then explained how the students should reach the answers to these questions and provided information related to them.

The students began answering the questions along with the teacher while he was writing the answers on the white board.

The lesson continued in the same manner, where the teacher writes the question and asks the students about the answer. They sometimes gave the wrong answer, after which he corrected them and continued with the lesson. At the end of the lesson, he finished the class by asking them if there were any further questions or clarifications needed.

- Almost the same routine is followed throughout the lesson; there is no use of any creative thinking techniques such as brainstorming, creative problem-solving or collective stimulus groups.
- All the discussions are limited to specific issues that are related to understanding the content.
- All questions from both the teacher and the student teachers are direct and need specific information/answers that are already mentioned throughout the lecture and mostly require LOT (e.g. *do you understand?, can you remind us about…? please explain again…).* The researcher also noted that some of the students' questions were met with ridicule by some of the professors, which is obviously frustrating for the students.
- Some lessons start and end without any discussion—the teachers are either lecturing or reading until the end.

4.9.4 Documents (College B)

The following is the presentation of results from documents collected from College B, which included the student information guide, statistical information on the students who enrolled for the modules, and tests and assessment materials.

Student information guide

All departments under investigation within this study offer only one optional module related to creativity (2 credits) (Al-Refaei & Al-Sharhan, 2010/2009, p. 129). The interviews with the students confirmed that their compulsory modules are connected to core knowledge of their specialty.

The credits required to graduate in College B are as follows: Islamic studies: 139 credits, Arabic: 139, English: 127, Mathematics: 139, and Science (Al-Refaei & Al-Sharhan, 2010/2009, p. 129). All the five departments included in this study do not include specific compulsory modules related to creative thinking; the only one available is optional and is provided as a general and cultural module and not included as a specialist core module. Table 4.10 shows the types of modules and the required credits for each specialty in College B.

Table 4.9: Type of modules/credits for each specialty in College B

Speciality	General cultural modules	Specialist core modules	Vocational core modules	Specialist minor core modules	Practical course
Islamic	**30 Credits;** Compulsory 24 Optional 6	**36 Credits;** Compulsory 32 Optional 4	**40 Credits;** Compulsory 36 Optional 4	**24 Credits;** All compulsory	**9 Credits**
Arabic	**30 Credits;** Compulsory 24 Optional 6	**36 Credits;** Compulsory 30 Optional 6	**40 Credits;** Compulsory 36 Optional 4	**24 Credits;** All compulsory	**9 Credits**
English	**30 Credits;** Compulsory 24 Optional 6	**48 Credits;** Compulsory 36 Optional 12	**40 Credits;** Compulsory 36 Optional 4	**-**	**9 Credits**
Mathematics	**30 Credits;** Compulsory 24 Optional 6	**36 Credits;** Compulsory 30 Optional 6	**40 Credits;** Compulsory 36 Optional 4	**24 Credits;** All compulsory	**9 Credits**
Science	**30 Credits;** Compulsory 24 Optional 6	**36 Credits;** Compulsory 30 Optional 6	**40 Credits;** Compulsory 36 Optional 4	**24 Credits;** compulsory 15 Optional 9	**9 Credits**

Statistical data of the students enrolled.

The registered statistical data of the student numbers also show that the number of enrolled students increased dramatically in all disciplines, especially in Arabic and Islamic studies (SSCBE, 2011/2012). This impacted the overall performance and teaching strategies in the classrooms, according to the teachers in the five departments. It can also be seen that the increase in the number of students who enrolled for the five subjects is more compared to the number in College A. Table 4.10 shows the percentage increase in the number of students during 2011–2012.

Table 4.10: Percentage increase in the number of students who enrolled for the five subjects in College B

Specialty	(2011-2012)
Islamic	65%
Arabic	60%
English	40%
Mathematics	35%
Science	30%

Tests and assessment materials

The assessments in the departments in College B are limited to the midterm (30%) and final tests (50%). Some departments require presentations, assignments and small projects, but all the departments consider the two aforementioned tests to be the main methods of assessments (80% of the students' final grade). The researcher reviewed a number of sample test papers from the five departments, using the same criteria explained earlier (see p. 171, in this chapter) to analyse what verbs were used in the test questions. In the reviewed exams for the academic year 2011/2012, the tests contained four sections and six papers. Each section included different types of questions. For example, section one consisted of eight multiple-choice questions and four essay questions, and section two included five identification questions and five multiple-choice questions. Analysis of the test questions for all the investigated departments

showed similar results as those found in Table 4.11. This means that 90% of the test questions in the five subjects only required LOT.

Table 4.11: Percentage of questions requiring LOT (College B)

lower-order thinking				
Islamic	**English**	**Mathematics**	**Sciences**	**Arabic**
92%	90%	89%	91%	89%

Table 4.12 provides an analysis of the type of test questions asked for one of the five subjects with regard to the use of each verb.

Table 4.12: Example of the test questions analysed in College B (2011/2012)

The content knowledge			**The teaching methods**		
Verbs	**Thinking order**	**Repeats**	**Verbs**	**Thinking order**	**Repeats**
Give the reason	LOT (1)	10	Interpret	LOT (2)	2
Label	LOT (1)	7	Show	LOT (2)	1
Describe	LOT (1)	7	What	LOT (1)	15
What	LOT (1)	18	Mention	LOT (2)	9
Mention	LOT (2)	15	How	MOT (3)	1
Why	LOT (1)	3	Why	LOT (1)	3
How	MOT (3)	2	Outline	MOT (4)	1
Define	LOT (1)	3	Describe	LOT (1)	3
Distinguish	LOT (1)	1	Write	LOT (1)	11
Classify	LOT (1)	1	Give	LOT (2)	2
Write	LOT (1)	4	Find	MOT (4)	1
Explain	LOT (2)	6	Which	LOT (2)	1
Draw	LOT (1)	1			

Name	LOT (1)	1			
Identify	LOT (1)	3			
Discuss	LOT (2)	3			
Which	LOT (2)	1			
Complete	LOT (1)	3			
Set	LOT (1)	1			
Total		**90**	**Total**		**50**

With regard to the content, 58 out of 90 (64%) of the test questions required LOT (1), 25 (28%) required LOT (2), 2 (2%) required MOT (3), and no questions required HOT.

With regard to the teaching methods, 22 out of 50 (44%) of the test questions required LOT (1), 15 (30%) required LOT (2), 1 (2%) required MOT (3) and 2 (4%) required MOT (4). None of the questions on teaching methods required HOT.

4.10 Research sub-question 3 (College B)

How can creative thinking in this institution be developed?

4.10.1 Teacher interviews

With regard to the teachers, each one gave a specific recommendation, which represents his/her opinion on how to develop creative thinking within their department and across the colleges of education in general.

The Arabic teacher felt that it was important to *raise the level of interest in the Arabic language from an early stage [in life] and continue this interest up to the university level… by adapting reformation policies which consider cooperation between the*

schools and colleges of education, developing the curriculums, and making some reforms in the preparation of student teachers' programmes.

The mathematics teacher suggested that:

The administration policies should be more flexible, so that the teacher has more freedom to add or amend the content of the course syllabus. There should also be an authoritative decision that directs the student to choose a specialization based on hobbies, desires and skills, and not based on administrative instructions. For example, I studied mathematics based on desire, even though I could study engineering or medicine as I was able to qualify for both of these. This definitely will be reflected in the creativity and the outcomes later. Therefore, I believe that the administration policies must be reconsidered.

The English teacher also pointed out the *need for firmness in the admissions' decisions, so that the choice is made for efficiency, and not because of a bias or nepotism.*

The science teacher stated that *the curriculum should be revisited and courses should be developed to increase faculty awareness about creative thinking and how it can be developed in student teachers.*

The Islamic teacher stated that:

Teachers should work to arrange meetings to put forth their ideas and share their experiences over the issue of curriculum development. Teachers also have a responsibility to develop the existing teaching methods that are used, in order to

integrate students and raise their motivation, so the student will not just be interested in completing the course with the lowest rate or without proper qualifications.

Lastly, the SEDH-teacher stated that *we have already suggested a compulsory module to be introduced to specialty courses that focuses on creative thinking, hoping that it would be approved by the college administration.*

In addition, he provides several recommendations based on his experience in the field of gifted and creative students, summarising them as follows:

- *Establish a permanent committee that has a representative in the curriculum committee of the college, in order to develop a curriculum that suits the interest of the students and helps in the development of creativity.*
- *Customize compulsory courses for all faculty members on how to link the content of their specialties to include creative thinking, which could be reflected positively in teaching and training strategies.*
- *I wish also that we could establish a kind of authority here in Kuwait, to be under the responsibility of the Council of the Ministry directly, which has its own budget to take care of creative and talented students. This authority should be responsible for monitoring and providing moral and financial support to all educational institutions, including the Ministry* of *Education and the Educational Colleges in Kuwait.*

4.10.2 Student teacher focus groups

The students from the five departments affirm that diversity in using various teaching strategies is the main factor for enhancing creative thinking. The following are their responses on how this can be improved:

- *Placing some assessment criteria to monitor the teachers' performance and teaching strategies.*
- *Providing a variety of assessment methods and reconsidering the grades for these assessments, so we have more opportunities to use different types of skills and abilities.*
- *Improving the teaching materials (library, sound laboratory, etc.) and equipping classrooms with modern technology such as smart boards, internet access and PowerPoint devices.*
- *Reconsidering the specializations modules to include modules that help in understanding and developing creative thinking skills.*

4.11 Comparison of the findings (Colleges A/B)

Similar findings were obtained for the two colleges of education; the findings have the potential to influence the development of creative thinking. They can be summarized as follows:

Social and cultural aspects of the community:

These can negatively impact the students' motivation, as the analysis shows that many students choose specific disciplines in line with the culture of the society and to satisfy their families, despite their lack of interest or ability in that particular subject.

Technological resources materials:

Both the teachers and students assert that technology can help foster creative thinking if used effectively in diversifying the teaching strategies and in developing the skills associated with the specialised subject.

Type of communication and cooperation between educational institutions:

According to the teachers in colleges A and B, constant exchange of good practices and open communication are fundamental in positively enhancing creative thinking. This includes all types of cooperation between the departments of each college and between each one of them and the Ministry of Education, other colleges of education and all other members of the educational system.

Students' thinking styles:

The teachers also explained that the students' thinking style influences the development of creative thinking; they explained that the students' previous experiences impact their thinking style, which ultimately could negatively or positively influence their development of creative thinking.

4.12 Summary

This chapter presents the data analysis and interpretation of the case studies in College A and B. It began with a brief background of the participants in the study and then addressed the research questions, by presenting the findings from the teacher interviews and student teacher focus groups, and by presenting the results from observation and analysis of the documents. The findings were presented by linking the six pre-determined concepts and issues that guided the investigation (teaching strategies and classroom environments, the concept of creative thinking, administration policies and education system, student competencies, barriers to enhancing creative thinking, and factors related to the development of creative thinking) with the research questions and the themes that emerged for each case study separately. A comparison of the findings for both colleges was also presented.

CHAPTER FIVE: DISCUSSION

5.1 Introduction

This chapter discusses the research findings presented in Chapter 4 and interprets them in light of the specific Kuwaiti context, the wider international context, the research questions and the extensive creative thinking literature. The chapter begins with a summary of the findings and structures related to the first two objectives of this study, which are:

- Identify and understand the factors that may affect the development of creative thinking in teacher education colleges in order to propose the best approach for change in their future practices within the classroom.
- Draw attention to the requirements when considering creativity as one of the main elements in teacher training programmes in Kuwait.

5.2 The summary of the research findings

The findings can be summarized in the following points, which are presented in Table 5.1 according to the dimensions of investigation used through the following research instruments of semi-structured interviews, focus groups, observation, documents (teaching strategies and classroom environment, the concept of creative thinking, administration policies and education system, student competencies, barriers to enhancing creative thinking, factors to develop creative thinking).

Table 5.1: The main findings in each department in both colleges (A/B)

Arabic departments				
Teacher		**Students**	**Observation**	**Documents**
Teaching strategies & classroom environment	Yes	Rarely	Confirmed	Confirmed
The concept of creative thinking	Yes	No	Confirmed	Confirmed
Policies & education system	Yes	-	Confirmed	Confirmed
Student competences	Yes	-	Confirmed	Confirmed
Barriers	Yes	Yes	Confirmed	-
Developing factors	Yes	Yes	Confirmed	-
English departments				
Teacher		**Students**	**Observation**	**Documents**
Teaching strategies & classroom environment	Yes	Rarely	Confirmed	Confirmed
The concept of creative thinking	Yes	No	Confirmed	Confirmed
Policies & education system	Yes	-	Confirmed	Confirmed
Student competences	Yes	-	Confirmed	Confirmed
Barriers	Yes	Yes	Confirmed	-
Developing factors	Yes	Yes	Confirmed	-
Mathematics departments				
Teacher		**Students**	**Observation**	**Documents**
Teaching strategies & classroom	Yes	Rarely	Confirmed	Confirmed

environment				
The concept of creative thinking	Yes	No	Confirmed	Confirmed
Policies & education system	Yes	-	Confirmed	Confirmed
Student competences	Yes	-	Confirmed	Confirmed
Barriers	Yes	Yes	Confirmed	-
Developing factors	Yes	Yes	Confirmed	-
Science departments				
Teacher		**Students**	**Observation**	**Documents**
Teaching strategies & classroom environment	Yes	Rarely	Confirmed	Confirmed
The concept of creative thinking	Yes	No	Confirmed	Confirmed
Policies & education system	Yes	-	Confirmed	Confirmed
Student competences	Yes	-	Confirmed	Confirmed
Barriers	Yes	Yes	Confirmed	-
Developing factors	Yes	Yes	Confirmed	-
Islamic departments				
Teacher		**Students**	**Observation**	**Documents**
Teaching strategies & classroom environment	Yes	Rarely	Confirmed	Confirmed
The concept of creative thinking	Yes	No	Confirmed	Confirmed
Policies & education system	Yes	-	Confirmed	Confirmed

Student competences	Yes	-	Confirmed	Confirmed
Barriers	Yes	Yes	Confirmed	-
Developing factors	Yes	Yes	Confirmed	-

From the tables above, we can infer the following:

- (Teacher = Yes) shows that the teachers from all departments under investigation in the current research believe that the diversification of teaching strategies is required, but that it is difficult to apply due to the numerous barriers specified in the teachers' interviews. The teachers have their own concept of creative thinking, and they offer several developmental suggestions (mentioned earlier in chapter 4). They also declare that the students' competencies influence their teaching strategies because the students' low skill levels in their areas of specialization force them to face difficulties in rehabilitating the students' basic understandings instead of building and developing their new experiences.
- The observation notes confirmed the teachers' views regarding the influence of the students' competences and the admission policies on their teaching strategies and the interactions in the classrooms (i.e., large numbers of students in small classrooms). The notes also affirmed the students' opinions regarding the lack of diversity in teaching strategies, including all types of weaknesses in effective interaction between the students and the teachers and

among different students.

- The documents in both colleges (A/B) showed that the student enrollment has increased dramatically because there is only one optional module (worth 3 credits in College A and 2 credits in College B) on creative thinking. The teachers have little freedom to add their ideas or contributions to the curriculum. There are varieties of assessments methods in all five subjects in College A, but the final tests are worth the most in terms of grades; moreover, the majority of the test questions related to lower-order thinking in all five subjects. There are limited assessment methods in all five subjects in College B; however, here, too, the majority of test questions considered lower-order thinking.
- (Students = Rarely) shows that the students assert that the diversity in teaching strategies is minimal and that the teachers use lectures as the main teaching strategy.
- (Students = No) shows that the students confirm that the college does not provide specific or clear concepts of creative thinking in its teaching and training programme.
- (Students = Yes) shows that the students agree that there are many barriers to creative thinking, and they suggest certain development factors to enhance creative thinking from their points of view.

These points suggest the following summary of findings from the two single-case studies:

- In both colleges, the five departments consider creativity to be a secondary element in teaching, learning and preparing pre-service teachers.
- There is no single module that exists in all five majors of both colleges that connects creative thinking with the curriculum content or with teaching methods in the five subjects (Mathematics, Science, Arabic, English, and Islamic).
- There is no clear conception or definition across both colleges for understanding and identifying the components and types of creative thinking.
- There is no cooperation between the two Kuwaiti Colleges of Education (A/B) in terms of professional development and the exchange of experiences to promote creativity.
- The teaching strategies for all five subjects in both colleges are limited and consist almost entirely of providing information, as the majority of students asserted. The results show that 60 to 90% of all teaching strategies employed are lectures.
- Between 50 and 60% of students' final grades are attributed to final exams, and 90% of the test questions of all five subjects require lower-order thinking.
- Although technological materials (e.g., smart board, videos, DVD, the Internet...) are available in all departments of College A, none are used to help in developing creative thinking.
- There is a lack of certain teaching materialsrequired for improving the students' skills in Arabic and English in both colleges (A/B). Some materials are also needed to develop student teachers' creativity, and these may include sound studios and science laboratories in the primary section of College A.

- College B has a special education department, in which all of the teachers are specialists in creativity. The head of this department confirmed that there is no cooperation between the teachers in the special education department and those in the five departments under investigation in the current study in terms of employing creative thinking in their lessons, teaching strategies, curriculum content or teaching methods.
- There are no criteria in either college (A/B) concerning the students' enrolment, which contributes to increasing the number of students in all specialties and affecting the quality of teaching and the classroom environment.

The six dimensions of investigation (teaching strategies and classroom environments; the concept of creative thinking; administration policies and education system; student competencies; barriers to enhancing creative thinking; factors to develop creative thinking) also led to the following common findings in both Colleges (A/B):

- The social and cultural aspects of the community have a significant impact on the development of creative thinking.
- The lack of certain teaching resources and the inactive of use the available technological materials impacted the diversity of the teaching strategies and ultimately discouraged the development of creative thinking.
- There is no consideration of the student teachers' thinking styles, either before they enroll in a course or during their attendance. This could, in turn, potentially reduce the opportunity to raise student teachers' motivation

regarding a development in genera—and, specifically, towards creative thinking.

- The communication and exchange of experiences across all educational institutions are rare and inactive, which negatively affects the development of creative thinking.

5.3 Discussion of case study 1 (College A)

The discussion will be presented in the following sections according to four sides: the teacher, student teachers', observation and document perspectives. The links to the research questions and the extensive creative thinking literature will be explored in order to achieve the research aims stated above.

5.3.1 The role of creative thinking and the factors that have affected its development from the teachers' side

Several researchers have confirmed that developing creativity in education depends on the support that must exist among all aspects of the educational environment in order to provide a 'systems view of creativity', along with a clear concept of creativity and its intended endeavours (Craft, 2000; Csikszentmihalyi, 1996; Hennessery and Amabile, 2010; Sternberg, 1995). The results of Vedenpää and Lonka (2014, p. 1829) study on student teachers' opinions of creativity in learning showed that student teachers believe that creativity can be developed and that it concentrates on the 'collaborative process'. One of the main findings of Newton and Beverton (2012) and Bolden et al. (2009) related to the importance of addressing the conception of creative thinking in order to

encourage it later in the classroom. Nevertheless, the teachers from the five departments explained that the role of creative thinking in a teaching and training programme is limited and that the college has not adopted a clear concept of creativity. The teachers unanimously considered creative thinking to be an important type of thinking, which could improve the abilities of student teachers within their profession. Interestingly, the teachers' understanding of creative thinking differed, as each held his or her own particular concept in relation to it. That said, all were quite vocal in providing specific ideas for developing this type of thinking; however, they also believed that there are many difficulties and barriers to developing and implementing creating thinking in their classrooms. One of the main obstacles is that there is no cooperation among colleagues within the college or with colleagues from the second Kuwaiti College of Education in terms of professional development and the exchange of experiences and ideas to promote creativity. Cooperation is also lacking between the college and the Kuwait Ministry of Education in terms of integrating the theoretical aspects of training with its practical application, particularly in the context of creative thinking development. According to several researchers (i.e., Al Ajmy, 2010; Jarwan, 2009; Saleh, 2011), such a lack of cooperation and clear vision could be an essential barrier to creative thinking development because it leads to the absence of the following aspects in the teaching and training programme:

- The exchange of experiences among experts of creativity within the educational system.

- The identification of points of strength and weaknesses with regard to the development of creativity.
- The ability to follow up on students' abilities and desires from previous stages until the college level.
- A recognition of the possibilities available in various educational channels (e.g., resources, locations, and materials).
- A review of the suggested plans from the different sections in order to remove any discrepancy may exist between the goals or interests

The five teachers in College A also suggested that the enhancement of creative thinking was affected by specific factors, such as the dramatic increase in student numbers in all discipline, which has reduced teachers' ability to use diverse teaching strategies. In addition, the lack of student teachers' interest in their speciality has lowered their level of motivation to develop skills and abilities as professional teachers, including the creative thinking skills. Sternberg (2006, p.7) notes that 'motivation is not something inherent in a person: One decides to be motivated by one thing or another'. Thus, an individual may have the motivation and the necessary aptitudes for creative work, but the absence of an appropriate environment that supports him/her may suppress that person's inherent creativity (Sternberg, 2006b). Hence, the student teachers' motivation represents one of the critical internal aspects that should work in parallel with the external aspects (e.g., environmental elements and social factors) to develop creativity (Amabile, 2012; Sternberg, 2006a, 2006b). The general administrative policies and educational systems in the college play a crucial role in decreasing students'

motivations and desires. For instance, the criteria for registering and selecting students in any of the disciplines depend on inefficient or inactivated measurements or, in some specialities, on certain cultural and social aspects that negatively affect students in their selections of specialization subjects (e.g., females tend to prefer careers in teaching, as this specialty provides an appropriate environment that most families feel is culturally acceptable and safe for female members to pursue). Consequently, females attending these courses do not always choose the courses based on their abilities and desires; instead, in many cases, they pursue teaching as a result of their parents' advice and guidance. This can ultimately decrease the student teachers' desire to improve their general skills, including creative thinking. According to Meintjes and Grosser (2010, p. 364), the main factors that influence an individual's creative behaviour and production, whether positively or negatively, can be categorised by contextual factors, including: 'social environment, family, economic, and physical conditions'.

Moreover, students' thinking styles are considered to be influential factors that negatively impact the development of creative thinking. This is because students' previous experiences in earlier stages of education (i.e., primary, middle, and secondary school) continue to influence their present thinking styles. They were still accustomed to the traditional method, which is dependent on the teacher as the source of transferring information, and failed to activate the role of the student in the teaching and learning process. Several researchers (Al Ajmy, 2010; Davis, 1999; Fisher, 1995, 2008; Jarwan, 2009; Lipman, 2003; Saleh, 2011) demonstrate that a tendency to conform represents one of the personal barriers that individuals use in order to keep up and comply with

prevailing standards; however, conforming reduces the imagination and expectations, which limits creative thinking.

Furthermore, although teaching and learning resources (e.g., data show-projector connected to the computer, videos, DVD, the Internet, smart boards, etc.) were available in all departments, according to the teachers, most of these materials were not used at all in the classrooms, and some were used inefficiently. Thus, the resources are ultimately unhelpful in developing skills and abilities in general, and more specifically, in enhancing creative thinking. In another example, there is a lack of laboratories for the primary science section, which also prevented teachers and student teachers from introducing their ideas and reduced their motivation to develop their work and skills. Perkins et al. (2006) explored the development of creative thinking through technology. The main findings of Perkins et al. (2006) is that their project, from a creativity point of view, stimulated more combinations of earlier learning and new technology aptitudes in future teachers. This confirms that technology, along with every tool in the teaching and learning environment, can be useful in developing student teachers' abilities, including creative thinking skills, if it is used in an adequate way.

5.3.2 The role of creative thinking and the factors that have affected its development from the student teachers' side

The student teachers from the five departments (50 students total) believe that creative thinking is considered a secondary element within the teaching and training programme, even though they also feel that it is an important type of thinking that they need to apply in their learning and teaching. The teaching strategies for all five subjects are limited

and consist almost entirely of the direct instruction method, as the majority of students asserted. Of the teaching strategies employed by the teachers, 60 to 90% were lecture-based and, thus, highly teacher-centric. Moreover, there is a discrepancy between the theoretical aspects and the practical components of most modules, which has left the students somewhat confused about how to teach, particularly during the practical semester.

A lack of encouragement in the environment surrounding an individual may suppress or inhibit creativity, despite the presence of capability or appropriate potential (Amabile, 2012; Craft, 2002; Sternberg, 2006b). According to Lin (2011), a supportive environment for developing creativity can be made available through the interaction between creative and effective teaching, which includes a creative facilitator and creative learning. The student teachers confirmed that the school offers only one optional module about thinking skills, which they believe is a general subject and cannot be useful for explaining everything about using creative thinking skills in teaching. Torrance (2002) refers to the importance of training teachers to learn the four dimensions of creativity (i.e., fluency, flexibility, originality and elaboration) and incorporate them in their classroom practices and pedagogy. This type of training, according to Torrance (2002), helps teachers, first, in preparing appropriate materials or environment to encourage children's imaginations, make them express something or lead them to act fluently. Second, teachers must accept a variety of ideas from their children, which will motivate the children to produce ideas easily, and be flexible in giving the children time schedules and rules. Third, this type of training is useful in

helping teachers recognise the outstanding or unusual ideas that their children produce. Finally, it helps teachers foster rich productions by encouraging their children to include more details in their ideas, actions and explanations. This type of training requires additional space, time and effort in order to be helpful for student teachers in their future teaching. According to De Bono (1995, p.12), creativity is not simple work; instead, it is the use of simple aspects to reach 'serious creativity', which includes novelty and originality and requires acute training on all patterns of mental systems.

The pre-service teachers in College A also mentioned other factors that they believed affected the development of creative thinking, such the fact that, despite the existence of several methods of assessments in all five departments, but the focus was primarily on tests (mid-term and final) as essential evaluations. This lowered students' motivation to introduce potential abilities, as well as their desire to develop creative thinking skills. Similarly, the student teachers reported a significant lack of opportunities for open discussion, which would have allowed the students to express their ideas, use their imagination and exchange experiences from different sources (i.e., teachers, colleagues and other sources, such as the Internet). In addition, the teachers did not use the available resources when engaging with the students during lessons or to facilitate a diversity of teaching strategies. Again, the common use of lecturing methods was specifically highlighted. Bergström (1991) explained that creative thinking is not based on predictable thinking and, therefore, cannot be taught in a logical method. According to Fisher (1990), the human brain is divided into two spherical halves: the left half of the brain specializes in specific operations and logical organization, such as menus,

words, numbers, sequencing and logical analysis, whereas the right side focuses on various activities, such as rhythm (music), imagination, perception, daydreaming, seeing dimensions and spatial awareness. Focusing on only one side of the brain and ignore the other in the teaching and training process means that only half of the brain's functions and abilities are used.

5.3.3 The factors that have affected development from the observation side

According to Churches (2009, p. 9), the target of teaching and learning strategies in the '21st century is to increase students' abilities from Lower Order Thinking Skills (LOTS) to Higher-Order Thinking Skills (HOT)'. This is clear when observing the primary student teachers, since the overall atmospheres in the five subjects' classrooms failed to encourage open debate, provide opportunities to ask questions or allow the students to use their imagination or put forth ideas outside the scope of the lessons. Many theories of creativity emphasize the importance of providing opportunities to accept imaginative ideas, as well as to encourage freedom, an open-minded environment, and the accomplishment of challenging tasks (i.e., humanist theory (Maslow (1970) and problem solving theories (Amabile, 2012; Gruber, 1989; Guilford, 1986; Schank, 1988; Sternberg, 2006a). The observation showed that the lessons' aims focused mainly on lower-order thinking skills (LOT), which were repetitive, disconnected from creative thinking skills and lacking in overall diversity. The lessons followed a particular routine, which involved repetition and narrative procedures. Classroom discussions were limited in the majority of lessons and rare in some lessons, with most of the interaction occurring in only one direction (from the teacher to the students). The

questions from the teachers to the students during the lessons were repeated, as they focused on the students' understanding. In addition, the questions from the students to the teachers were either limited or occurred rarely. Some classrooms possessed technology resources (e.g., smart boards, Internet access), but these were rarely used by either the teachers or the students for the benefit of the lessons. Fisher and Williams (2004) assert that, in order to transform learning and teaching from a didactic approach to one that includes creative thinking skills, it is important to have a teacher with adequate competencies in creative thinking, who can build the creative learner's personality in an appropriate manner. According to Torrance (1990, p. 2), the teaching strategies that focus on providing knowledge to students directly, with strict instructions that restrict students' engagement and enthusiasm, force students to use specific types of thinking skills, including 'recognition, memory, and logical reasoning', which hinders the growth of creative thinking.

5.2.4 The factors that have affected development from the documents side

The documents in College A (i.e., student guides, statistical information of students enrolled, module schemes/syllabi and test questions) show that there is no single module in any of the five departments that connects creative thinking skills with content or teaching methods. The only available module dedicated to creative thinking is optional, offered in addition to many other optional modules across the five departments. However, due to its optional status and relatively low credit value (3 credits); the students rarely opt to take it. In addition, high numbers of enrolled students in general and, particularly, in the literary disciplines (Arab and Islam) negatively

impacts the classroom environment (the results showed that attendance was over 60 in some classes). This, in turn, influences the development of creative thinking.

These findings illustrate that creative thinking is considered to be a secondary element in teaching and training within the college. Many researchers (Eysenck, 1994; Hennesse and Amabile, 1988; Sternberg, 1988, 2006a, 2006b) believe that creativity can be seen through the interactions among mental functions (intelligence), thinking style, personality, motivation and environment aspects. One optional module is not sufficient to cover these aspects and to connect creative thinking skills with the core knowledge of each subject. Moreover, restrictions placed on teachers with regard to adding more diverse experiences to the curriculum or to linking its content with creative thinking are also evident and limiting (70% of the curriculum is provided by the departments, and only 30% by the teachers). The evaluating and creating categories of Bloom's revised taxonomy (Anderson & David Krathwohl, 2001) focus on those questions that consider higher-order thinking, such as: What modifications would you use to find the solution? How would you enhance the plan…To create? What can you do to lower the…?. The majority of test questions reviewed in the five departments focused on lower-order thinking skills. This is not useful to develop student teachers' creative thinking.

On the other hand, teachers assert that new generations of student teachers should have the potential to develop their general skills in teaching, including creative thinking. This means that a joint effort needs to exist across multiple all aspects, such as teachers, administration policies and all educational systems in the college. Moreover, teachers should have the ability to create an environment that fosters and encourages this type of

thinking. The teachers also confirmed that the college is hoping to pursuing and gaining academic accreditation and has written a plan and milestone goals for this purpose. This may be useful for developing creative thinking options, but only if the college translates these aims and plan to real, practical aspects in all departments, removes the contradiction that exists between written goals and their implementation and takes pro-active steps to implement steps accordingly in the teaching and training programme. In addition, the college has all of the facilities necessary for the development of creative thinking, including a variety of materials and resources, such as smart halls and boards, Internet access and other useful technologies that can be used in developing students' skills, including creativity.

5.4 Discussion of case study 2 (College B)

The same discussion structure utilized for College A will be followed for College B. The discussions from the teachers', student teachers', observations' and documents' sides will then be linked with literature in order to achieve the first two aims of this research study.

5.4.1 The role of creative thinking and the factors that have affected its development from the teachers' side

Similar to teachers in College A, the teachers in College B highlighted that the role of creative thinking is considered a secondary element in the teaching and training of the primary programme. They asserted that efforts to develop creative thinking were accomplished individually, and were not necessarily supported or encouraged by the

existing policies of the college or by management, even though creative thinking is regarded as an important type of thinking.

Within an organization, several researchers have highlighted the importance of providing a clear concept and encouraging collective support from all elements of the organization in developing creative thinking (Barron, 1988; Csikszentmihalyi, 1996, 1988; Dodd, 2004; Feldman, 1999; Gruber & Davis, 1988; Hennesse & Amabile, 1988; Parnes, 1970; Puccio, 2006). The five teachers confirmed that the level of teaching is weak and that the educational system does not encourage the development of creative thinking. For example, although there is a special education department in the college that employs highly experienced professors that specialise in creativity and giftedness, they are not consulted by the five investigated departments when there is a need to exchange experiences or ideas on how to improve creative thinking abilities. There is also a lack of connection between College B and the second Kuwaiti College of Education, even though both colleges have similar dedicated goals of preparing student teachers with the appropriate and necessary skills for teaching. The only communication between the colleges occurred during the cultural week, which the teachers confirmed attracted very few attendees. There is also no cooperation between the college and the Kuwait Ministry of Education with regard to any strategy that could help prepare the student teachers for college life and provide them guidance on selecting specializations appropriate to their desires and abilities.

The five teachers in College B also emphasized that the curriculum is old and overloaded, as well as that they have very little input in adding to or modifying it.

Although there is no concept of one specific term for creative thinking (Craft, 2003; Mitchell et al., 2003; Sharp, 2001; Wallace, 1986), there is agreement that creativity is a form of problem-solving, of complex/divergent/critical thinking and of imagination, which needs to be synthesised with individuals' traits, domains, and the environment (Bergström, 1991; Craft, 2000; Jackson & Shaw, 2005; Jarwan, 1998; NACCCE report, 1999; Simonton, 2012; Torrance, 1974). This means that creativity cannot be developed without considering these elements in the curriculum, in teaching and in the educational system as a whole (Robinson, 2011).

The admission policies do not provide specific measurements or criteria to select students according to their abilities and/or desires. This has led to an increase in the number of students selected for almost all majors. This change has subsequently negatively impacted the teaching and learning that takes place within a classroom environment and contributed to lowering students' motivation in general. Moreover, the majority of the students' competences in their specialities are low, which forces teachers to concentrate primarily on raising the students' basic knowledge, at the expense of developing their creative thinking skills. Furthermore, students tend to misuse resources such as the Internet, which reduces the important role that these resources could play in the development of creative thinking. Finally, there is a lack of vital resources (e.g., library technological equipment, up-to-date books, smart boards, voice studios and the other necessary materials) that could help to diversity teaching strategies, which could, in turn, foster a more conducive environment for developing creative thinking skills.

5.4.2 The role of creative thinking and the factors that have affected its development from the student teachers' side

The ability to think creatively and solve problems is a highly important primary skill that represents a necessary and basic requirement for employment (Karka, 1990). Sensitivity to problems, fluency, flexibility, originality, elaboration and calibration are among the most important abilities or skills that comprise creative thinking (Craft, 2002; Guilford, 1950-1986; Sternberg, 2006b). These skills, according to the student teachers, are not active in the current teaching and training programme. The student teachers from the five departments (50 student teachers total) believe that creative thinking is an important type of thinking; nevertheless, they do not know how to use it in their thinking and teaching because its role has not been made clear during the course of the teaching and training programme.

There is no diversity in the teaching strategies; the teachers often use a traditional lecturing approach as the main teaching method in all five subjects. The administrative policies and educational system in general do not promote creative thinking. Examples have shown that administrative policies and the educational system do not generally promote the creative thinking. This reality is illustrated in the following:

> A student from the science department produced a device for reducing marine pollution, but because the college did not put a plan to follow this type of performance and because no one took into account her enthusiasm for the project, she could not find time for both her studies and her creative work. Thus, she was forced to abandon the project.

Some teachers' methods of dealing with students are, arguably, out of line with the undergraduate level of learning. This disparity reduces students' motivation regarding any creative achievement and impacts their initiative to ask questions or present new ideas. The current classroom environment does not encourage students to participate in diverse discussions, introduce their ideas, use their divergent thinking or experience their imagination.

Furthermore, assessment methods are limited and rely on midterms and the final tests, which, in turn, decrease students' motivation to initiate potential skills and reduce their interest in enhancing their ability to think creatively. In addition, there is a lack of specific resources and technology (i.e., up-to-date books, technology equipment in the library, voice studios, Internet access and smart boards) in the classrooms and in the college in general, particularly in comparison to the resources found in College A and other private colleges. These resources can be used to diversify teaching strategies.

According to the above, it can be said that the teaching and training programme ignores both types of creativity identified by Craft (2000, p.4) and Torrance (1974, p.8): namely, ordinary thinking or 'possible thinking' and 'extraordinary creativity'. These two types of creativity focus on training the student to be 'sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses' (Torrance, 1974, p.8). The student also needs to practice 'refusing to be stumped by circumstances, but being imaginative in order to find a way around a problem or in order to make sense of a puzzle' (Craft, 2000, p.4). 'Extraordinary creativity' requires training a student on

‘formulating hypotheses about any deficiencies, testing and retesting these hypotheses and possibly modifying and retesting them, and finally communicating the results’ (Torrance, 1974, p.8).

5.4.3 The factors that have affected development from the observations’ side

Creativity occurs through the ‘dialogue’ (Fisher, 2008, p. 106; Wegerif, 2010, p. 54) and requires encouragement, such as ‘a question, problem, a story...’ (Fisher, 2008, p. 106) and includes a ‘leap from one way of seeing things to another’ (Wegerif, 2010, p. 54). This requires particular procedures in the classroom environment that were not evident in observations of the five subjects’ lessons. The interaction between the teachers and the students is limited and non-existent in some lessons. Moreover, the lessons focus on simplifying the information in order to ensure that the students understand the topics, which lead to dealing with the simple aspects of a subject and ignoring the important need for students to ‘feel challenged by their goals, operations and tasks’ (Craft, 2002, p. 8). There is no consideration of higher-order thinking in the lessons’ aims; instead, each lesson follows the same steps that are repeated in all other lessons. Moreover, the lessons are disconnected from any creative thinking techniques or strategies. Craft (2002, p. 9) notes that, in the creative environment, participants ‘experience much debate within a prestige-free and open environment’. However, discussions in the observed lessons are limited to specific issues that are related to the lesson topics. The questions in the lessons are direct, which means that they are related only to ensuring students’ understanding of a topic. Finally, some students’ questions are met with cynicism and ridicule by some teachers.

5.4.4 The factors that have affected development from the documents' side

The development of creative thinking in the educational college as an organisation involves various and tangled elements and requires a collective effort in terms of the interacting manners in order to include creativity in the main aspects of the teaching and training programme (Craft, 2000; Csikszentmihalyi, 1996; Hennessery and Amabile, 2010; Sternberg, 1995). Nevertheless, the documents in College B (i.e., the student information guide, statistical information of students enrolled, module schemes/syllabi and test questions) illustrate that there is only one optional module available that focuses on creative thinking and that this accounts for only two credits. Moreover, since the module is optional, it is not necessary taken by all students, or it may not provide suitable understanding or training for this type of thinking. Student teachers need to practice their skills in different types of tasks and challenges in order to increase their motivation and learn various ways of dealing with the teaching situations through creative thinking (Al-Mushrif, 2003). This cannot be accomplished when the 80% of assessment methods depend on midterm and final exams or when the teachers have very little authority to add to or modify the existing curriculum. Furthermore, the number of students accepted to the college continues to increase, particularly in the literary disciplines (Arab and Islamic). With overly crowded classrooms, it is very difficult to adopt creative thinking strategies or techniques. Almost 90% of the test questions for the five subjects concentrate on lower-order thinking.

However, College B has a special education department, which employs highly experienced professors that specialise in creativity and giftedness. The College's

consideration of the role of the special education department, as well as the implementation of the recommendations given by the head of this department, could be useful in developing creative thinking skills in College B (see SEDH-teacher's recommendations, p. 200).

5.5 Theory produced: the limitations of creative thinking in student teachers

The preparation and training of teachers in Kuwait is similar to that in most countries around the world, in that it is affected, in general terms, by the educational system and the societal culture. Four factors arose in the findings from both colleges (A/B) that could effectively influence the development of creative thinking in these colleges (see Section 4.11, p. 200). These elements are: *the social and cultural aspects of community, the technological resources and materials, the type of communication and cooperation across all educational institutions,* and *the students' thinking styles*. Limitations, including the teaching strategies used, the classroom environment, the assessment materials, and the administration policies, illustrated the following:

The development of creative thinking is a part of teachers' professional remit; however, both teachers and student teachers stressed that efforts to develop this kind of thinking in the preparation programme in both colleges (A/B) are personal, unclear, and do not form an essential element of the training programme.

The societal culture does not encourage open ideas. The classroom environment still follows traditional teaching methods, and activities such as open and free debate,

questioning, discussion, and the formation of hypotheses, are frowned upon and seen as disrespectful of the expert (the teacher) and of authority. These limitations also show that the educational system in the primary teachers' education colleges in Kuwait does not support creativity.

The most prominent limitations are the social and cultural aspects, especially after the adoption of the feminisation law for the primary stage in Kuwait. This law made teaching at the elementary level the sole responsibility of female teachers. This study does not aim to discuss the advantages and disadvantages of this law; however, it considers the impact of this law with regards to the role of creative thinking in the preparation of pre-service teachers. This leads us to several issues related to the role of creative thinking, particularly in primary education, such as the cultural attitudes toward teaching in Kuwait in terms of the role of women since the feminisation law, and the challenges and benefits of sociocultural change.

Kuwaiti women have achieved much to be proud of, and have proven their professional competence through their success in various positions, but they still face challenges that limit their ability to contribute to the Kuwaiti community. Al-Zafiri (2012) asserted that the discrimination against Kuwaiti working women is exacerbated by popular images relating to gender and culture, women's social status, and there is also the problem of sexual harassment in the workplace. Taking into account these difficulties and pressures faced by women, and the prevailing culture in Kuwait which promotes work environments which are solely for women rather than mixed, teaching is the most preferable occupation for Kuwaiti women.

However, these female teachers face several challenges related to the socio-cultural aspects of the community, which might impact on their creativity or their ability to use creative thinking in teaching. Additionally, the feminisation law put more pressure on female primary teachers, as they alone bear the responsibility of teaching male students in the primary stage (Kuwait News Agency (KUNA), 2005); this has led to an associated decline in motivation to teach. Almia et al. (2005) showed that 77.5% of teachers in all educational regions of Kuwait opposed the feminisation of males' elementary schools, while 22.5% agreed with the decision. The effectiveness and quality of the educational process is linked to the enthusiasm and motivation of the teachers (Almia et al., 2005). Thus, it is important that the overseers of the preparation programme in both colleges (A/B) consider teachers' opinions regarding the feminisation law. It is also important to bring about changes in the socio-cultural aspects, as this could help in solving many problems, such as the increase of numbers of student teachers in some specialities that they don't have the desire or competency for; thus, their creative thinking skills dwindle, and become difficult to develop. This problem might also exist in the pre-service teachers; when they become in-service teachers, their motivation is reduced and, therefore, their teaching might be without any type of creative development. Teachers' motivation is one of the main components of creative thinking in education (Amabile, 2012; Craft, 2002; Sternberg, 2006a, 2006b).

5.6 Summary

This chapter discussed the results of the research in light of the specific Kuwaiti context, the broad international context, the research questions and the extensive creative thinking literature. It began with a summary of the findings, and then provided an explanation of the role of creative thinking and the factors of creative thinking development in teachers' educational colleges (Colleges A/B), according to the four perspectives (teachers, student teachers, observations and documents) in order to achieve the first two aims of this research. The chapter concluded with a theory that showed the determinants of creative thinking in teachers' educational colleges in Kuwait.

CHAPTER SIX: CONCLUSION, RECOMMENDATION AND SUGGESTED FRAMEWORK

6.1 Introduction

While the previous chapter was structured around the first two aims of the research, this chapter focusses on the overall aim of this study, which is as follows:

- To suggest appropriate recommendations and a theoretical framework that will be helpful in improving creative thinking in teacher education colleges in Kuwait.

This chapter also provides the closing comments on the findings of the research, in addition to suggestions for future research.

6.2 The essential recommendations

It is clear that there are several similarities between colleges A and B with regard to the role of creative thinking in teaching and training in Kuwait. These similarities are clearly visible in the presentation of the results relating to the (two) single-case study (Chapter four) and the discussion of the study findings (Chapter five). Therefore, the recommendations for developing creative thinking can be explained similarly for both colleges and can be divided into the following four recommendation levels: policies; curricula, educational materials and the culture of the colleges; teaching strategies and classroom environments; teachers and students.

6.2.1 Recommendations at the level of policies, curricula and educational materials, and the culture of colleges

As mentioned earlier in this study, Kuwait is one of the first Arab and Gulf countries to realise the importance of nurturing gifted and creative students, and the Ministry of Education has already addressed this by introducing some basic measures in the form of specific policies (see Table 1.1 in Chapter one). The two colleges of education referenced in this study need to build on these efforts by fostering supportive cultures and establishing targeted policies that will enhance creative thinking and encourage creativity in all aspects. There was agreement between the teachers in the 10 departments under investigation in the current study that the culture of the colleges does not currently encourage creativity. The teachers clarified their points of view during interviews, based on a number of factors, and their perspectives were confirmed with the help of the other tools used in the present study (focus groups with student teachers, analysis documents and observations). Based on the results, it is recommended that approaches be introduced to encourage the building of a culture of creative thinking, by opening the doors between the two Kuwaiti colleges of education, as well as private colleges and international colleges, so that all can mutually benefit from experiments in developing creative thinking, especially teaching and training colleges. Cooperation can be increased in many ways, for example, by using the internet (video calls) to present samples of lessons showing techniques for teaching creative thinking and presentations on how to develop students' creative potential, or by engaging in conferences, academic visits and so on. Setting up annual meetings between the teachers at the colleges is also

recommended to facilitate discussions regarding obstacles to creativity or useful ways to develop creative thinking during the academic year. This meeting requires the presence of specialists in the area of creativity and student representatives who can exchange information on their experiences and discuss the development of thinking in both teachers and students. A curriculum review by an authorised committee is also needed to develop links to creative thinking skills, in addition to giving teachers the required freedom to share their creativity regarding such development. Special classrooms should be allocated to all departments in the colleges and should be equipped with all of the necessary technological materials including internet connections, smart boards and presentation tools. The benefits of technological materials in the teaching and training process cannot be overstated. These classrooms can be used to train student teachers in applying creative thinking strategies in their teaching. In addition, they can be linked online with real school classrooms to allow the student teachers experience teaching in a realistic way. This use of modern technological materials to foster a culture of creativity, both financially and morally, cannot be achieved without the joint subsidised efforts of all educational institutions in the country. Furthermore, the major curriculum for each subject should be reconsidered to facilitate the addition of more modules focussing on an understanding of creative thinking from all angles, namely, conception, dimensions, types, techniques and strategies. These modules also need to be prepared efficiently so that knowledge in each speciality can be connected with all creative thinking components.

6.2.2 Recommendations at the level of teaching strategies and classroom environments

Several researchers (Fisher and Williams, 2004; Torrance, 1974, 2002; NACCCE, 1999) note that teacher education colleges should take responsibility for training pre-service teachers in how to incorporate the dimensions of creative thinking (imagination, fluency, flexibility, originality and elaboration) into their classroom teaching and pedagogy. This type of training needs to be done based on diverse teaching strategies to include searching, imagination and problem solving. A variety of discussion topics should be utilised, as well as questions based on stimulating higher-order thinking skills and using available teaching materials or other necessary modern educational materials. Learning and teaching need to be moved away from the one-direction or teacher-concentrated approach and towards interaction through creative and effective teaching, which involves creative facilitators and creative learning. Activities must be provided that challenge students' thinking skills, for example, brainstorming to share ideas and choose the best ones in a free atmosphere, group work to help in using divergence and critical thinking through feedback from colleagues, and class discussions that provide opportunities to express opinions in a flexible environment. More classrooms are needed, and the size of classrooms also needs to be increased to accommodate more students while ensuring proper ventilation and suitable lighting. All students should be equipped with the necessary educational materials so that the teachers can engage in the above-mentioned activities and use the materials to diversify their teaching strategies and engage students.

6.2.3 Recommendations at the teacher level

Since teachers have expressed their willingness to develop and enhance their own abilities, it is recommended that training courses be provided for them to achieve this goal. While staff members of both colleges under review are well qualified in their specialities, they still need to improve their skills in order to make successful connections between their areas of knowledge and creative thinking components and abilities. Moreover, cooperation should be encouraged between teachers in terms of exchanging experiences, so as to foster the development of creative thinking. In assessing the performance of teachers, students' views should also be taken into account. For example, the college can use questionnaires that have been prepared and thoroughly analysed by specialists in the field of performance evaluation. These evaluations should be regularly followed up with a view to achieving an outstanding level of performance and ultimately enhancing creativity.

6.2.4 Recommendations at the student level

The teachers in both colleges pointed out many factors relating to students that they considered central barriers to the development of creative thinking. These factors included students' low levels of competency in their specialities, their lack of general motivation, their thinking styles, and the associated social and cultural community factors. Therefore, it is recommended that programmes be provided to connect the colleges of education with school students, particularly at the secondary stage, in order

to help prepare them for university life and modify their thinking styles. Such programmes can introduce them to the differences between school and university, and prepare them to change their attitudes as appropriate to their new academic environment. Accurate measures should be devised, including measurements of creative thinking skills, that can be included in the criteria used to accept students in different disciplines. The aim of such scales is to identify types of student skills to help students through their studies in accordance with their actual potential and to increase their motivation. In this context, outreach programs run by relevant specialists should be provided for families to help them recognise their daughters' goals and potential, and direct them accordingly. Such initiatives will enhance their academic and practical success.

6.3 Basic elements of the suggested framework (interaction and cooperation)

The suggested theoretical framework was derived from the seven basic elements agreed by most researchers in the field of education. The first of these is the importance of creative thinking for the individual and society, and the role the educational system should play in developing this type of thinking in students at all levels (Tegano et al., 1991; De Bono, 1995, 2007; Edwards and Springate, 1995; Duffy, 1998; Torrance, 1998; Torrance, 2002; Jackson and Shaw 2005; Morris, 2006; Kleiman, 2008; Kampylis et al., 2008; McWilliam, 2008; Fisher, 2008, Robinson, 2011). The second basic element centres on the notion that 'creative children need creative teachers' (Fisher & Williams 2004, p. 2). This relates to the role of teacher training colleges in

preparing teachers to gain adequate competencies in creative thinking and in building on creative learners' skills in an appropriate manner. Third, considering creativity in education has become part of the educational reform effort, and it is now a fundamental issue in the academic domain (Craft, 2005; Morris, 2006; Ferrari et al., 2009). Fourth, the development of creative thinking requires an understanding of the external and internal factors that discourage and encourage such thinking in individuals, including environmental elements and general readiness for creative thought (Davis, 1999; Al Ajmy, 2010; Jarwan, 2009). The fifth basic element involves a shift in how we understand the concept of creativity; in other words, everyone can be creative or has the potential to be, and that creativity should exist in all areas of work and in every problem an individual may encounter in life (Robinson, 2011; Craft, 2003; Goleman et al., 1992; Fisher, 1995; Maslow, 1970). The sixth basic element holds that creative thinking occurs and develops through interaction between specific elements (Sternberg, 1988, 2006a, 2006b; Lin, 2011; Amabile, 1988, 2012; Sternberg and Lubart, 1955; Craft, 2002). The seventh and last element posits that creativity is rooted in the early years, which means that basic education needs to be delivered by qualified teachers who are appropriately equipped to use creative thinking in classroom teaching and learning (Craft, 2002; Duffy, 2006; Fisher, 2008).

6.4 Goals of the suggested framework (interaction and cooperation)

The suggested framework aims to guide all efforts interactively within the educational system to support the development of creative thinking. The internal elements of the

education system need to be strengthened through the interaction, cooperation and support of the external elements in order to facilitate an understanding of the barriers to creative thinking and to encourage its development. In short, the essential theoretical components in the development of creative thinking must be identified with respect to education colleges for primary teachers in Kuwait.

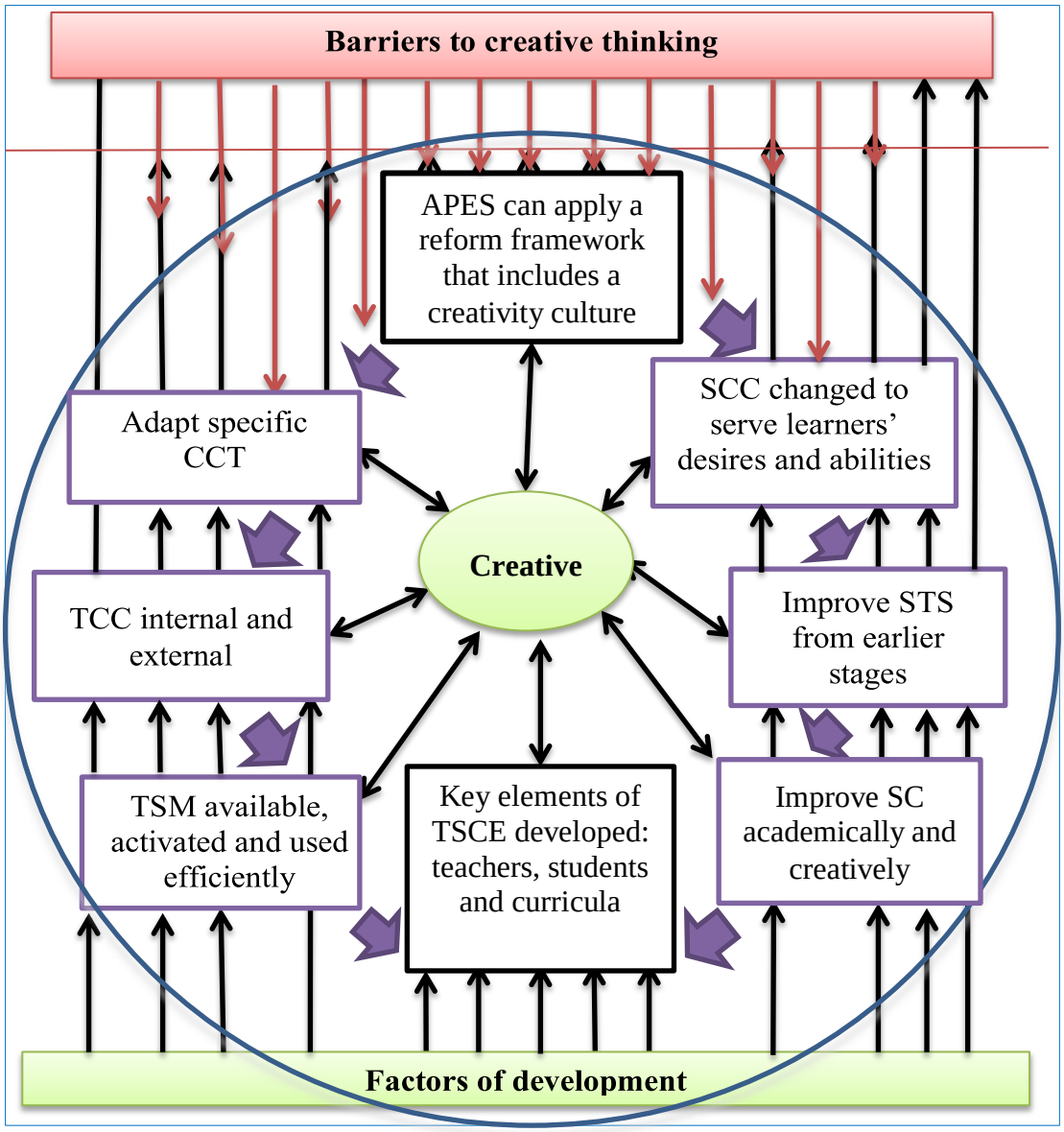
6.5 Dimensions of the suggested framework (interaction and cooperation)

The data derived from the interviews, focus group discussions, observations and documents underpinned the structure of this framework and dictated its dimensions. Each element has its role in creative work and in the development of creative potential. Six dimensions were drawn from a systematic review and exploration of the existing literature, namely, teaching strategies and classroom environment (TSCE), the concept of creative thinking (CCT), administration policies and education system (APES), student competences (SC), barriers to creative thinking, and factors of development. These elements informed the investigation of the current study, explained the role of creative thinking in each college and led to the discovery of the following common and new elements: social and cultural aspects of the community (SCC), technological sources and materials (TSM), type of communication and cooperation between all educational institutions (TCC), and students' thinking styles (STS). The combination of all these elements plays an important part in identifying the role of creative thinking and influencing the development of such thinking in the primary sectors of both colleges (A and B). Each element affects the development of creative thinking to one degree or

another; therefore, the theoretical framework was built according to the interaction between all of the above domains. TSCE and APES are the most important dimensions in terms of identifying the role of creative thinking, and have the greatest effect on it. Primarily, this is because the TSCE includes the main elements of the educational process (the teachers, students and curricula that represent the inner elements of the educational system) and APES represent the link that controls and joins all educational efforts and learning processes to achieve the required reforms (the link between external and internal elements). Figure 5.1 shows the dimensions of the suggested framework.

The red arrows in Figure 5.1 represent the barriers that discourage creative thinking work and development, and the black arrows show the factors that help in enhancing this type of thinking through interaction and cooperation between all of the influential domains (purple arrows and two black arrows at the sides). The more developmental factors that are used and joined through interaction between all domains, the more drive there is to remove the barriers to creative thinking. Although some barriers are a feature of all educational system components, the factors relating to development through internal and external cooperation and interaction can help to remove these barriers and facilitate the reform necessary to enhance creative thinking.

Figure 5.1: *The dimensions of the suggested framework*



Teaching strategies and classroom environment (TSCE)

This element includes the following components:

- Teachers: Several points must be considered regarding teachers as an important component in the teaching and learning process, as follows:
  - Teachers' perceptions of teaching in general and of creative thinking in particular, as these perspectives identify their teaching strategies and aims.
  - Teachers' attitudes to their students, as it is important for them to gain their students' respect and interact creatively with them.
  - Teachers' use of teaching resources and materials, as this shows how they benefit from such resources and materials in reaching the overall goals of creativity-based teaching, learning and training.
- Students: The following points should be considered with regard to students as another important component of the teaching and learning process:
  - Their intellectual abilities in general and their creative thinking skills in particular.
  - Their personalities and how they reflect the main characteristics of creativity.
  - Their motivation in general and with regard to creative performance.
  - Their perceptions of teaching in primary education in general and of creative thinking in particular.
- Curriculum: Since the curriculum is a crucial component of the teaching and learning process, it is important to identify criteria linking the content of knowledge with creative thinking as a specific topic, taking the requirements for each subject

into account (Arabic, English, science etc.). In addition, it is necessary to identify precisely the role of all contributors in constructing the curriculum, including teachers, student teachers, experts in all specialities in general, and experts in creative thinking in particular.

Concept of creative thinking (CCT)

The CCT needs to be considered from three perspectives: type, component, and the adopted definition of creative thinking. This necessitates the introduction of clear policies, plans and goals with regard to applying creativity in teaching and training programmes.

Administration policies and educational systems (APES)

APES represent the key controller and linker of all elements in the teaching and training process from outside to inside in terms of decisions, support, interaction and planning for present and future development and reform.

Students' competences (SC)

SC should be viewed in relation to their specialities (Arabic, English, sciences, Islamic and mathematics) as cumulative factors that either weaken or strengthen as a result of the stages of study (elementary, secondary and university) they have already experienced.

Social and cultural characteristics of the community (SCC)

The SCC can be seen from two sides: the perceptions of society regarding creative thinking in the educational system and the traditional concept of families in the community based on the relationship between creativity and children's success, both academically and in their lives in general.

Technological materials (TM)

TM includes all the materials and technology available for the teaching and learning process. Such materials need to be used adequately from every educational perspective. This can be done by identifying specific implementation criteria in terms of teachers, students, curricula, and administration with the purpose of applying TM optimally to support teaching, learning and training goals.

Type of communication and cooperation (TCC)

The external TCC relates to the communication and cooperation of each college with all educational institutions (Ministry of Education, other colleges or departments in the second college of education, international connections, and communication through the SCC). The internal TCC represents the interaction and cooperation of the internal components in the education system, for example, teachers, students, and teaching materials and tools.

Student thinking styles (STS)

STS need to be considered from three perspectives in the teaching and learning process: personal characteristics, mental abilities and previous experiences. This may be helpful in modifying or improving students' motivation.

6.6 Internal interaction and cooperation between the elements

Every dimension is influenced by specific components, which means that interaction is required in order to implement the necessary cooperation and reform initiatives. As mentioned previously, TSCE and APES are the main dimensions that impact the development of creative thinking. Therefore, it is important to explain the inner interaction and cooperation that occurs between these main dimensions and others through their external components.

TSCE, APES and the other six dimensions

Many researchers have agreed that the TSCE dimension is influenced by three elements: teachers, students and curricula (Al-Mushrif, 2003; Perkins et al., 2006; Sternberg, 1988, 2006a, 2006b; Barnes and Shirley, 2007; Oral, 2010; Lin, 2011; Amabile, 1988, 2012; Antonenko and Thompson; 2009). These elements, in turn, require cooperation and interaction with APES and the other six dimensions to enable them to improve creative thinking. This is explained in more detail below.

Teachers' knowledge, teaching styles, attitudes to their students and communication styles are considered to be determinants of the classroom environment, and when those factors are appropriate and effective, creative thinking can be developed successfully.

In-depth teacher knowledge needs to be provided in terms of both teacher specialities and creative thinking concepts and skills in order to help student teachers to apply everything they have learned to their thinking and teaching. They can do this by continuing to improve their abilities and teaching strategies with the aim of applying them to the general domain (Amabile, 1988). The cooperation and interaction path in such cases needs to be based on APES through the provision of the necessary training courses to help teachers improve their skills, especially in connecting their areas of knowledge with creative thinking skills, techniques and learning approaches.

Teaching style involves the following:

- Exploring problem-solving techniques by giving students the opportunity to discover, think about and examine problems or issues from different sides, and vary their views in order to find creative solutions. Essentially, this involves encouraging students to be sensitive to the 'problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses' (Torrance, 1974, p. 8).
- Accepting and dealing with imagination appropriately by respecting students' questions and ideas, even if they are unusual or non-conformist. This includes giving students time to think about and explain their ideas (Craft, 2000; Sternberg 1988, 2006a, 2006b).

- Supporting freedom to express ideas without self-criticism, advising students not to stop after a single failure but to continue trying using different methods, and giving them proper feedback on their work (Maslow, 1970; Amabile, 1988; Craft, 2000; Sternberg, 1988, 2006a, 2006b).
- Considering the four dimensions of creativity, namely, fluency, flexibility, originality and elaboration, and applying the use of divergent and convergent thinking through teaching and learning operations. This can be done by using open-ended questions and encouraging students to analyse, explore, test, self-initiate, synthesise, take on risks or challenges, experiment, add or modify ideas when needed. Students should be encouraged to engage in group work, discuss, search for related factors from different angles, and be precise when searching for solutions with a view to finding comprehensive results (Guilford, 1986; Torrance, 1974, 2002).

To succeed in the approaches above, two internal TCCs need to exist. First, cooperation is required between teachers from the primary department and other departmental colleagues to facilitate the exchange of experiences and make it possible to get the necessary help from specialists in the area of creative thinking. Second, there must be cooperation between teachers and APES regarding the discussion of reform plans such as providing more freedom for teachers to contribute to the development of all teaching and learning aspects, the curriculum, assessments, enrolment policies and so on. In addition, specific types of interaction and cooperation should occur in order to support the adoption of clear CCT, because adopting particular concepts means that colleges

must seek to create a framework that includes creative thinking as a main element of their teaching and training programmes. This also means that the colleges must identify the necessary goals, plans and procedures to support creativity in their cultures and determine the type of work considered creative work and deserving of a reward, both at the college level and in classrooms.

Teachers' attitudes to their students are based on respecting students' ideas and opinions, showing personal interest in student success, and considering students to be colleagues.

Finally, ***teachers' communication styles*** are built on creative teaching pedagogy, which takes different directions depending on how knowledge is transferred through different teaching operations (teachers to students, students to students, students to teachers) (Lin, 2011). Teachers also need to be good listeners who are provocative but not aggressive, and to provide a flexible, comfortable, relaxed and non-threatening classroom environment.

Students' intellectual abilities, thinking styles, personalities and motivation

Student teachers need to understand the role of intellectual ability and intelligence, thinking styles, personalities and motivation in creative work, because this will help them to understand their own creative abilities (Sternberg 1988, 2006a, 2006b). Teachers also need to have this knowledge about their students so that they can identify the types and levels of creative thinking potential in those students.

According to Duffy (2006, p. 5), pre-service teachers need to understand the 'interconnectedness' of all elements and the 'cognitive, perceptual, physical, language, social and emotional' development of children, because all of those factors are 'interlinked' and overlap 'to facilitate the development of imagination and creativity' during the early years. This type of understanding needs to permeate each subject, as each one brings with it unique content and knowledge. Thus, it is important that APES consider reform plans as a specific part of curricula, courses, modules and facilities in order to include the required training and preparation. APES also need to provide creative thinking measurements that have high levels of validity and reliability so that student teachers' intellectual abilities, personalities and thinking styles can be identified. This will help teachers to encourage student motivation according to their thinking styles, abilities and personalities. Scales can be used as essential criteria in admission policies with a view to increasing students' awareness of aspects of their abilities and how compatible their abilities are with their desires. This, in turn, can help in improving SC. The results of these measurements can also be used to increase families' awareness of their children's creative thinking skills and to change negative SCC aspects such as the insistence of some families on forcing females to choose specialities according to societal or parental expectations rather than their abilities or desires.

The content of curricula, according to many researchers (Parkhurst, 1999; Fisher and Williams, 2004; Runco, 2004; McWilliam, 2008; Robinson, 2011), should feature flexible terms considering teachers' and students' roles in planning, controlling and

facilitating learning operations. Curriculum content should also include a rich body of general-domain experiences and knowledge as the main characteristics of creative thinking implementation.

Researchers (Parkhurst, 1999; Fisher and Williams, 2004; Runco, 2004; McWilliam, 2008; Robinson, 2011) additionally point out the importance of linking subject topics with problems that happen in the real teaching and learning process, both locally and internationally, and training student teachers to deal with these problems creatively. This type of linkage between theoretical and practical aspects, which aims to solve problems that arise in the field of teaching, will help pre-service teachers develop new and creative methods to solve the unexpected problems they may face in the future as in-service teachers. Cooperation and interaction in this case require APES to provide the TM and all required educational materials (such as computers, televisions, videos, clarification instruments, data shows and projectors) and use them effectively to connect creative thinking concepts and skills with content from all specialities in order to develop appropriate types of thinking.

6.7 Summary and suggestions for future research

This research mainly investigates the role of creative thinking in primary student teacher education colleges in Kuwait. To achieve its goal, the study focussed on investigating five departments in the administration area of the main colleges of education in Kuwait (the Education College of Kuwait University and the Basic Education College of the Public Authority for Applied Education and Training). The

research highlights the factors that most affect the development of creativity in teacher education colleges and draws attention to what is required when considering creativity as one of the main elements in teacher training programmes in Kuwait. In essence, the input for this study was inspired by existing creative thinking literature and can contribute to the introduction of appropriate creative thinking recommendations and a theoretical framework in the educational context of Kuwait (Chapter six).

Based on the aims of the study and in light of previous creative thinking studies (Chapters one and two), the research adopted (two) single case-study methods using multiple strategies to investigate the different elements of creative thinking and identify its role in Kuwait's primary teacher education colleges. The use of in-depth interviews, focus groups observations and documentary analysis as research instruments to collect data (Chapter 3) enabled the researcher to take data from multiple sources such as individuals (teachers and students), situations (in the classroom), and contexts (the five departments in general) (Denzin, 1989). Based on the study results (presented and discussed in Chapters four and five), it can be concluded that creativity has, up to now, been considered a secondary element in primary teacher education colleges in Kuwait, and several difficulties have inhibited its development.

However, the current research is faced with several limitations (presented in Section 1.7 of Chapter one). The main limitation is that it was subject to a short timeline and limited possibilities in that it only used specific departments (five from each college) and a small number of teachers (N=11) and student teachers (N=100) from the primary section of the two colleges of education in Kuwait. Therefore, the results of the research

may not be generalisable to other contexts. Nevertheless, it can be used to lay the foundation for other studies relevant to the present study group, particularly in Arab countries, as there are many similarities between them in terms of teacher education colleges. Ultimately, this will help to highlight some of the issues and offer possible solutions to some of the problems.

Ultimately, it can be said that the research has accomplished its aims and filled the gap in terms of creative thinking in education by providing results that can be used as helpful examples in the development of creative thinking policies and frameworks for primary teachers in Kuwait's education system.

Future research can build on the current research by including other departments and issues, as well as more participants. The current study addressed several dimensions that influence the developments of creative thinking (these factors include type of teaching strategies used, classroom environment, social and cultural characteristics of the community, admission policies, use of technological sources and materials, type of communication and cooperation between all educational institutions, assessment materials, and the manner in which students' motivation and thinking styles are dealt with). More research is necessary to investigate these dimensions by using different types of methodology and varied research instruments. Further research can also be done to extend the investigation by including different types of participants such as decision makers, curriculum authors and parents, and exploring their opinions regarding the factors that influence the development of creative thinking. This study could be replicated with the cooperation of the Kuwait Ministry of Education to facilitate an

observation of student teachers during their practical courses. Such an initiative would make it possible to determine the barriers to creative thinking in the real teaching environment and to define the role of school cultures in encouraging or discouraging creative thinking.

REFERENCES

Al Ajmy, A. (2010). *Survey Study of the problems faced by gifted students in the basic stage in Kuwait*, Kuwait University. Arbic Source.

Al-Zafiri, A. M. (2012). Dimensions affecting forms of discrimination against women in Kuwaiti society (applied study). *Journal of Social Sciences - sociology and social service*. 40 (4), p. 51.

Anderson, C. (2010). Presenting and evaluating qualitative research. *American Journal of Pharmaceutical Education.* 74 (8). P.141. Available online at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2987281/. Accessed date: 2nd Of December 2013.

Al-Refaei, Y. S. Y, & Al-Sharhan, A. S. Y. (2009-2010). *Student information guide. College of Basic Education, (Part One).* The Public Authority for Applied Education and Training. State of Kuwait. Arabic source.

Annual Report-Faculty of Education (2011/2012). Kuwait University School of Education. Arbic Source.

Al-Mhelby, A.; al-Muqate, H. & al-Dhafiri, M. (2004). The role of school administrators in promoting student thinking in Kuwait. *Social Behavior and Personality: an international journal.* 32 (7), Pages. 637+.

Aldrich, G. (2001). *Developing of creativity terms and definitions*. Masters thesis, State University of New York.

Al-Mshrifi, I. (2003). *The effectiveness of a suggested program for developing teaching competencies of creative thinking for student teachers in the faculty of kindergarten.* Doctoral Thesis. Faculty of Kindergartens, University of Alexandria. Arbic Source.

Anderson, L.W., & Krathwohl, D. (Eds.) (2001). *A Taxonomy for learning, teaching and assessing: a revision of Bloom's Taxonomy of educational objectives*. Longman. New York.

Albergawi, M. (2010). *Creative thinking…Do you think is far, its near?* Available online at: http://www.alukah.net/culture/0/26351/#_ftn2. Accessed date: 18th of April 2012. Arbic Source.

Antonenko, P. D.; & Thompson, A. D. (2009). Pre-service teachers' perspectives on the definition and assessment of creativity and the role of web design in developing creative potential. *Educ Inf Technol*. Vol (16). Pp. 203–224

Amabile, T. M. (2012). Componential Theory of Creativity. Working papar. Harvard Business School. *To appear in Encyclopedia of Management Theory*. *(Eric H. Kessler. Ed)* SAGE Publication 2013

Amabile, T. M. (1983). The social psychology of creativity: a componential conceptualization. *Journal of Personality and Social Psychology*. 45 (2). Pp. 357-376.

Ambile, T. M. (1990). With you, without you: the social psychology of creativity and beyond. In M. A. Runco & R. S. Albert (Eds.) *Theories of Creativity*. (Pp. 61-91). Thousand Oaks. CA, SAGE.

Auerbach, C. F.; & Silverstein, L. B. (2003). *Qualitative data: an introduction to coding and analysis.* New York University Press. London and New York.

Al-mia, F. K.; Al-azmi, B. H. & Al-failkawi, F. A. (2005). The views of teachers of elementary school to the new educational ladder under the feminization of primary school in Kuwait in variable light of district - subjects - teaching experience. *Journal of Gulf Studies and Arabian Island*. Val (31). P. 116. Council of Scientific Publications. Kuwat University. (In Arabic).

Anthony J., O. & Nancy L., L. (2007). Sampling Designs in Qualitative Research: Making the Sampling Process More Public. *The Qualitative Report*. 12 (2). P. 228.

Bryman, A. (2004). *Social research methods*. (2nd Ed). Oxford University Press.

Bryman, A. (2008) *Social research Methods*. Oxford: Oxford University Press.

Bryman, A. (2012) *Social research Methods*. (4th Ed). New York: Oxford University Press.

Bolden, D. S., Harries, T. V. & Newton, D. P. (2009). Pre-service primary teachers' conceptions of creativity in mathematics. *Educ Stud Math*. Vol. (73), pp. 245 - 157.

Beyer, B. K. (1997). *Improving student thinking: a comprehensive approach*. Boston. MA. Allyn and Bacon, Inc.

Bailey, K. D. (1994). *Methods of social research*. (4th. Ed). New York. NY: The Free Press.

British Educational Research Association (BERA) (2012) *The BERA Charter for Research Staff in Education*. Available online at: http://www.bera.ac.uk/publications/Ethical%20Guidelines. Accessed date: 3rd Of July 2013.

Barran, F. (1988). Putting creativity to work. In R. J. Sternberg (Ed). *The nature of creativity: contemporary psychological perspectives*. (Pp. 76-98). New York. The Press of the University of Cambridge.

Blumer, H. (1969). *Symbolic interactionism; perspective and method*. Prentice-Hall, Englewood Cliffs, New Jersey.

Burgess, H., Sieminski, S. and Arthur, L. (2006) *Achieving your doctorate in education.* London: SAGE Publications.

Bransford, J. D., Sherwood, R. D., Hasselbring, T. S., Kinzer, C. K., & Williams, S. M. (1987). *Anchored instruction: why we need it and how technology can help. Nashville Learning Technology Center*. George Peabody College of Vanderbilt University.

Barnes, J. & Shirley, I. (2007). Strangely familiar: cross-curricular and creative thinking in teacher education. *Canterbury Christ Church University, UK. Improving Schools*. Vol (10). Pages 162.

Bell, J. (2010). *Doing your research project: a guide for first-time researchers in education health and social science*. (5th. Ed). Open University Press.

Bergström, M. (1991). Creativity, a resource of the human brain. *Scandinavian journal of management*. 7 (3). Pp. 163-171.

Bogdan, R. C., & Biklen, S. K. (1998). Qualitative research for education: An introduction to theory and methods. Boston: Ally & Bacon.

Boujaoude, S. B. & Giuliano, F. J. (1991). The relationship between the student's approaches to studying, formal reasoning ability, prior knowledge, and ginder and their achivement in chemistry. Papar presented at the Annual meeting of The *Natioal Association for research in Science Teaching, Lake Geneva*. WI. April 7-10.

Confucian Analects Chinese philosopher & reformer (551 BC - 479 BC). Available online at: http://www.brainyquote.com/quotes/authors/c/confucius_3.html. Accessed date: 9th of November 2014.

Clandinin, D. J. & Connelly, F. M. (2000). *Narrative inquiry, experience and story in qualitative research.* San Francisco : Jossey-Bass Publishers.

Cropley, A. (2004). Creativity as a social phenomenon. In Fryer, M (Ed.) Creativity and cultural diversity. Leeds. England. The Creativity Centre Educational Trust Press. Pp.13-23.

Craft, A. (1999). Creative development in the early years: Some implications of policy for practice. *The Curriculum Journal*. 10 (1). Pp. 135-150.

Craft, A. (2000). *Creativity across the Primary Curriculum: Framing and Developing Practice*. London: Routledge.

Craft, A.; Jeffery, B. & Leibling, M. (2001). Creativity and education. Available online at: http://books.google.co.uk/books?hl=en&lr=&id=eJJY8d26ktkC&oi=fnd&pg=PA17&dq=From+Youthful+Talent+To+Creative+Achievement&ots=6Xo3b9lunj&sig=q625Hjjw46Z0R8CmGP3Px0ikAro%20-%20v=onepage&q&f=false#v=onepage&q&f=false. Accessed date: 25th Of March 2014.

Craft, A. (2002). *Creativity and early years education*. Alifewide foundation. Bookcraft (Bath) LTd. Great Britain. London.

Craft, A. (2003). The limits to creativity in education: Dilemmas for the educator. *British Journal of Educational Studies*. 51 (2). Pp. 113-127.

Craft, A. (2005). *Creativity in schools: Tensions and dilemmas*. London; New York. RoutledgeFalmer.

Comrey, A. L. (1993). Joy Paul Guilford. March 7, 1897—November 26, 1987. Biographical Memoir. *National Academy of Sciences*. Washington D.C.

Clancier, A. & Kalmanovitch, J. (1987). *Winnicott and paradox : from birth to creation*. London and New York. Tavistock Publications.

Callahan, C. M. (1991). The assessment of creativity. In N. Colangelo & G. A. Davis (Eds.). *Handbook of gifted education*. (Pp. 219–235). Boston: Allyn and Bacon.

Cassinadri, E. & Mitchell, J. (2008). Resource Depletion, Dependence and Development: Kuwait. *Working paper: EEDP 11/08 Depletion, Dependence & Development Project* – Kuwait.

Charlotte, B. (1971). Basic theoretical concepts of humanistic psycology. *American Psychologist*. 26(4). Pp.378-386.

Cotton, K (2001). Teaching thinking skills. School Improvement Research Siries. (SIRS). Northwest Regional Educational Laboratory. Available online at: http://www.nwrel.org/scpd/sirs/6/cu11.html. Accessed date: 23rd Of March 2013.

Carroll, J. B. (1993). *Human Cognitive Abilities*. Cambridge, UK: Cambridge University Press.

Coles, M. J. (1993). Teaching thinking: Principles, problems and programmers. *Educational Psychology*. 13(3/4).

Csikszentmihalyi, M. (1996) *Creativity. Flow and the psychology of discovery and invention*. New York. Harper Collins.

Carter, M. (1992). Training teachers for creative learning experiences. *Child Care Information Exchange.* No (5). Pp 92-46.

Cromwell, R. (1993). *Creativity is a key to the future and to education: The importance of creative visioning.* California, Minnesota.

Chenail, R. J. (1995). *Presenting data, the qualitative report. 2 (3).* Available online at: http://www.nova.edu/ssss/QR/QR2-3/presenting.html. Accessed date: 4th Of December 2014.

Creswell, J. W. (2013). *Qualitative inquiry &Research design: choosing among five approaches.* (3rd. Ed). Thousand Oaks. SAGE Publications.

Creswell, J. W. (2003) *Research design: qualitative, quantitative, and mixed methods approaches.* (3rd. Ed). Thousand Oaks. SAGE Publications.

Codó, E. (2008). Interviews and questionnaires. In Wei, L. & Moyer, M. (Eds). *Research methods in bilingualism and multilingualism*. Oxford: Blackwell Publishing.

Crotty, M. (2003). *The foundation of social research. Meaning and perspective in the research process.* (2nd. Ed). SAGE London.

Cohen, L.; Manion, L.; & Morrisonm K. (2000). *Reasearch method in education*. (5th. Ed). London and New York.

Denny, D. (1968) Identification of teacher-classroom variables facilitating pupil creative growth. *American Educational Research Journal*. 5 (3). Pp. 365-383

Denny, D. (1969) *Classroom creativity observation schedule, direction manual revised. Oneonta*. New York. State University College.

Cohen, L; Manion, L.; & Morrison, K. (2007). *Research Methods in Education*. Routledge. New York.

Denscombe, M. (2010). *The good research guide for small-scale social research projects*. (4th. Ed) McGraw. England. Open University Press.

David, M. & Sutton, C. D. (2004). *Social research the basics*. London. SAGE.

Denzin, N. K. (1978). *The research act: a theoretical introduction to sociological methods*. (2nd. Ed) New York: McGraw-Hill.

Denzin, N. (1989). *Interpretive biography*. Newbury Park, CA: Sage.

Denzin, N. & Lincoln, Y. (2011). *The SAGE Handbook of qualitative research*. Thousand Oaks. CA. SAGE

Duffy, B. (2006). *Supporting creativity and imagination in the early years.* Buckingham and Philadelphia. USA: Open University Press.

Davis, G. (1999) .Barriers to creativity and creative attitudes. In Runco, M. & Pritzker, S. R. (Ed.) *Encyclopaedia of creativity*. Vol. (1). Academic Press. pp.165-175.

Davies, D. & Howe, A, (2005). Creativity in primary design and technology. In Wilson, A. (Ed.) *Creativity in primary education: Theory and practice (achieving QTS cross-curricular strand).* Great Britain. Learning Matters Ltd. pp.77-88.

Davies, D. (undated) Creative teachers for creative learners - a literature review Avalable online at: http://www.steveslearning.com/Teacher%20Training%20resources/Dan%20Davies%20Bath%20Spa.pdf. Accessed date: 14th Of April 2014.

De Bono. E. (2009). Fifth impression. *Edward Dedono's thinking course. Powerful tools to transform your thinking*. BBC. England.

De Bono. E. (2007). *How to have creative ideas. 26 exercises to develop the mind*. Vermilion of Ebury Publishing . McQuaing Group. Inc. London.

De Bono. E. (1995). Serious creativity. The de Bono Group. *Available. The Journal for Quality and Participation*. 18 (5). ABI/INFORM Global. pg. 12.

De Bono, E. (1991). The Direct teaching of thinking in education and the CORT method. In Stuart. Macture, S. & Davis, P (Eds.) *Learning to think, thinking to learn. The proceedings of the 1989 OECD Conference organized by the Centre for Educational Research and Innovation.* Emerald Group Publishing Limited. Pp. 1-14.

De Bono, E. (1986). *Cort thinking teacher notes: Creativity*. (2nd Ed). London: Pergamon Press.

Dodd, L. (2004). Learning to think: thinking to learn. Available online at: http://www.lancsngfl.ac.uk/nationalstrategy/literacy/files/TheBrainandLearning.pdf. Accessed date: 31st Of March 2014.

Diakidoy, N., A. & Kanari, E. (1999) Student teachers‟ beliefs about creativity. British *Educational Research Journal*, 25 (2): 225-244

Davidovitch, N. & Milgram, R.M. (2006). Creative Thinking as a Predictor of Teacher Effectiveness in Higher Education. *Creativity Research Journal*. 18 (3). Pp. 385-390. Lawrence Erlbaum Associates, Inc.

Einstein, A. Albert Einstein Quotes. BrainyQuote. Available online at: http://www.brainyquote.com/quotes/authors/a/albert_einstein.html. Accessed date: 22nd Of March 2014.

Edwards, C., & Springate, K. (1995). Encouraging creativity in early childhood classrooms. *Eric clearinghouse on elementary and early childhood education Urbana IL*. Eric Digest. Ed 389474.

Ezzy, D. (2002) *Qualitative analysis: practice and innovation.* London: Routledge.

Edwards, D. J.A. (1998). Types of case study work. A conceptual framework for case-based research. *Journal of Humanistic Psychology*. 38 (3). Pp.36-70.

Erving, G. (1990). *The presentation of self in everyday life*. Harmondsworth, England: Penguin.

Eisenhardt, K. (1989). Building theories from case study research. Academy of management. *The academy of management review*. 14 (4). Pp. 532-550. ABI/INFORM Global.

Fetzer, J. H. & Almeder, R.E (1993*). Glossary of epistemology/philosophy of science (Paragon house glossary for research, reading and writing).* Roundhouse Publishing Ltd.

EPPI-Centre. (2010). Methods for Conducting Systematic Reviews. Evidence for Policy and Practice Information and Co-ordinating *Centre (EPPI). Institute of Education, University of London*.

Eysenck, H. J. (1994). The measurment of creativity. In M. A. Boden (Ed.) *Dimensions of creativity*. Pp. 199-242.

Eastaway, R. (2007). *Out of the box. 101 ideas for thinking creatively*. Duncan Baird Publishers Ltd. London.

Ferrari, A.; Cachia, R. & Punie, Y. (2009). Innovation and Creativity in Education and Training in the EU Member States: Fostering Creative Learning and Supporting Innovative Teaching. Literature review on Innovation and Creativity in E&T in the EU Member States (ICEAC). *European Commission Joint Research Centre Institute for Prospective Technological Studies*.

Feldman, D. (1999). The development of creativity. In Sternberg, R. (Ed.*) Handbook of creativity*. USA: Cambridge University Press. Pp.169-188.

Fisher, R. (2008). *Teaching thinking: Philosophical enquiry in the classroom.* (3rd Ed). New York: Cassell.

Fisher, R. (2002). Creative minds: building communities of learning for the creative age. Paper presented at Teaching Qualities Initiative Conference, Hong Kong Baptist University. Available online at: http://www.teachingthinking.net/thinking/web%20resources/robert_fisher_creativeminds.htm. Accessed date: 29th Of December 2013.

Fisher, R. & Williams, M. (2004). *Unlocking creativity: teaching across the curriculum.* David Fulton Publishers Ltd. London.

Fisher, R. (2008). *Teaching children to think.* Basil Blackwell Ltd. London.

Goleman, D.; Kaufman, P. & RAY, M. (1992). *The Creative Spirit.* New York. Dutton.

Gruenfeld, E. (2010). *Thinking creatively is thinking critically.* New Directions for Youth Development, NO. 125. Published online in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/yd.339.

Gino, F. & Ariely, D. (2011). The dark side of creativity: original thinkers Can be more dishonest. *Journal of Personality and Social Psychology*. 102 (3). Pp. 445–459.

Gardner, H. (2011). *Creating Minds: an anatomy of creativity seen through the lives of Freud.* New York: Basic Books.

Gruber, H. E. (1989). The evolving systems approach to creative work. In D. B. Wallace & H. E. Gruber. (Eds). *Creative People at Work: Twelve Cognitive Case Studies.* Pp. 3-24. New York. Oxford University Press.

Gardner, H. (2006). *Five minds for the future. Harvared Business School Press*. United State of America.

Gardner, H. (2003). *Multiple intelligences after twenty years. Paper presented at the American Educational Research Association*. Chicago. Illinois. April 21.

Gardner, H. (1993). *Multiple Intelligences: the theory in practice*. Basic Books. New York.

Guilford, J. P. (1986). *Creative talent: Their nature, uses and development*. Buffalo. New York. Bearly Cimited.

Guilford, J. P.; Christensen, P.R. & Frick, J. W. (1962). The role of Intellectual factors in problem solving. Psychological Monographs: *General and Applied.* 76 (10). Whole No. 529.

Guilford, J. P. (1950*)*. Creativity. *American Psychologist*. 5 (9). Pp. 444–54.

Gilbert, K. R. (2002). Taking a narrative approach to grief research: Finding meaning in stories. *Death Studies*. 26: (3). Pp. 223-239.

Gerver, R. & Robinson, K. (2010). *Creating tomorrow's schools today: education.* Continuum International Publishing Group. New York.

Gall, M. D.; Borg, W. R. & Gall, J. P. (2007). *Educational research: an introduction*. (8^{th}.Ed). Pearson Publishers.

Hoffert, B. (2005). Educating for innovation: Is creativity necessary? Monash University. In. *Backing our creativity: research - policy – practice: the National Education and the Arts Symposium* 12-14 September 2005. Australian Council for the Arts. Melbourne.

Hennessey, B. A. & Amabile, T. M. (1993) *Creativity and learning*. USA. National Education Association Publication.

Hennessey, B. A. & Amabile, T. M. (1988). The conditions of creativity. In R. J. Sternberg (Ed). *The nature of creativity: contemporary psychological perspectives.* Pp. 11-38. New York. The Press of the University of Cambridge.

Houtz, J. C.; Selby, E.; Esquivel, G. B., Okoye, R. A. & Peters, K. (2003). Comparison of two creativity style measures. *Perceptual and Motor Skills*. 96 (1). Pp. 288-296.

Hamers, J. H. M. & Csapo, B. (1999). *Teaching thinking*. In J. H. M. Hammers,

Hill, K. G. & Amabile, T. M. (1993). A social psychological perspective on creativity in the classroom and workplace. In S. G. Isaken; M. C. Murdock; R. L. Firestien; & D. J. Treffinger (Eds). Understanding and recognizing creativity: the emergence of a discipline.

Han, K.; Marvin, C. & Walden, A. (2003). Searching for an Alternate Way to Identify Young Creative Minds: A Classroom-Based Observation Approach. Assessment for Effective Intervention. Vol. 28. No 2.

Hill, L. (2000). What it takes to change minds? Intellectual development of pre-service teachers. Journal of Teacher Education. 51(1). Pp. 50-62.

Hunsaker, S. L. (2005) Outcomes of Creativity Training Programs Gifted Child Quarterly. Vol. 49. P. 292.

Harman, W. & Rheingold, H. (1984). Higher Creativity: Liberating the Unconscious for Breakthrough Insights. Jeremy P Tarcher. New York.

Jensen, A. R. (1998). The g Factor: The Science of Mental Ability. Westport, CT: Praeger.

Jeffrey, B. (2006) Creative teaching and learning: Towards a common discourse and practice. Cambridge Journal of Education. 36 (3): 399-414.

Jeffrey, B. (2005). The redress of creative teaching and learning through specialist programmes and strategic partnerships. Paper given at the creativity in education seminar series (2nd Ed). Birmingham: University of the West of England.

Jeffrey, B. & Craft, A. (2004) Teaching creatively and teaching for creativity: Distinctions and relationships. Educational Studies, 30 (1): 77-87.

Jeffrey, B. & Craft, A. (2003) Creative learning and possibility thinking. Draft paper for BERA conference. UK.

Jeffrey, B. & Woods, P. (2003). The creative school: A framework for success, quality and effectiveness. London: Routledge/Falmer.

Jeffrey, B. (2009). The Creative Process Revisited. Available online at: http://scottjeffrey.com/2009/05/the-creative-process-revisited/. Accessed date: 30th Of December 2013.

Jensen, E. (2005). Teaching with the brain in mind. 2ed edition. Corwin Press. A SAGE Company. London. United Kingdom.

Jensen, E. (2008). Brain-based learning. The new paradigm of teaching. 2ed edition. Corwin Press. A SAGE Company. London. United Kingdom.

Jensen, E. (2010). Defferent brain defferent learners. How to reach the hard to reach. 2ed edition. Corwin Press. ASCD. Verginia. U. S. A.

Jarwan, A. F. (2009). 2nd Edition. Creativity. Concepts, standards, theories , measurement, training , stages of the creative process. Daralfiker. Amman. Jordan. Arabic Source.

Jarwan, A. F. (1998). Talent, superiority, and creativity. United Arab Ematerts. University Book House - Al Ain. Arbic Source.

Jarrard, B. & Goddard, J. (2001). Seven ways to be more cre8ive today. Mindwerx International Pty Ltd.

Jackson, N. (2008). Tackling the wicked problem of creativity in higher education. Background paper for a presentation at the ARC Centre for the Creative Industries and Innovation, International Conference Brisbane, Creating Value: Between Commerce and Commons. Available online at: http://normanjackson.pbworks.com/f/TACKLING%20THE%20WICKED%20PROBLEM%20mod.pdf. Accessed date: 10th Of July 2013.

Jackson, N., Oliver, M., Shaw, M., & Wisdom, J. (2006). *Developing creativity in higher education. An imagination curriculum.* London and New York: Routledge.

Jackson, N., & Shaw, M. (2005). Subject perspectives on creativity: A preliminary synthesis. York, UK: An Imaginative Curriculum Study for The Higher Education Academy. Available online at: 78.158.56.101/archive/palatine/files/1004.pdf. Accessed date: 22nd Of April 2012.

Krathwohl, D. (2002). A revision of Bloom's Taxonomy: an overview. *Theory into practice*. 41 (4). P. 212. College of Education. The Ohio State University.

Kuafman, E.; K.; Robison, J.; S.; & Bellah, K.; A. (2008). *Enhancing students with brain based learning*. Research Reports. Techniques. September. www.acteonline.org.

Kuwait Foundation for the Advancement of Sciences. (2015). Available online at: http://www.kfas.org/ar/. Accessed date: 21st of August 2015. Arabic Source.

Kaila, H. (2005). Democratising schools across the world to stop killing creativity in children: An Indian perspective. *Counselling Psychology Quarterly*. 18 (1). Pp. 1-6.

Kaufman, J. & Beghetto, R. (2009). Beyond big and little: The four C model of creativity. *Review of General Psychology*. 13 (1). Pp. 1-12.

Kuwait Ministry of Education (2007). *Kuwaiti efforts to consider gifted and creative students*. Arabic Source.

Kuwait Ministry of Education (2011). *The Demands to cancel the feminisation of primary schools*. Arabic Source.

Kuwait Ministry of Education (2014). *Numbers of students and teachers across the educational stages.* Arabic Source.

Kuwait News Agency (KUNA), (2005). Available online at: http://www.kuna.net.kw/ArticlePrintPage.aspx?id=1521936&language=ar. Accessed date: 29th of August 2015. Arabic Source.

Kleiman, P.(2008). Towards transformation: conceptions of creativity in higher education. *Innovations in Education and Teaching International*. 45 (3). Pp. 209–217.

Kampylis, P., Berki, E., & Saariluoma, P. (2008). In-service and prospective teachers' conceptions of creativity. *Thinking Skills and Creativity*. (4). Pp. 15-29.

Kampylis, P. (2010). Fostering creative thinking: The role of primary teachers. *University of Jyväskylä. Department of computing Sciences and Information Systems.*

Karwowski, M. & Soszynski, M. (2008). How to develop creative imagination? Assumptions, aims and effectiveness of role play training in creativity (RPTC). *Thinking Skills and Creativity.* Vol 3. Pp. 163–171.

Kampylis, P.; Berki, E. & Saariluoma, P. (2008). In-service and prospective teachers' conceptions of creativity. *Thinking Skills and Creativity*. Vol 4. Pp. 15–29.

Li, R. (1996). *A theory of conceptual intelligence: thinking, learning, creativity, and giftedness.* Weatport, Connecticut. London.

Lubart, T. I. (1994). Creativity. In R. J. Sternberg (Ed.), Thinking and problem solving. Handbook of perception and cognition (2nd Ed.) Pp. 289–332. San Diego, CA: Academic Press.

Lin, Y-S. (2011). Fostering Creativity through Education—A Conceptual Framework of Creative Pedagogy. *Creative Education.* SciRes. 2 (3). Pp. 149-155.

Liamputtong, P. (2011). *Focus group methodology, principles and practice*. Thousand Oaks. CA: SAGE.

Miller, A. L. (2012). Conceptualizations of creativity: comparing theories and models of giftedness. *Journal of the Roeper Institute.* Roeper Review. 34 (2). Pp. 94-103.

Morgan, D. (1953) Creativity today: A constructive analytic review of certain philosophical and psychological work. *Journal of Aesthetics and Art Criticism*. 12 (1). Pp. 1-24.

Mcwlliam, E. (2008). *The creative workforce: How to launch young people into high-flying futures.* Australia: University of New South Wales Press Ltd.

Meintjes, H. & Grosser, M. (2010). Creative thinking in prospective teachers: the status quo and the impact of contextual factors. *South African Journal of Education*. Vol. 30. Pp. 361-386.

MASLOW, A., H. (1970). *Motivation and Personality*. (3rd Ed). Harper Collins. New York.

Manning, P. K. (1982). Analytic induction. In P. K. Manning & R. B. Smith (Eds.). *A handbook of social science methods* (pp. 273-302). Cambridge, MA: Ballinger.

McPeck, J. (1981). *Critical thinking and education.* Oxford. Martin Robertson & Company Ltd.

Martinsen, Ø. L. (2011). The creative personality: a synthesis and development of the creative person profile. *Creativity Research Journal*. 23 (3). Pp. 185–202.

Morris, W. (2006). *Creativity – its place in education (Doc).* Wayne Morris: director of Future Edge Ltd based in New Plymouth New Zealand. He can be contacted on future.edge@clear.net.nz or through a web site he shares with a colleague www.leading-learning.co.nz.

Mackintosh, N. J. (1998*). IQ and Human Intelligence.* Oxford, UK: Oxford University Press.

Mitchell, W.J., Inouye, A.S., & Blumenthal, M.S. (Eds.). (2003). *Beyond productivity: Information technology, innovation and creativity.* Washington, DC: The National Academies Press.

NACCCE (1999). National Advisory Committee on Creative and Cultural Education. All our futures: creativity, culture and education. *Report to the Secretary of State for Education and Employment the Secretary of State for Culture, Media and Sport*. May 1999.

Nophal, M. B. (2009). *Serious creativity. Concepts. and applycations. De Bono Center for Teaching Creative Thinking*. Amman. Jordan. Arbic Source.

Newton, L., & Beverton, S. (in press). Pre-service teachers' conceptions of creativity in elementary school English. Thinking Skills and Creativity. (2012). doi:10.1016/j.tsc.2012.02.002.

Nickerson, R. S. (1988). On improving thinking through instruction. Review of Research in Education. *Amarican Educational Research Association*. Vol. 15. Pp. 3-57.

Neuman, W. L. (2006) *Social Research Methods: Qualitative and Quantitative Approaches*. Boston: Pearson Education, Inc.

O"Donnell, S. & Micklethwaite, C. (1999). Arts and creativity in education: An international perspective. Available online at: www.inca.org.uk/pdf/1999_creativity_and_arts.pdf. Accessed date: 5th Of October 2012.

Oral, G. (2010). Creativity of Turkish prospective teachers. *Creativity Research Journal*. Lawrence Erlbaum Associates, Inc. 18 (1). Pp. 65 - 73. Office for Standards in Education, Children's Services and Skills (Ofsted) (2010). Learning: creative approaches that raise standards. Reference no: 080266. www.ofsted.gov.uk.

Patton, M. C. (2002). *Qualitative research and evaluation methods* . (3rd Ed). Thousand Oaks. CA: SAGE Publications.

Polkinghorne, D. E.(1995) Narrative configuration in qualitative analysis, International *Journal of Qualitative Studies in Education* 8 (1). Pp. 5-23.

Perkins, D. N. (1981). *The mind's best work.* Cambridge, MA, Harvard University Press.

Petkus, Ed. (1996). The Creative Identity: creative Behavior from the Symbolic Interactionist Perspective. *The Journal of creative behaviour*. 30 (3). P. 188

Parkhurst, H. (1999) Confusion, lack of consensus, and the definition of creativity as a construct. Journal of Creative Behavior. 33 (1). Pp. 1-21.

Plucker, J. A.; Beghetto, R. A. & Dow, G. T. (2004). Why Isn't creativity more important to educational psychologists? Potentials, pitfalls, and future directions in creativity research. Educational Psychologist. 39 (2). Pp. 83-96.

Popper, K. R. (1994). The Myth of the Framework. London: Routledge.

Popova, M. (2014). The art of thought: Graham Wallas on the four stages of creativity, 1926. Available online at: http://www.brainpickings.org/index.php/2013/08/28/the-art-of-thought-graham-wallas-stages/. Accessed date: 28th Of March 2014.

Petticrew, M. R., H. (2006). Systematic Reviews in the Social Sciences: A Practical Guide. Oxford: Blackwell Publishing.

Perkins, R. F.; Davis, S. C.; Sickle, M. L., V. & Welch, F. C. (2006). Encouraging creativity in pre-service teachers: designing CAI with hypermedia. Charleston. USA. *Media International*. 33 (2). Pp. 73-75.

Parnes, S. (1970). Education and creativity. In Vernon, P. (ed). *Creativity: selected readings*. Harmondsworth. Penguin Books. Pp.341-354.

Piaget, J. (1972). Intellectual evolution from adolescence to adulthood. *Human Development*. 15 (1).Pp. 1–12.

Popper, K. R. (1972) *Objective knowledge; an evolutionary approach*. Oxford: Clarendon Press.

Ruscio A. M. & Amabile T.M. (1999). Effects of instructional style on problem-solving creativity. *Creativity Research Journal.* (12) 4. Pp. 251-266.

Rzadkiewicz, C. (2009). The Five Major Theories of Creativity. Exploring Creativity 10 stories. Available online at: https://suite.io/carol-rzadkiewicz/2d7v20v. Accessed date: 12th Of April 2014.

Rice, G. (2003). The challenge of creativity and culture: a framework for analysis with application to Arabian Gulf firms. *International Business Review*. Vol.12. Pp. 461–477.

Rubin, H. and Rubin, I. (1995) *Qualitative Interviewing: The Art of Hearing Data*. Thousand Oaks: Sage Publications.

Robinson, K. (2011). *Out of our minds: learning to be creative*. Capstone.

Rhodes, M. (1961). An Analysis of Creativity. *Phi Delta Kappa International*. 42 (7). Pp. 305-310.

Runco, M. A. (2004). Creativity. Annu. Rev. Psychol. 55. Pp. 657–87. *Annual Reviews*.

Runco, M. (1993) *Creativity as an educational objective for disadvantaged students*. Storrs. CT. The National Research Centre on the Gifted and Talented.

Saleh, A. Z. (2011). *Developing the students' creative thinking in the light of constructivist learning. Does the student learn better with the level of the group than if they work alone? The National center for Educational Recerschs and development.* The Modren University office. Alexandrine. Ejept. Arbic Source.

Seale, C. (2010). Using Computers to Analyse Qualitative Data', in Silverman, D. (Ed.) *Doing Qualitative Research*. (3rd Ed). London: SAGE Publications Ltd, pp. 251-267.

Simonton, D. K. (2012). Taking the U.S. Patent Office criteria seriously: a quantitative three-criterion creativity definition and its implications. *Creativity Research Journal*. 24 (2–3). Pp. 97–106.

Sharp, C. (2001). *Developing young children's creativity through the arts: What does research have to offer?* Paper presented to an invitation seminar. London: National Foundation for Educational Research.

Starko, A. J. (2005). *Creativity in the classroom, schools of curious delight*. (3rd Ed). Lawrence Erlbaum Associates.

Skinner, B. F. (1976). 'A Behavioral Model of Creation'. In Rothenberg & Hausman, The Creativity question. Duke University Press. Pp. 267-272.

Student information guide. (Part One) (2009-2010). *College of Basic Education*. The Public Authority for Applied Education and Training. Kuwait. Arabic Source.

Sternberg, R. (2010). Creativity as a habit. Available online at: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.148.5028&rep=rep1&type=pdf. Accessed date: 14th Of April 2014.

Schank, R. C. (1988). Daynamic memory: a theory of learning in computers and people. In R. J. Sternberg (Ed). *The nature of creativity: contemporary psychological perspectives*. New York. The Press of the University of Cambridge.

Sternberg, R. J. (1985). *Beyond IQ: A Triarchic theory of human intelligence*. Cambridge. MA: Cambridge University Press.

Sternberg, R. J. (2006a). The nature of creativity . *Creativity Research Journal.* (18) 1. Pp. 87–98. Lawrence Erlbaum Associates. Inc.

Sternberg, R. J. (2006b). Creating a vision of creativity: the first 25 years. Psychology of Aesthetics, *Creativity, and the Arts.* S (1). Pp. 2-12.

Sternberg, R. J., & Lubart, T. I. (1995). *Defying the crowd: Cultivating creativity in a culture of conformity*. New York. Free Press.

Sternberg, R. J. (1988). A three – facet model of creativity. In R. J. Sternberg (Ed). The *nature of creativity: contemporary psychological perspectives*. New York. The Press of the University of Cambridge.

Sungurtekin, S.; Sezer, G., O.; Ba6Çeli Kahraman, P. & Sadio6lu, Ö. (2009). The views of pre-service teachers about creative drama: a study according to gender. *Elementary Education Online.* 8 (3). Pp. 755-770.

Scottish Executive. Education Department (SEED). (2006). Promoting creativity in education: overview of key national policy developments across the UK, an information paper. Available online at: http://dera.ioe.ac.uk/7329/1/hmiepcie.pdf. Accessed date: 19th of January 2014.

Swartz, R. J., & Perikins, D. N. (1990). *Teaching Thinking: issues and approaches.* Midwest.

Swartz, R. J., & Parks, S. (1994). *Infusing the teaching of critical and creative thinking into content instruction: a lesson design handbook for the elementary grades.* Pacific Groove. CA. Critical Thinking Press & Software.

(SSECE) *Statistical of students enrolled in the College of Education by disciplines, sex, school teams, until second semester of the University academic year (2011-2012).* The Dean Office of Students Affairs. Kuwait University School of Education. Arabic Source.

(SSCBE) *Statistical of students enrolled in the College of Basic Education (2011/2012).* Admission and registration Deanship in Basic Education College. Kuwait. Arabic source.

Student guide. (2011/2012). *The admission and registration deanship, records administration.* Kuwait University. Arabic source.

The Creativity Centre. (2006*) Facilitating creativity in higher education: the views of National Teaching Fellows*. UK. The Creativity Centre Ltd.

Taylor, C. (1959). The nature of creative process, in P. Smith, ed., *Creativity: an examination of the creative process.* A report on the 3rd communications conference of the art directors club of New York. NY, New York: Hasting House. Pp. 55-60.

Taylor, I. & Getzels, J. Editors.(2009). *Perspectives in creativity*. Chicago: Aldine Publishing Company.

Treffinger, D. J; Isaksen, S. G. & Firestien, R. L. (2013). Theoretical perspectives on creative learning and its facilitation: an overview. The Creative Problem Solving Group. Inc. Available online at: http://www.cpsb.com/research/articles/creative-problem-solving/Theoretical-Perspectives-Creative-Learning-Facilitation.html. Accessed date: 3rd of January 2014.

Trends in International Mathematics and Science Study (TIMSS). (2007). Arab Countries Participating in TIMSS. Available online at: http://www.arabtimss-undp.org/arab-countries-participating-in-timss-2007.html. Accessed date: 20th Of May 2012.

Torrance, E. P. (1974). Norms-technical manual: Torrance Tests of Creative Thinking. Lexington, MA: Ginn and Company. In Cramond, B.; Neumeister, K. L. S; Millar, G.& Silvian, A. F. (2002). E. Paul Torrance: His life, accomplishments, and legacy. *The national research center on the gifted and talented*.

Torrance, E. P. (1977). Creativity in the classroom. Available online at: http://files.eric.ed.gov/fulltext/ED132593.pdf. Accessed date: 31st Of March 2014.

Torrance, E. P. (1998). Can we teach children to think creativity? *The Journal of Creative Behavio*. Vol (6). Pp. 114-143.

Torrance, E. P. (2002) The Manifesto: *A guide to developing a creative career*. USA: Ablex Books.

Tongco, M. D. (2007). Purposive sampling as a tool for informant selection *Ethnobotany Research & Applications, A Journal of Plants, People, and Applied Research.* (5). Pp.147-158.

Tawfiek, A.; Mohammed, N.; & Mustafa, A.; M. Authors. Amin, A. Editor. Habibi, M. & Hattab, H. Supervision and coordination. (2008). *Arabic strategy for developing creativity in higher education. The Arab Organization for Education, Science and Culture.* Department of education. Tunisia. Arbic Source.

The Public Authority for Civil Information (2014). Distribution of the labor force by gender and nationality groups. Available online at: https://www.paci.gov.kw/stat/Analytical_Tables/table2.pdf. Accessed date 4th of November 2015.

UK Universities. (2010). *Creating Prosperity: the role of higher education in driving the UK's creative economy.* UK Universities. London.

(UNESD) United Nations Decade of Education for Sustainable Development (2005-2014). Available online at:

http://unesdoc.unesco.org/images/0014/001416/141629e.pdf. Accessed date: 7th Of January 2011.

Vedenpää, I., & Lonka, K. (2014). Teachers' and teacher Students' conceptions of learning and creativity. Creative Education. Vol(5). PP.1821-1833. http://dx.doi.org/10.4236/ce.2014.520203.

Vint, L. (2005). Creativity & innovation: driving the future. Griffith University. In Backing our creativity: research - policy – practice: the National Education and the Arts Symposium 12-14 September 2005. *Australian Council for the Arts. Melbourne*. Pp. 197-206.

Wilson, A. (2005) *Creativity in primary education: Theory and practice (achieving QTS cross-curricular strand).* Great Britain: Learning Matters Ltd.

Wallace, B (1986). Creativity: Some definitions, the creative personality; the creative process; the creative classroom. *Gifted Education International*. A B Academic Publishers. Vol 4. Pp. 68-73.

Warren, C. (2001) 'Qualitative Interviewing'. In F.Gubrium, J. and Holstein, J. A. (eds.) *Handbook of Interview Research: Context & Method.* Thousand Oaks: Sage Publications, pp. 83-99.

Wilson, L. O (2004). Levels of creativity. Available online at: http://www4.uwsp.edu/education/Lwilson/CREATIV/levels.htm. Accessed date 27th Of December 2013.

Wilkinson, S. (2004) .Focus group research, in Silverman, D. (ed.) *Qualitative research: theory, method and practice.* London: SAGE Publications, pp. 177-199.

Wegerif, R. (2010*). Mind expanding: Teaching for thinking and creativity in primary education.* Open University Press. England. UK

Weisberg, R. W. (2006). Creativity: understanding innovation in problem solving, science, invention, and the arts. Hoboken: Wiley & Sons.

Weisberg, R. W. (1993). Creativity: beyond the myth of genius. New York. W.H. Freeman.

Yin, R.K. (2009). *Case study research: design and methods*. (4th Ed.) SAGE Publications.

Yin, R.K. (2003). *Case study research: design and methods*. (3rd Ed.) SAGE Publications.

Zhang, LF. (2002). Thinking styles: their relationships with modes of thinking and academic performance. *Educational Psychology*. 22 (3). Pp. 331-348.

Appendix A: Checklist of initial steps before fieldwork

Prior to conducting the data collection, the initial steps of this case study begins with a checklist prepared by the researcher, in order to gain a broader view of the contacts that this project should consider (table below). In addition, the checklist ensures all the relevant procedures are completed chronologically, as well as verifying the appropriate data collection tools are prepared and setup accordingly.

Initial steps to consider	**Check**
Set up a plan including the time and dates for every step before and during the data collection.	
Prepare all tools that are needed in the practical field (recorder, papers, pencil, and notebook)	
Check the quality of the recording device.	
Check the possibility of getting help and get basic information from teachers in each college, first informally and then officially.	
Set up the dialogue for the first meeting to introduce myself and explain the overview and key objectives of the project.	
Practice and rehearse the dialogue in each part of the data collection.	
Provide ethical approval and all information regarding my research, such as the title and the nature of participations that the researcher might need.	
Print out all the relevant consent forms	
Contact the dean in each college.	

Appendix B: Permission from Kuwaiti Government Officials to conduct this study (Arabic and English)

1-Education College of Kuwait University (KUEC)

23/10/2012

السيد المحترم / عميد كلية التربية جامعة الكويت

أ.د. عبد الرحمن أحمد الأحمد

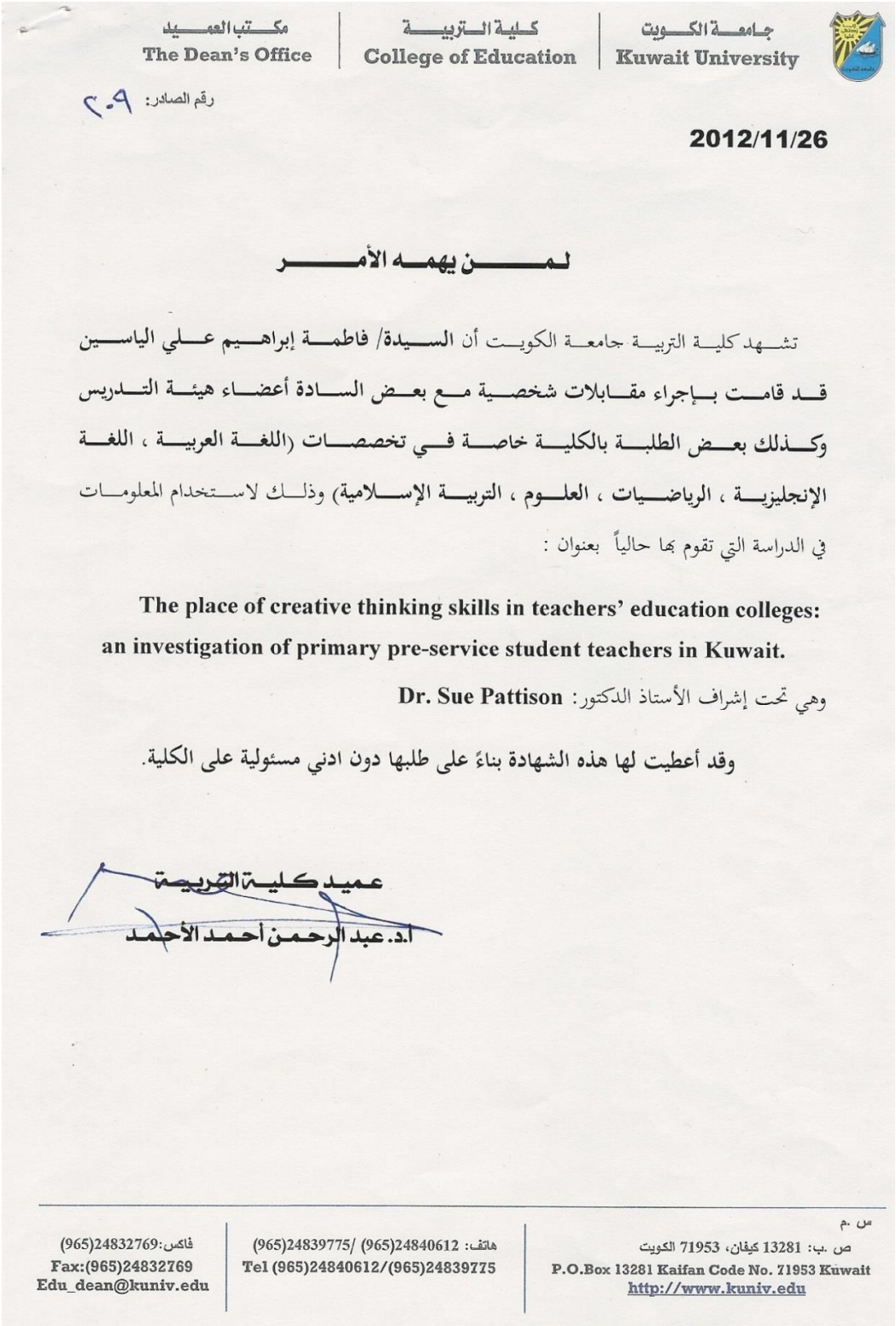
أحيطكم علما بأنني طالبة دكتوراه مبتعثة إلى جامعة نيوكاسل في المملكة المتحدة ولدي جانب عملي لجمع البيانات من كلية التربية (جامعة الكويت) وكلية التربية الأساسية (الهيئة العامه للتعليم التطبيقي والتدريب) تهدف الدراسة إلى تحديد مكان التفكير الإبداعي في برامج التدريس والتدريب في هذه الكليات وخصوصا بالنسبة لمعلمات المرحلة الإبتدائية للتعرف على أهم العوامل التى تساعد على تنمية هذا النوع من التفكير.

الجانب الميداني يتطلب اجراء مقابلات مع مجموعه من الطالبات والأساتذه في أقسام **اللغة العربية، اللغة الانجليزية، الرياضيات، العلوم، التربية الاسلامية،** ، وتسجيل بعض الملاحظات من خلال حضور محاضرات في هذه الكليات بالإضافة إلى البحث عن اهم المراجع والملفات والوثائق للتعرف على أهم الجوانب الإيجابية لتنمية التفكير الإبداعي وأهم العوائق التى تقف في وجه هذه التنمية.

مرفق: رسالة من المشرفة الاكاديمية في جامعة نيوكاسل

المبتعثة: فاطمة إبراهيم علي الياسين

2-Education College of Kuwait University (KUEC)



جامعة الكويت | كلية التربية | مكتب العميد
Kuwait University | College of Education | The Dean's Office

رقم الصادر: ٢٠٩

2012/11/26

لمن يهمه الأمر

تشهد كلية التربية جامعة الكويت أن **السيدة/ فاطمة إبراهيم علي الياسين** قد قامت بإجراء مقابلات شخصية مع بعض السادة أعضاء هيئة التدريس وكذلك بعض الطلبة بالكلية خاصة في تخصصات (**اللغة العربية ، اللغة الإنجليزية ، الرياضيات ، العلوم ، التربية الإسلامية**) وذلك لاستخدام المعلومات في الدراسة التي تقوم بها حالياً بعنوان :

The place of creative thinking skills in teachers' education colleges: an investigation of primary pre-service student teachers in Kuwait.

وهي تحت إشراف الأستاذ الدكتور: **Dr. Sue Pattison**

وقد أعطيت لها هذه الشهادة بناءً على طلبها دون ادني مسئولية على الكلية.

عميد كلية التربية
أ.د. عبد الرحمن أحمد الأحمد

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3-BEC- PAAET in Kuwait

السيد المحترم / عميد كلية التربية الأساسية

أحيطكم علما بأنني طالبة دكتوراه مبتعثة إلى جامعة نيوكاسل في المملكة المتحدة ولدي جانب عملي لجمع البيانات من كلية التربية (جامعة الكويت) وكلية التربية الأساسية (الهيئة العامه للتعليم التطبيقي والتدريب) تهدف الدراسة إلى تحديد مكان التفكير الإبداعي في برامج التدريس والتدريب في هذه الكليات وخصوصا بالنسبة لمعلمات المرحلة الإبتدائية للتعرف على أهم العوامل التى تساعد على تنمية هذا النوع من التفكير.

الجانب الميداني يتطلب اجراء مقابلات مع مجموعه من الطالبات والأساتذه في أقسام **اللغة العربية، اللغة الانجليزية، الرياضيات، العلوم، التربية الاسلامية،** ، وتسجيل بعض الملاحظات من خلال حضور محاضرات في هذه الكليات بالإضافة إلى البحث عن اهم المراجع والملفات والوثائق للتعرف على أهم الجوانب الإيجابية لتنمية التفكير الإبداعي وأهم العوائق التى تقف في وجه هذه التنمية.

مرفق: رسالة من المشرفة الاكاديمية في جامعة نيوكاسل

المبتعثة: فاطمة إبراهيم علي الياسين

أ.د. عبدالله محمد الرشيدان

عميد كلية التربية الأساسية

4-The supervisor's letter

Date: 23.10.2012

To whom it may concern,

This letter is to confirm that Fatemah AlYaseen is a doctoral student at Newcastle University in the School of Education, Communication and Language Sciences and is carrying out a research project to investigate about the primary pre-service student teachers in Kuwait. Fatemah is planning to use a three types of data collection in both Kuwait University (Education College) and the Public Authority for Applied Education and Training (Basic Education College) the data will be used with student teachers (observation and focus group interviews) in order to understand their conception about creative thinking skills and the factors of discourage and encourage this type of thinking. In addition, she will conduct a semi-structure interview with the tutors and make documents analysis in both Kuwait University (Education College) and Basic Education College. The research is an important contribution to developing creative thinking skills in student teachers. To carry out the research Fatemah depends on contacting the schools of teacher education and working closely with a sample of student teachers from primary sections. The research is designed not to influence any student negatively, and full anonymity will be insured in all published data.

I hope Fatemah will be helped to carry out the planned research, but do not hesitate to ask if more information is required.

Yours sincerely
Dr. Susan Pattison
(Doctoral Supervisor)
Newcastle University
School of Education, Communication and Language Sciences
Tel: 0191 222 7368
Email: susan.pattison@ncl.ac.uk.

Appendix C: Copy of Consent Form for Student-Teachers

The title of the study is: **Creative thinking skills in teachers' education colleges: an investigation of primary pre-service student teachers in Kuwait.**

This study is part of a doctoral project which I am conducting. My name is Fatemah AlYaseen, and I am a doctoral student at Newcastle University in the School of Education, Communication and Language Sciences.

Please read each statement and tick boxes for those statements you agree with:

☐ I am a student teachers and I will be taking part in this project to explore the key factors of developing creative thinking skills in Kuwait's Education colleges.
☐ I have been given full information regarding the aims of the research and have been given information with the Researcher's names on and a contact number and address if I require further information. All personal information provided by me will remain confidential and no information that identifies me will be made publically available.
☐ I consent to participate in this study. I am satisfied with the instructions I have been given so far and I expect to have any further information requested regarding the study supplied to me at the end of the investigation.
☐ I am free to ask any questions at any time before and during the study. I have been provided with a copy of this form and the participant information sheet.
☐ I understand that I may terminate participation in the study at any point should I wish. I am at least 18 years of age. I also understand my rights to withdraw my data without explanation and retrospectively but only until the point that my data is anonymised.

Name of the student: ……..…….....
Signature: ……..…….... Date: ……
Name of researcher (print): Fatemah Al-Yaseen
Signature (researcher) …….. Date: ……..……...

Contact details for the researcher
fatemah.al-yaseen@newcastle.ac.uk.
Dr. Sue Pattison (Doctoral Supervisor).
Email: susan.pattison@ncl.ac.uk
School of Education, Communication and Language Sciences
King George VI Building
Newcastle Upon Tyne NE1 7RU

Appendix D: Debriefing Sheet for Participants

Project title: The creative thinking skills in teachers' education colleges: an investigation of primary pre-service student teachers in Kuwait
Thank you for participating in this study.
The main aim of this study was to explore the key factors of developing creative thinking skills in Kuwait University College of Education (KUCE) and Basic Education College in the Public Authority for Apply Education and Training (BEC- PAAET) in Kuwait.

This study employed multi qualitative data collection strategies namely focus group, interview, observation, and documents analysis. The researcher used purposive sampling technique to select participants for the study. There was two groups of participants in colleges; tutors and students of the both KUCE and BEC-PAAET teacher training who were been interviewed and observed. Thank you again for helping with this study, your participation is valued and very much appreciated.
If you would like more information, or have any further questions about any aspect of this study, then please feel free to contact the researcher using the contact details provided below.

Contact details for the researcher
fatemah.al-yaseen@newcastle.ac.uk.
Dr. Sue Pattison
(Doctoral Supervisor)
School of Education, Communication and Language Sciences
King George VI Building
Newcastle University
Newcastle Upon Tyne
NE1 7RU
Email: susan.pattison@ncl.ac.uk
Thank you for your time.

Appendix E: Consent Form for Teachers

The title of the study is: **The creative thinking skills in teachers' education colleges: an investigation of primary pre-service student teachers in Kuwait**

This study is part of a doctoral project which I am conducting. My name is Fatemah Al-Yaseen, and I am a doctoral student at Newcastle University in the School of Education, Communication and Language Sciences.

Please read each statement and tick boxes for those statements you agree with:

☐ I am a tutor and I will be taking part in this project to explore the key factors of developing creative thinking skills in Kuwait's Education colleges.
☐ I have been given full information regarding the aims of the research and have been given information with the Researcher's names on and a contact number and address if I require further information. All personal information provided by me will remain confidential and no information that identifies me will be made publically available.
☐ I consent to participate in this study. I am satisfied with the instructions I have been given so far and I expect to have any further information requested regarding the study supplied to me at the end of the investigation.
☐ I am free to ask any questions at any time before and during the study. I have been provided with a copy of this form and the participant information sheet.

Name: ……..…….....
Signature: ……..….. Date: ……..
Name of researcher (print): Fatemah Al-Yaseen
Signature (researcher) …… Date: ……...

Contact details for the researcher
fatemah.al-yaseen@newcastle.ac.uk.

Dr. Sue Pattison
(Doctoral Supervisor) - Email: susan.pattison@ncl.ac.uk
School of Education, Communication and Language Sciences
King George VI Building
Newcastle University
Newcastle Upon Tyne
NE1 7RU

Appendix F: Teachers' structured and semi-structured interview

Tutors interviews: The structured interview

1- **Name:**……....**Gender: M**…....**F**……

2- **Professional status:**

.....
……

3- **Academic qualification:**

.....
.....

4- **Area of specialization:**

.....
.....

5- **Teaching and training experience:**

.....
.....
.....

6- **Subject (s):**

.....
.....

7- **Other or additional duties:**

.....
.....

8- **Any other comments:**

.....
.....
.....

Tutor interviews: Semi-structured interviews

A. Teaching strategies and classroom environment:

1- What is your perception about the teaching in general?
2- Do you think that the scientific and cognitive side in the subject you teach allows providing diverse teaching strategies?
3- What types of teaching strategies do you often use? How do the students engage with these strategies?
4- Do you think that these strategies can contribute in developing creative thinking? Please explain this contribution.
5- What are in your opinion the most important reasons that lead to the absence of an atmosphere of interaction in the classroom and thus inhibit effective education and hinder the development of creative thinking skills?

B. The concept of creative thinking:

1- Is there a clear concept of creative thinking in the College of Education and in your field of teaching in particular?
2- Do the objectives of the subject that you teach includes any attention to this kind of thinking?
3- Do you adopt specific definition for creative thinking?

C. Students' Competences:

1- What is the standard of efficiency when selecting students in the teaching programme training?
2- Does this affect the standard in teaching strategies pursued in the educational process in general, and in your teaching strategies, toward creative thinking?
3- What are your suggestions to improve the students' standard of efficiency?

D. Administration policies and educational system:

1- What are the administrative policies that effect in your teaching?
2- How do these policies effect in the education of the student teachers, particularly with regard to creative thinking skills?

3- Is there an exchange of ideas among colleagues about teaching methods and strategies, most notably with regard to the development of creative thinking skills?

4- Do you think that the educational system in the college affects your teaching and interaction in the classroom, especially toward creative thinking? If yes please explain how?

E. The barriers to enhance creative thinking skills:

1- What are the barriers to the development of creative thinking in general and in your field, in particular, from your point of view?

F. The factors to develop creative thinking skills:

1- What are the key factors in the development of this kind of thinking in the College of Education and in your specialty? How it can be apply?

Appendix G: Sample of Teacher Interview (Transcript)

The structured interview

Researcher: greeting (As-Salāmu `Alaykum) Hello

Teacher: *greeting (W `alaykum als-Salāmu) Hello*

Researcher: I would like to know some information about you and your position in the college

Name: Arabic teacher……....**Gender:** Male

Professional status:

Assistant Professor

Academic qualification:

MA and Ph.D. in teaching Islamic studies from Al-Azhar University in Egypt States

Area of specialization:

Arabic Literature and Criticism

Teaching and training experience:

Seven years teaching in Kuwait, 20 years in teaching at Al-Azhar University in Egypt, Sana'a University in Oman, and College of girls in Saudi Arabia

Subject (s):

Teach the Arabic language for the primary programme in all sections such as, literature, Readings, criticism, and story.

Other or additional duties:

None

Any other comments:

None

Semi-structured interview

Researcher: we will discuss six dimensions; the first one includes five questions.

G. Teachers' strategies and teaching perception:

Researcher: What is your conception about the teaching in general?

Teacher: *The educational process of the most dangerous operations if we want to build any country on a sound basis education is the core product and the highest value in the society. It is obviously that we pay a lot of money, but unfortunately, the individual as an essential product is still non-clear and non-productive. This error is continuing and repeated on all levels of education. In my vision for the consideration for the individual (product) must start from the family through the construction of the child's personality, where the educational process begins since childhood by building the child's personality through his self-reliance and freedom of thought. The family begins to crack down on child and put a lot of bans on the ideas without any explanation. When he enters the school, the process of repression continues by the teaching style to be up to the university, and even there we find that some professors consider teaching as kind imposition of opinion control. For me, teaching is a mutual dialogue between the teacher and the learner.*

Researcher: Do you think that the scientific and cognitive side in the subject you teach allows providing diverse strategies?

Teacher: *The subject I taught like all other subjects should be taught through diverse strategies,*

Researcher: What Types of teaching strategies do you use very often? How do the students engage with these strategies?

Teacher: *The strategy that I sue mostly is communicating with the students through my web site which I prepared as personal effort. It includes all modules' detail, exams*

samples, each lecture contents, videos, and also there is section I named it ‘‘by students’ pen’’. It has written by students from previous courses so the new students can benefit from the old students' experiences. They can prepare themselves before the lecture, recognize the plan for each listen, and put any question they might have.

Of course, there are individual differences, some of them respond and follow the site which helps to interact in the classroom. When they read about the subject and previous efforts for the students come and have a background on the subject. Start a dialogue with them, so I let them field for those who wish to speak on their understanding of and through the interplay dialogue I draw requesting answers or perceptions or vision that I want, or I aim it and eventually get to a picture of the final product which we want to understand or the target we seek to reach. To be honest with you some of them apologizing with matters isn’t honest like, I do not use the Internet, the family does not allow me to do. I know that they use smart phones; it includes the Internet ... so I think that the technology is not used properly, also financial abundance, unfortunately, they are not used appropriately.

Researcher: Do you think that these strategies can contribute in developing creative thinking skills? Please explain this contribution.

Teacher: *The lecture as I mention is a dialogue between me and the students, then they should put the new concept in the form of another, this is what they will type in the page "by the students’ pen" once again and this is the third process of Strategy. Fourth is the examination process, which I consider the dialogue from the inside to get to know the extent of our arrival to the target. The test for me is not a judgment on the student, but is sentenced to a professor and the student's ability to reach the stage of understanding. In the end, of course, there are individual differences. So this strategy could contribute in developing creative thinking if the student has made the effort required, and they possess the motivation and the desire for development and this is not what I find, unfortunately, in a lot of students…*

Researcher: Ok Dr. before it goes on I think this will take us to the next question: **What are in your opinion the most important reasons that lead to the absence of an atmosphere of interaction in the classroom and thus inhibit effective education and hinder the development of creative thinking skills?**

Teacher: *A lot of points affect the classroom environment and the interaction between the teacher and the learner and between learners themselves. Do you mean in our college?*

Researcher: *Yes*

Teacher: *As previously reported financial abundance is not used properly by where we note that the classes are small and not equipped with the techniques required for this specialization, on the other hand, there are a large number of students in small classrooms which make it very difficult process of interaction and a lot of them do not use the technology correctly. As well as we find that a lot of them arrive late because of the transition from one building to another and this causes delays and a lot of inconvenience. There is also an important point related to the internal desire of the students choose to specialize.*

Researcher: Yes Dr. I think we will take about this point in another dimension through this interview. Now we will discuss the second dimension which includes three questions:

H. The concept of creative thinking:

Researcher: Is there a clear concept of creative thinking in the College of Education and in your field of teaching in particular?

Teacher*: There is no clear of creative thinking conception on the college level. Interest in creativity and the development of this kind of thinking among student teachers are in college through the efforts of individual unregulated. In my specialty creative thinking can be seen through the artistic taste of the language and also it can be seen as I explained in the strategy of mutual interaction and exchange of experiences to reach a*

new intellectual formulate. Student teachers should be well versed in the language first so they can teach the children correctly and help them to raise their taste of the language.

Researcher: Are the objectives of subject that you teach includes any attention to this kind of thinking?

Teacher: *The department defines the objectives of the program, which focuses primarily as I explained on preparing the students teachers to be skilled in the language, and everything related to its knowledge. This is to help them to transfer this knowledge to their children according to the educational stage. Therefore, it may not be the development of creative thinking among these goals. However, I think a professor can develop student teachers' thinking by his style and strategies in teaching, but, unfortunately, we note that the method of memorization is often even the student teachers back to this kind of teaching, we find that they want the professor sets them with the significant notes in order memorize them and pass the exam successfully then we find them in-service teaching their students in a same style.*

Researcher: Do you adopt specific definition for creative thinking?

Teacher*: Theoretically, I do not adopt a particular definition, but I think practically my strategy can foster creative thinking if received response and interaction from the student teachers.*

Researcher: Third dimension includes three questions:

I. Students' Competences:

Researcher: What is the standard of efficiency when selecting students in the teaching programme training?

Teacher: *First openly say that there is no standard for accepting student majoring in Arabic. Unfortunately, we find that the students enrolled or transferred to Arabic specialty when they cannot continue in other disciplines, the discipline becomes like a*

receiving station without any goal or desire or eligible capacity. You can see that few are entering the Arabic programme as they wish in the Arabic specialty. Therefore, you can see more than 60 students in a small classroom; even if we want to develop the students' creative skills it would be difficult if not impossible.

Researcher: Does this affect the standard in teaching strategies pursued in the educational process in general, and in your teaching strategies, toward creative thinking?

Teacher: *Yes greatly affect because there is weakness from the both parties.*

Researcher: You mean students and teachers.

Teacher: *Yes, I can assure to you through my experience in teaching and headed sections in more than one Arab country (Saudi Arabia, Oman, Egypt ...) that the weakness in the level of the Arabic language has become a large and clear as I said it is weakness from the both parties. The students in terms of the fear or the illusion of the difficulty of the language, the lack of internal motivation and effort, also as explained of the student teachers mostly enrolled in the program often without a desire to specialize. The weakness from the teachers can be recognised by insisting to keep using the same traditional strategy which depends on feeding the students with the information and cancel the students' personality.*

Researcher: What are your suggestions to improve the students' standard of efficiency?

Teacher: *Building a correct standard to select the students in the specialty, Abandon telegrapher professor, and stay away from nepotism of choice.*

Researcher: The fourth dimension includes four questions:

J. Administration policies and educational system:

Researcher: What are the administrative policies that effect in your teaching?

Teacher: The admonition policies are the main elements that effect in our teaching.

Researcher: How do these policies effect in the education of the student teachers, particularly with regard to creative thinking skills?

Teacher: *As I mentioned they accept the student teachers according to no-academy considerations, such as filling the gap in the work field, or to overcome the pressure to accept the largest number of students on the grounds that there are only two colleges of Education in Kuwait. Thus, we find that the increasing number of student becomes significantly affects the interaction in the classrooms. Many of the students enrolled in the speciality without a motive, so they are not making any effort, and sometimes we find that they are interested in other disciplines, they registered only for the desire of their families. Here we find a large number of students with a general weakness in the language skills, which makes a lot of professors, are focused on re-building the specialization skills without considering on creative thinking skills.*

Researcher: Is there an exchange of ideas among colleagues about teaching methods and strategies, most notably with regard to the development of creative thinking skills?

Teacher: *It is assumed that there are courses taken under the authorisation of our organisation in the cultural week. This depends on the professor's response, some participate and some others not. As the college level there are no general cooperation but as personal effort yes. For example I cooperated with a professor from educational technology department in the preparation of my we site.*

Researcher: Do you think that the educational system in the college affects your teaching and interaction in the classroom, especially toward creative thinking? If yes please explain how?

Teacher: *Of course because if the educational system does not provide us with all facilities to encourage creativity, the personal efforts will be stopped in some point. The teachers need support in materials, policies, and joint efforts.*

Researcher: The fifth dimension includes one question:

K. The barriers to enhance creative thinking skills:

Researcher: What are the barriers to the development of creative thinking in general and in your field, in particular, from your point of view?

Teacher: *I think we covered these barriers through our discussion; I will put them as points to you:*

- *The students' low level in general and in the field of Arabic language.*
- *The ineffective admission policies.*
- *The teaching methods that rely on only in memorization information.*
- *The inappropriate use of financial abundance for the benefit of educational reform.*
- *Improper use of the technology by the teacher and the learner.*

Researcher: The sixth dimension also includes one question:

L. The factors to develop creative thinking skills:

Researcher: What are the key factors in the development of this kind of thinking in the College of Education and in your specialty? How it can be apply?

Teacher: *The educational system should raise the level of interest in the Arabic language from the early stages and continuing this interest to the university level. Because we cannot cultivate creative thinking skills in the Arabic language programme, when there are weaknesses in the basic skills of specialize. The teachers also need to choose the diverse teaching strategies. This can be done by adapting the reformation policies which consider cooperation between the schools and colleges of education, developing the curriculums, and make some reforms in the preparation of student teachers' programmes.*

Appendix H: Focus groups interviews

First: The structured interview

Name**:** ……..**.....**

Class**:** ……..**.....**

Major as student teacher**:** ……..

Teaching experiences if any**:** ……

Second: Semi-structured interview

Issues that highlighted in the focus group discussions:

A. The teaching strategies and

1- Dimensions of good teaching from your point of view.
2- Teaching strategies' methods that professors usually used.

B. Classroom environment:

1. Methods and strategies help you in interaction and integration in the educational process in the classroom.

C. The concept of creative thinking

1- Concept of creative thinking in the College of Education in general and in particular, the area of your specialization (in terms of objectives, content, teaching methods).

D. Obstacles to the development of creative thinking:

1. Barriers to the development of creative thinking in your specialty in particular
2. Suggestions for the removal of these obstacles.

E. The development of creative thinking:

1- Key factors in the development of this kind of thinking in the College of Education.

2 - Key factors for the development of creative thinking through your specialty.

Appendix I

1- Checklist of the classroom environment

The purpose of observation	Lessons' aims	Lessons' structures	Questions and discussion
The students appear provoked by their aims, procedures and missions.			
They are capable of issue ambition and to take initiatives and to discover related knowledge, facts, and ideas.			
They engage with the subject and with each other.			
They can express their new ideas and views with encouragement, support, and freedom.			
They practice freely discussion in unclosed surrounding.			
They encouraged to take risk by providing tolerate atmosphere.			

Adapted from Craft (2002), modified and prepare by the researcher.

2- The Categories of Bloom's revised Taxonomy

The Categories of Bloom's revised Taxonomy in cognitive domain. Adapted from (Churches, 2009; Krathwohl, 2002; Anderson & Krathwohl, 2001; Quick Flip questions for revised Bloom's Taxonomy, 2001)

Categories	Meaning	Thinking classification	Verbs samples	Examples of questions
Remembering	Display the formerly learned knowledge by		- List - Recognize - Select	- What happens before or

	remembering details, relations, essential ideas and solutions	Lower order of thinking	- Determine - Locate - Identify - Link - Label - Exclude - Remember - Show - Spell - Tell - Retrieve	after..? - Can you remember..? - How would you explain..? - Can you locate all..? - Who was..? - Can you recognize where…?
Understanding	Illustrate the understanding of the details, ideas, facts, and instructional communications, involving verbal written, and pictorial contact through arranging, contrasting, restating, explaining giving characterizing, and declaring leading concepts	Lower order of thinking	- Classify - Correlate - Extend - Illustrate - Interpret - Demonstrat e - Conclude - Explain - Summarize - Connect - Compare - Exemplify - Paraphrase	- Explain the meaning in your words..? - What does this mean..? - How would you classify these ideas..? - What correlations would you make…? - Can you give examples of…?
Applying	Using or applying the obtained comprehension, knowledge, information, facts, methods, and regulations to solve problems in new circumstances through various strategies	Med order of thinking Med order of thinking	- Carry out - Use - Execute - Construct - Experiment with - Plan - Solve	- How would you use..? - What would the outcomes be if..? - What patterns would you select to reform? - What details would you choose to

				explain..?
Analyzing	Investigate and split the facts, knowledge, information into parts through detecting reasons or sources arrange inferences and look for proof to assist in providing generalizations.		- Outline - Organize - Structure - Find - Simplify - Motive - Discover - Integrate - Attribute	- How would you sort? - Can you specify the sections? - What hint can you discover? - What is the connection …? - Can you differentiate between…?
Evaluating	Display, guard and justify ideas, opinions and views through making judgments about facts, information, reasonableness of ideas or efficient of the situation depending on arrangements of principles	High order of thinking High order of	- Check - Hypnotize - Criticize - Conclude - Detect - Test - Judge - Breakdown - Analyze	- What facts, data, and information would you provide to support your opinion? - What perception would you have about…? - How would you illustrate...? - How would you defend...? - What materials you use to make the completion? - Why is it the best?

Creating	Putting information and elements together in a varied method to shape a novel, unknown and consistent complete or construct a unique product by merging elements in a new form or suggesting optional and unconventional results or solutions	thinking	- Design - Plan - Formulate - Write - Develop - Produce - Invent - Make - Imagine - Originate - Create	- What modifications would you use to find the solution..? - How would you enhance the plan…To create? - What can you do to lower the..?

Appendix J: Researcher's experience in higher education

Arab Open University
Kuwait Branch
Office of the Rector

الجامعة العربية المفتوحة
فـــرع الكويـــت
مكتب مدير الجامعة

Date: 8/5/2006

Certificate

This is certify that Mrs. Fatima Yaseen is a part time Tutor in the branch and has taught the course GR101 as of the spring semester 2003/2004 and until this current academic year.

Mrs. Yaseen has proved to be a very responsible and discipline person with her work.

This Document has been issued upon her request.

Your Sincerely,

Dr. Fahed Al-Mekrad
Branch Director

الجامعة العربية المفتوحة
فرع الكويت

Appendix K: Conference Publications

1. Al-Yaseen, F & Pattison. S (2013). How do student teachers prepared and learn to use creativity/creative thinking skills in their thinking and teaching? *INTED2013 Conference*. ISBN: 978-84-616-2661-8. 4th-6th March 2013. Valencia. Spain.

2. Al-Yaseen, F. (2013). The Place of Creative Thinking Skills in Teacher Education Colleges: An investigation of Primary Pre-service Student Teachers in Kuwait *London International Conference on Education (LICE-2013)*. London. UK.