

The degree of possessing the skills of developing creative thinking by faculty members at the Middle East University from students' point of view

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Abstract

This study aimed at finding out the degree of possessing the skills of developing creative thinking by faculty members at the (MEU) from students' point of view. The sample consisted of (162) students who drawn randomly from the population, for the academic year 2016/2017. A questionnaire was developed to collect data. Its validity and reliability were assured. The findings were as the following: (1) The mean of possessing flexibility skills by faculty members was (3.99) with a standard deviation of (0.68) from students' point of view, and in a high degree, (2) The mean of possessing fluency skills by faculty members was (3.13) with a standard deviation of (0.96) from students' point of view, and in a medium degree, (3) The mean of possessing originality skills by faculty members was (2.75) with a standard deviation of (1.02) from students' point of view, and in a medium degree. In light of the findings, the researchers recommended the following: Organizing in-service training courses for faculty members at (MEU) to acquire creative thinking development skills.

Keywords: Flexibility and originality, Fluency, MEU, Possessing creative thinking skills.

1. Introduction

Human innovations are an important indicator of scientific and technological progress. The preparation of minds is the most important factor for the advancement of human societies, and the educational institutions are concerned. Traditional education based on stuffing minds with information without the constant pursuit of mental development is no longer acceptable, which necessitated the adoption of what is necessary to prepare educated intellectuals responsible for their learning. The teacher is responsible for improving the outputs and leading the educational process through building the generations by developing all the abilities of learners, especially thinking skills, based on what they do inside the classroom.

One of the most important skills of thinking that should be developed is creative thinking skills. Zaytoun (1987) confirmed that innovation and creative thinking are among the most important goals of education. Creators are the true wealth of the nation that depends on them to solve problems. Teachers should include these skills and work on their development, when teaching students. Al-Khoujai (2001) emphasized that the teacher's awareness of the responsibilities entrusted to him illustrates the future effectiveness of creative education.

The university is the educational institution that provides all institutions in the society with educated cadres. The greatest role in the production of innovative students is due to the possession of teaching staff members for the skills of developing creative thinking, so they can teach and employ them in developing the abilities of creative students.

Scientists around the world were interested in the subject of thinking, which became noticeable in the second half of the 20th century. That interest was represented in many models of thinking and training programs, research and studies. Attention to thinking and its development is one of the principles of education aimed at organizing thinking among learners, and enable them to invest as much of their creative potential in the learning

process as possible (Nofal,2008:21). Despite the many types of thinking, some researchers (Guilford, 1950; Ristow, 1988) emphasized the importance of creativity and creative thinking, which is an important source of productive members of society, who are thinkers, producers and creators, working on the development of society (Katami,2007; Al-Zubaydi, 2006). This is demonstrated by Guilford (1965) and Torrance (1977) studies, which stressed that there was nothing can contribute to raise the level of human well-being, development and progress, rather than raising the level of creative performance of nations and peoples.

The Darwish (2000) study pointed to the importance of paying attention to the position taken by individuals towards what constitutes the distinctive behavioral characteristics of the creative student, and therefore, the right of the student to get the best opportunities to grow and innovate.

Creative thinking

Creative thinking is one of the many types of thinking, such as critical thinking and reflective thinking, as thinking is a process and a mental activity that occurs throughout human life. It is also one of the highest thought patterns. It requires highly efficient mental abilities, especially for finding extraordinary solutions and ideas (Ayad, 2009). Creative thinking is seen as a method of guided thinking, that the individual seeks to discover new relationships, or he reaches new solutions to his problems, or to produce subjects for beautiful artistic images. The general sense of creative thinking is to produce anything has a new or positive basis. It occurs when the individual is more self-aroused than imitating. Creativity is not just an assembly of elements, and if it doesn't prevent a new employment or a new composition of the old elements (Razuki & Abdul-Kareem, 2015).

Creative thinking can be defined as looking at the familiar from an unfollowed angle, then developing this consideration into an idea, then into a workable innovation (Suleiman, 2011). Katami (2001) defined creative thinking as existing something known from something unknown and the transformation of known to something unknown. Suleiman (2011) defined it as a mental process that we use to reach the new ideas and visions that lead to the integration and reflection between ideas or things that are previously unfamiliar.

The stages of creative process

Despite studies and research conducted by educators and psychologists, understanding of creativity is still limited. One of the most challenges that face them is the problem of determining the stages of the creative process and thinking abilities. Abdul gafar (1977) and Zaytoon (1991) determined the following stages of the creative process:

1. Preparation stage: At this stage, the mind is prepared for the process of creativity to deal with one of the issues and the current problems for discussion, so that the information and ideas related to it are collected and understood well in the preparation for the second stage.
2. Incubation stage: It is a stage or ordering and waiting, in which the mind is free of many ideas and materials that have nothing to do with the problem, but leaves the situation mentally until the solution comes automatically.
3. Inspiration stage: It is a stage of the emergence of the spark of creativity and generate a new idea that leads to the solution of the problem, so it is a critical stage to the mind in the process of creativity.

4. Verification stage: It is the final stage. It is the experimental stage in which the individual has to test the creative idea, and re-examine it to insure its validity and usefulness, and the need for refinement (Abo-Hatab, 1993).

1.1 The importance of creative thinking

Interest in the study of creative thinking began since the announcement of Guilford (1950) in his opening speech at the Annual Conference of the American Psychological Association, 1950, in which he presented his model of the structure of human mind. Guilford referred to the failure to study creativity during the second quarter of the 20th century, and that the examination of intelligence tests does not indicate the existence of any items that measure creativity. He also called for the need to search beyond intelligence to search for creativity (Jarwan,2002:84)

Hence he interest in creativity and creative thinking, and to realize its importance in the development of creativity which is the way to progress. Many scientists in Europe and the United States have initiated studies on creativity and creative thinking, such as Taylor, Mackinnon and Torrance. Many conferences were held in 1955 at the University of Utah in the United States, followed by several other conferences on the subject of creativity. Not only the European countries and the United States, but in our Arab world there are researchers who have devoted their lives to study creativity with the help of their students, such as Abdulsalam Abdulgafar at Ain Shams University and Sayed Khearalah at Al Mansoura University, and other Arab researchers who have shown the importance of creative thinking through their research (Al-Kinani, 2005).

Creative thinking skills

The majority of researchers in the field of creativity and creative thinking agree that this type of thinking includes three main skills: fluency, flexibility and originality. A review of the most common creative thinking tests is the Torrance tests, and Guilford tests. These tests emphasize the three thinking skills (fluency, flexibility and originality). The skills of creative thinking can be clarified as the following (Shawaheen, et.al., 2009; Khalil, 2007):

1. Fluency: Fluency plays an important role in most forms of human thinking, especially creative thinking. It means the ability to generate a large number of alternatives, synonyms, ideas, problems, or uses when responding to a particular stimulus, and the speed and ease of generation. It is essentially a process of recalling optional information, experiences or concepts already learned (Jarwan, 1999: 82). Several types of fluency have been achieved through the factor analysis of mental abilities, such as:
 - a. Verbal fluency: It is the ability to produce the largest number of words that meet certain conditions and appear in the form of the ability to produce the largest number of words that contain certain letters or a set of letters or endings (Moawad, 1995: 51).
 - b. Intellectual fluency: It refers to the ability to produce the largest number of expressions belonging to a particular type of ideas at a specific time and indicate the ability to produce ideas to meet certain requirements (Al-Kathafi, 2000: 42-43).
 - c. Expressional fluency: It means the ability to think fast in words related to convenience (Moawad, 1995: 51). It can be identified through tests that require the examined person to produce expressions or

sentences, that require the formulation of words in a certain way or in a certain format (Al-Kathafi, 2000: 43).

- d. **Correlational fluency:** It is the ability to produce the largest number of primary units with specific characterizes, such as a relationship of similarity and contradiction. It is a factor that requires the production of new ideas in a position that requires the least amount of control (Moawad, 1995: 51). From this, correlational fluency can be defined as the ability to generate the largest number of ideas and synonyms when responding to a particular stimulus in a given period of time, which represents the quantitative side of creativity (Shawahin, et.al., 2009).
2. **Flexibility:** Flexibility is the ability to change the actual situation by changing the situation. It is the opposite of mental rigidity, in which the person tends to adopt specific intellectual patterns facing different situations (Laban,1996:75). Flexibility can be expressed in two forms (Al-Kathafi,2000:44-47).
 - a. **Spontaneous flexibility:** It is the ability to produce the largest number of ideas freely and spontaneously away from the means of pressure, guidance, urgency or inertia. The test, which measures this ability, requires from the examined person to navigate freely in a wide range of directions.
 - b. **Adaptive flexibility:** It refers to the ability to change the style of thinking and mental orientation to meet the new situations and changing problems. This ability contributes to provision of many possible solutions to the problems in a new or creative way away from the traditional and typical thinking. It is noted here that attention is focused on the diversity of ideas or responses, while attention is focused on fluency on judgement without quality and diversity.

From the above, flexibility can be defined as the ability to change the state of mind by changing the situation as flexibility represents the qualitative aspect of creativity.

3. **Originality:** Originality is one of the most relevant characterists of creative thinking. The originality here is in the sense of novelty and exclusivity (Jarwan, 1999: 84). It is the common factor between most definitions that focus on creative products, as a criterion to judge the level of creative thinking. The originality refers to the ability to produce as many indirect responses as possible, very quickly, and is required to be acceptable and appropriate for the goal, with its novelty (Al-Sahmawi, 1998: 196). It is also necessary to distinguish between originality and fluency. In the case of presenting an idea that is not presented or unusual, it indicates the originality. If the idea is among the ideas presented, it is considered a kind of intellectual fluency (Al-Kathaf, 2000: 48-49). Originality can be defined as the ability to express as many responses as possible in a new unfamiliar image.

1.2 Previous studies

A review of the literature and previous studies shows that there is a scarcity of previous studies related to the development of creative thinking skills in universities, including the study conducted.

McGregor (2002) conducted a study about the instructions of the creative thinking of the student education programs in the college, which applied on (97) students. A tool was used to evaluate and analyze qualitative and quantitative data, as well as the Torrance test for creative thinking. The sample subjects divided into two groups:

experimental and control groups. The findings showed that there is a difference between the students in the control group due to the educational experience for newly graduated, and the sex for the females.

Al-Bloushi (2010) carried out a study aimed at discovering the reality of practicing Islamic education teachers to develop the skills of creative thinking within the classroom. The sample consisted of (40) male and female teachers. The observation card which consisted of (33) items was applied to them, distributed on four skills for developing creative thinking. The most important findings of the study were the degree of practicing Islamic education teachers to develop the skills of creative thinking was medium, and there were significant differences between male and female teachers in the degree of practicing the skills of creative thinking, in favor of the females in originality and expansion.

The study conducted by Al-Salhi (2011) aimed at finding out the impact of a program based on activities in Islamic education in the development of creative thinking skills (fluency, flexibility, and originality). A random sample consisted of (130) basic seventh grade students were drawn from the population of the study in Al-Zarka City, Jordan. They were divided into two groups experimental and control groups. An educational program based on activities in Islamic education was prepared to develop creative thinking among students. Torrance test was also applied. The findings of the study revealed that there were significant differences between the mean performance of the students who studied the program based on activities in Islamic education and the students who studied the regular program, on the Torrance test on the three skills (fluency, flexibility and originality), in favor of the experimental group.

Tok & Seving (2012) conducted a study to find out the impact of providing a training program for thinking skills, based on the Synerburg theory of intelligence, for teachers' candidates for work in schools. Two experimental and control groups participated in the study, with (34) individuals per group. The findings indicated that the experimental group was statistically superior to the control group in the three thinking skills (fluency, flexibility and originality).

Abo Al-Nadi (2013) carried out a study aimed at finding out the effect of the science development program in an integrated method. (SEED) in the development of creative thinking skills and achievement of gifted female students in Jordan. The sample consisted of (39) female students from the eighth grade. The quasi – experimental methodology was used. Torrance scale for creative thinking and achievement test were utilized. The findings showed significant differences between the experimental and control groups in the achievement of gifted female students attributed to the use of training program.

Al-Fadly (2014) conducted a study aimed at investigating the impact of environmental survey activities on the achievement of eighth grade students and their creative thinking in science in Kuwait. The sample of the study consisted of two classes, which were chosen according to the intentional method. They were randomly distributed in two groups: experimental and control groups. The experimental group was taught by using survey activities, while the control group was taught by the ordinary method. Two tests were used, one of them was Torrance test, and the second was an achievement test after assuring their validity and reliability. The findings indicated that there were significant differences between the achievement means of students, in favor of the experimental group.

1.3 The problem of the study

Robinson (2006) indicated that the student does not learn thinking skills such as criticism, logic, creativity and practical thinking, and does not learn how to plan for himself and invest his time, but only by giving him some information and advice forgotten by the moment he left the classroom.

Here lies the importance of having a faculty member capable of developing creative thinking in his students, and this is a global trend aimed at the development of faculty member. Many efforts have been made for a long time and are still being made to develop lists of required competencies, which should be able to faculty member.

Studies have confirmed that one of the most important qualities of the faculty member is the development of the spirit of thinking and innovation among students, including the study of Omar (2000) which recommended the need to pay attention to the organization and management of teacher training programs, to raise their professional competencies in the field of education and development of creators. In many previous studies, Kruppely (2000) deduced the importance of developing creative potential, to achieve better learning and improve the mental health of the learner.

Through the experience of the researchers as faculty members at the university, noticed the weakness of most faculty members in the skills of developing creative thinking, as they rely mainly on providing information directly to students. Hence, this study determined its problem in finding out the degree of possessing the skills of developing creative thinking by faculty members at MEU, in Jordan.

The objective of the study and its questions

This study aimed at finding out the degree of possessing the skills of the development of creative thinking (fluency, flexibility and originality) by faculty members at MEU in Jordan, through answering the following questions:

What is the degree of possessing the skills of developing flexibility, by faculty staff members at (MEU)?

What is the degree of possessing the skills of developing fluency, by faculty staff members at the (MEU)?

What is the degree of possessing the skills of developing originality, by faculty staff members at (MEU)?

1.4 The importance of the study

The importance of the study is evident in the following aspects:

The role of university faculty members in the development of creative thinking.

Turning attention in the undergraduate stage from the automatic learning to creative education, which depends on thinking and ways to face problems and provide innovative solutions to them.

The study contributes to inform those responsible for the educational process of the importance of creative thinking and work on its development through programs and educational activities provided to students.

Limitations of the study

The study was limited to students of MEU in the Jordanian capital Amman, enrolled in the first semester of the academic year (2016/2017). The study was also limited on the development of creative thinking skills (fluency, flexibility and originality).

Definition of terms

The study covered the following terms:

Creative thinking: It is defined operationally as: the abilities practiced by the student based on an exciting situation in the course of teaching will respond with a set of new ideas that are characterized by the greatest degree of fluency, flexibility and originality.

Fluency: It is defined as: The ability to draw new and unfamiliar responses or ideas, go beyond common or logical responses (Al-Khadra, 2005).

Flexibility: It is defined as including the qualitative aspect and is meant to vary the ideas. It refers to the degree to which the creative learner changes a situation or a particular mental view (Abo-Jelala, 2007).

Originality: Al-Suroor (2000) defined originality as the ability to bring new ideas, rare and useful and not related to the repetition of previous ideas.

2. The procedures of the study

2.1 The methodology of the study:

The descriptive research methodology was used to suit the nature of the study. The questionnaire was used to collect data.

Second: The population:

The population consisted of all students at MEU, who enrolled in the first semester of the academic year (2016/2017). Their number was (3,044) students.

The sample:

The sample consisted of (162) male and female students. It forms (5%) of the population. The sample subjects were drawn by using stratified random sample according to the colleges of the university.

Third: The tool of the study:

A questionnaire was developed to measure the degree of possessing the skills of developing creative activity by faculty members at MEU. Relevant literature and previous studies, as well as the opinions of specialists in educational psychology, curricula and teaching methods have been reviewed. The questionnaire included three dimensions represented by creative thinking skills (fluency, flexibility and originality) in its initial form. The number of items for each skill was (10) items. The total number of the items was (30) skills. The assessment of the performance of teaching staff members for the required skills was determined by the students' responses (sample of the study) on the skills specified in the questionnaire according to Likert scale. The alternatives were: very high, high, medium, low and very low.

2.2 Validity of the questionnaire

The validity of the questionnaire was verified through the face validity, by presenting the questionnaire to a group of specialists in psychology, curricula and teaching methods. In its final form, the questionnaire consisted of (24) items distributed on the three dimensions as the following:

Fluency skill: (7) items.

Flexibility skill: (9) items.

Originality skill: (8) items.

2.3 Reliability of the questionnaire

The reliability of the tool was determined by calculating the coefficient of reliability, by using Cooper Coefficient. The value was (0.88) for the tool as a whole, as well as using Pearson correlation coefficient, which its value was (0.90) for the tool as a whole. Table (1) shows that.

Table (1)
 Reliability coefficient of the tool and its dimensions

Dimensions	Reliability Coefficient by using Cooper formula	Reliability Coefficient by using Pearson correlation coefficient
Fluency skill	0.87	0.88
Flexibility skill	0.86	0.88
Originality skill	0.88	0.90
Total	0.88	0.90

It is clear from table (1) that all reliability coefficients are high, and this indicates the validity of the tool for application.

2.4 Determining the criterion

The score for the instrument was calculated as follows:

$$\frac{\text{The high value} - \text{The low value}}{\text{Number of staging categories}} = \frac{4}{5} = 0.80$$

Table (2) shows the levels of the questionnaire:

Table (2)
 The criterion for each level of the tool

No.	Mean	Assessment
1	1 – 1.80	Very Low
2	1.81 – 2.61	Low
3	2.62 – 3.42	Medium
4	3.43 – 4.23	High
5	4.24 – 5	Very high

2.5 Statistical tools

The researchers used (SPSS) that represented in:

Cooper formula to find the reliability of the tool.

Pearson correlation coefficient to find the reliability by applying test-retest method.

Means, standard deviations, and ranks to find out the degree of possessing the skills of developing creative thinking by faculty members at MEU in Amman/ Jordan.

3. Findings and discussion

First: The answer and discussion of question one that states: What is the degree of possessing the skills of developing flexibility, by faculty staff members at MEU?

To answer this question, means, standard deviations and ranks were used as shown in table (3).

Table (3)

Means, standard deviations, ranks and the degree of possessing the skills of developing flexibility skill by faculty staff members at MEU from students' point of view

No. of the item	Item	Mean	S.D.	Rank	Degree
5	The faculty member provides a tolerant educational climate	4.39	0.99	1	Very high
2	The faculty member is different in his teaching methods for the new subjects	4.38	1.05	2	Very high
9	The faculty member avoids imposing his opinions on us.	4.10	0.82	3	High
3	The faculty member encourages providing a variety of examples of the concepts involved in the topic of the lesson	4.04	0.68	4	High
1	The faculty member gives enough time to think about the question he is asking	3.99	0.69	5	High
4	The faculty member exchanges ideas with us during the presentation of the subject	3.92	0.66	6	High
6	The faculty member uses more than one method in conducting the practical activities	3.90	0.79	7	High
7	The faculty member adjusts the ideas resulting from his dialogue with us	3.70	0.80	8	High
8	The faculty members varies in evaluation methods	3.48	0.85	9	High
Total score		3.99	0.68	-	High

It is noted from table (3) that the means of students' responses ranged from (3.48-4.39) with standard deviations ranged from (0.66-1.05). The item (5) that states "The faculty member provides a tolerant educational climate" came in the first rank. Its mean was (4.39) with a standard deviation of (0.99) and in very high degree. While item (8) which states "The faculty member varies in evaluation methods", came in the final rank. Its mean was (3.48) with a standard deviation of (0.85). It came in a high degree.

The researchers believe that the reason may be due to the fact that the university has prepared for the faculty members the appropriate organizational climate for the teaching process, and leave to the student the freedom to provide various examples during the learning process. Faculty members also allow students to present their ideas, discuss them and answer their questions, in a scientific and logical manner. The faculty members also show students' innovations by accepting their ideas, which can highlight the element of flexibility in presenting creative ideas.

The researchers believe that the reason for these high results compared to the results of the other two skills, because the teaching process focused on making the student the center of learning, by presenting his opinions, ideas and various examples during lectures, which is achieved by providing a safe environment and a tolerant educational climate that helps the student to increase his self-confidence and develop his thinking. This is

confirmed by McGregor's study (2002) that indicated there is a correlation between creative thinking abilities and student self-confidence.

Second: The answer and discussion of question two that states: What is the degree of possessing the skills of developing fluency, by faculty staff members at MEU?

To answer this question means, standard deviation and ranks were used as clarified in table (4).

Table (4)

Means, standard deviations, ranks and the degree of possessing the skills of developing fluency skill by faculty staff members at MEU, from students' point of view

No. of the item	Item	Mean	S.D.	Rank	Degree
14	The faculty member avoids making quick judgements on our answers in order to provide as many answers as possible.	3.32	1.12	1	Medium
11	The faculty member asks us to put many ideas about the lecture.	3.21	1.22	2	Medium
10	The faculty member directs us to analyze the lesson into key concepts and sub-concepts.	3.20	1.22	3	Medium
15	The faculty member asks for as many alternatives as possible to answer.	3.17	1.41	4	Medium
12	The faculty member directs us to look for other solutions to problems.	3.14	1.29	5	Medium
16	The faculty member provides situations that call for multiple ideas.	3.14	1.04	5	Medium
13	The faculty member raises divergent questions like: What happens if?	2.78	1.22	7	Medium
Total score		3.13	0.96		

It is noted from table (4) that the means of students' responses ranged from (2.78-3.32) with standard deviations ranged from (1.04-1.29). The item (14) that states "The faculty member avoids making quick judgement on our answers, in order to provide as many answers as possible", came in the first rank. Its mean was (3.32) with a standard deviation of (1.12). While the item (13) that states "The faculty member raises divergent questions like: What happen if?" came in the final rank. Its mean was (2.78) and a standard deviation of (1.22). The mean of the total score was (3.13) with a standard deviation of (0.96). It came in a medium degree.

The researchers believe that the reason for that is faculty members don't give enough time for students to think, as well as lacking of diversification in the use of teaching methods and educational activities, which in turn make students diversify their ideas and understand the subjects of the materials in many ways, as well as do not giving all students equal opportunities to present their ideas and participate in the lesson, which make some students reluctant to participate in the presentation of their ideas, because they do not feel the interest of the faculty member with their ideas. This result is agreed with the study of Bloushi (2010).

Third: The answer and discussion of question three that states: What is the degree of possessing the skills of developing originality, by faculty staff members at MEU?

To answer this question, means standard deviations and ranks were used as clarified in table (5).

Table (5)

Means, standard deviations, ranks and the degree of possessing the skills of developing originality by faculty staff members at MEU, from students' point of view

No. of the item	Item	Mean	S.D.	Rank	Degree
21	The faculty member provides activities that help us apply theoretical knowledge and test it.	3.12	1.28	1	Medium
18	The faculty member presents concepts in a form, through which comparisons can be made.	3.11	1.25	2	Medium
20	The faculty member discusses us to discover new facts.	2.90	1.25	3	Medium
17	The faculty member presents the subject of the lecture in the form of a question that raises our thoughts.	2.80	1.35	4	Medium
24	The faculty member asks us to predict in light of the lecture data.	2.77	1.30	5	Medium
19	The faculty member motivates us to deduce the main ideas from the lecture.	2.49	1.36	6	Low
23	The faculty member uses thoughtful teaching aids.	2.42	1.34	7	Low
22	The faculty member gives us the opportunity to apply the subject of learning in new situations.	2.40	1.33	8	Low
Total score		2.75	1.02		Medium

Table (5) shows that the means of students' responses ranged from (2.40-3.12) with standard deviations ranged from (1.25-1.36). The item (21) that states "The faculty member provides activities that help us apply theoretical knowledge and test it" came in the first rank. Its mean was (3.12) with a standard deviation of (1.28). While the item (22) that states "The faculty member gives us the opportunity to apply the subject of learning in new situations", came in the final rank, with a mean of (2.40) and a standard deviation of (1.33). The mean of the total score was (2.75) with a standard deviation of (1.02). It came in a medium degree.

This finding can be explained on the basis that faculty members in universities need training programs that enable them to activate modern methods of teaching thinking and in the form of questions that raise students' thinking in order to discover new facts.

4.Recommendations and suggestions

4.1 Recommendations:

In light of the findings of the study, the researchers recommended the following:
 Including the training programs held by the university at the beginning of each academic year for faculty members, material that train on the skills of developing creative thinking.

Holding in-service training courses for faculty members to acquire creative thinking development skills (fluency, flexibility and originality).

4.2 Suggestions:

Conducting a study on the contribution of teaching methods in acquiring the skills of developing creative thinking.

Conducting a study to prepare a proposed program for the development of creative thinking skills for faculty members in universities.

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