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Effectiveness of Curricula in Creative Thinking of University Students: A Comparative Longitudinal Study

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Abstract:

Colleges in Iraqi universities are depending on different curricula and courses in preparing their students and cadres. These courses differ from one college to another according to the specialization or department sometimes. However, all students are joining these colleges from the secondary education stage, as they study at that stage with a unified curriculum in terms of goals and content, after their completing the secondary stage, they undergo with a comprehensive competitive test, accordingly, they are classified and accepted into the colleges of Iraqi universities, when they join to these universities, they undergo different educational curricula in terms of goals, content and method of teaching. Here, the students begin for receiving different courses that affect their knowledge structure with a different effect. Therefore, the researcher worked on conducting a study to know the effectiveness of these curricula in college students through conducting a longitudinal study that extended for four years, during which different groups of students were followed in different colleges, where at the beginning of their joining in the college, their level of creative thinking was measured with a scale which has been for this purpose, their scores were obtained in the general test for the secondary stage while their equivalence with these variables was confirmed by analysis of variance, it was found that, there were no statistically significant differences, after following them for four years during their university studies, also after their graduation, they were undergo again to the scale of creative thinking, as here the researcher has obtained the results that were statistically processed by analyzing the variance, that it was found that there are statistically indication differences between the study groups where the students of the Faculty of Engineering surpassed the students of the College of Science while the students of the College of Medicine occupied the last rank, in the end, the researcher attributes those results to the type of courses that they underwent during their university studies.

Keywords*: Effectiveness - curriculum - creative thinking - college students - longitudinal study*

1.The Introduction

The curriculum is considered the tool which used by educational institutions in order to achieve its desired goals, also for providing the students with information, knowledge and experiences that qualify them to achieve their role in their society after graduation. Colleges are differing in their curricula, courses and subjects of each course, according to the specializations of the departments that are included in the college. Thus, the subjects and components of the curricula has become according to this difference, one of the most factors that affecting the achievement, intelligence and thinking of university students, therefore, most of the students differ in these three variables, despite the fact that students are admitted to colleges, then their classification on the departments is underwent to the degree of their average in the preparatory school stage.

But soon we find a variation in their academic achievement immediately upon joining colleges, as the academic achievement is related to the level of intelligence , thinking with its different patterns, where many studies have

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proven that the relationship is a positive correlation between the degree of thinking, intelligence and achievement, therefore, it is necessary to know the role that the curricula of Iraqi universities play in the level of thinking for their students, whether these courses help the growth of thinking, or do they help students and encourage them to a deaf memorizing. Therefore, it was necessary to conduct a longitudinal study extending several years to follow the level of students 'thinking in different colleges inside the university.

1.1 The problem of study:

Because of the difference in the curricula of Iraqi colleges at universities, their different curricula and their difference in influencing the creative thinking of students, the researcher has felt the necessity of studying this problem, which can be formulated in answering the following question. What is the effect of the curriculum on the creative thinking pattern of Iraqi college students?

1.2 The aims of study:

A- Knowing the level of students in the research sample in creative thinking

B- Knowing the differences of statistical significance in creative thinking in light of time variable (first application and second application)

C- Knowing the statistical differences in creative thinking in the light of the variable of specialization (Medicine - Engineering - Sciences)

1.3 The hypothesis of study:

A- There is no statistically significant difference between the average score of students in creative thinking among students of the research sample in the first and second tests
B- There is no statistical difference between the average scores of medical college students in creative thinking
C- There is no statistical difference between the average scores of students of the College of Science in creative thinking
D- There is no statistical difference between the average scores of students of the College of Engineering in creative thinking
E- There is no statistically significant difference between the average of students 'degrees in creative thinking according to the variable of specialization (medicine - science - engineering)

1.4 The importance of study:

The educational curriculum occupies a sensitive strategic position in the educational process, when educational planning is viewed in terms of quality and quantity because it is the practical translation of education goals, plans and trends in every society, as it is the best entrance and the best way to reform education, which renewing it and develop it in its comprehensive concept.

The importance of the curriculum lies on what is providing of the educational experiences which is necessary for the growth of learners and the formation of their personalities in the light of the educational philosophy which was adopted by society and in a manner that reflects the policy that is determined by the state's philosophy. The curriculum is the field in which the school achieves the desired educational goals, as he educational curricula in each country are the means and the tool for applying the educational philosophy that were prevailing in that country, as that philosophy including to us the goals and visions of training good citizens, in order to achieve those goals, it is necessary to choose and organize a number of topics that are described as academic courses, it has become recognized that by many educators and those who are interested in the educational process that the curricula are a set of study materials that are developed by specialists, so that the students should be familiarized with and preserved them. In view of this concept, we can find that the traditional definition of the curriculum which was prevailed for long periods and still affects some perception of the others for what the studying curriculum is. (Marie, 2000)

In the middle of the twentieth century, the developed countries witnessed technological, scientific and social revolutions that required the transition from this narrow concept to a broader concept of the curriculum from recent developments of the school curricula, so there are those who have known and envisioned it as experiences. (Krug 1956) had indicated that the curriculum is all the means that are implemented in the school in order to provide

students with appropriate opportunities to pass the desired educational experiences. In 1964 the educator (Doll) said: The definition of the school curriculum has changed from the set of study subjects and from the content of the course to all experiences which are presented to learners under the supervision of the school or sponsoring or directing it. However, the educator and philosopher (John Dewey) believes that the school curriculum is as a pattern of thinking, as the specialists and educators are focusing in this direction from the definition of the curriculum on the patterns of contemplative thinking and organized investigative thinking with their role in the school curriculum. John Dewey also states that there are things which are necessary to think about, including the real and correct attitude of experience, the existence of the information and observations to deal with the problem. Then presenting the proposed solutions to the problems which facing the human being, he also is mentioning the possibility of testing ideas through the actual application for them, making them have a clear meaning on one hand, and to reveal the extent of their authenticity or validity on the other hand (Saadeh, Ibrahim, 2004).

In this way, the developed countries went to build and design their curricula in a manner that is compatible with the modern definitions of the curriculum, so these modern curriculum have met with requirements of learners by providing them with appropriate experiences and opportunities for the growth of their personalities from all mental, physical and emotional aspects, as they have developed from their level of thinking and intelligence, which has allowed to these countries to reach the highest levels of advanced through the school curriculum.

Despite the great importance of the school curricula, we can find that in our country some specialists still focusing on building and designing the curricula on the basis of the academic subjects for all levels of school. Meanwhile the situation gets worse when in moving to study in universities, where the curricula are designed in the form of subject and topics without looking at their importance in terms what the experiences they would provide to students, as well as there is no planning to develop the thinking and intelligence of university students. Therefore, the researchers worked on conducting a study to show the effect of the curricula on creative thinking for the students at the university study. The importance of the current research is eliminated in the following points: -

A- It gives an idea to university professors about the effectiveness of the curricula which are used in education

B- It compares the effectiveness of the curricula between a number of colleges and its effect on the creative thinking of their students

C-It helps to develop curricula in some colleges, transmitting to the modern concept of the curriculum and its role in patterns of thinking.

1.5 The procedures of study:

First: The study community: The current research community is represented by the students of colleges (medicine, engineering, science) in Iraqi universities who joined the university for the academic year 2013-2014 and completed their studies in the 2017-2018 academic year.

Secondly: The study sample: Because of the research includes a large community, the researcher has chosen, in a simple random manner, twenty students from each of the colleges of the research community, by (10) male students and (10) female students, as the total of the sample becomes (60) students, those who will be undergo to the creative thinking test when they join at university with the completion of their study.

Third: The study tool: The study tool consisted of a creative thinking test which was prepared by Torrance and Al-Mu'arab by Sayed Khay'uallah in 1983. Which is appropriate for the age stage as its items were presented to the specialists and experts to ensure the apparent validity of the gauge, also to verify the correct scientific formulation of its items, as its stability was calculated by using the method of re-testing, then it was found that it has validity and stability, that its results can be relied on for the researches and studies purposes.

Fourth: Equivalence of the study groups: Since the aim of the research was to measure the effect of the curricula on creative thinking, it was necessary to conduct an equivalence between the groups that were undergone to research to be ensure that they do not differ in this characteristic when they join colleges at the beginning of the academic year for the first stage, where the researchers at the beginning and when students join at their colleges before they submit to educational curricula by undergoing of students to the gauge of the creative thinking,

Therefore, to ensure that there are no statistically significant differences among the research groups in this basic variable, the gauge was applied to a sample consisting of (60) students at the beginning of the 2013-2014 academic year. Equivalence also included variables such as chronological age as their ages were obtained from school cards, which were calculated in months, as well as they were underwent to "Raven intelligence test" which was corrected and obtained scores that were statistically treated by using the analysis of variance, the calculated value (F) has been calculated to compare it with its tabular value, the following table shows the results of the analysis of variance that are variables (creative thinking, chronological age, intelligence)

Table (1)

(F) Calculated value and tabulated of variables (creative thinking, chronological age, intelligence)

College Students	Creative Thinking	Chronological	Intelligence	Tabular (F) Value	Statistical Significance at 0.05
Medicine (20)	0,88	0,14	1,88	2,53	Not significant
Engineering(20)					
Science (20)					

Returning to the previous table, we notice that the(F) calculated value of the variables of creative thinking, chronological age, intelligence have reached to (0,88), (1,4) and (1,88), respectively. It is smaller than the tabular (F) value, meaning that the difference is not statistically indicated, which means that there are no differences between the research groups in these variables before their university studies and before their joining and their undergoing to any of the academic curricula taught in their colleges during the academic years, until they graduate from their colleges. After this procedure, the students began studying in their colleges, as the process of contacting them and communicating with them and informing them that they are undergoing to a period of research which is ending with the end of their university studies, the permission has been taken from the colleges and departments in which they study and after their arrival for the last year of their university studies, two months before graduation, an agreement was reached with them on a date to apply the gauge of creative thinking, as for the second time to see the effectiveness of the curricula that they underwent during their university studies. The gauge was applied and corrected according to the instructions of the correction key, that the results will be presented in the fourth chapter of the research.

1.6 Previous studies:

A-Ahmed study 1989: The study was conducted in Iraq at the University of Mosul. The study aimed to measure the creative thinking of students at the College of Engineering. The researcher has prepared and designed the gauge of creative thinking which is consisting of twenty items. The gauge was applied to a group of sixty students. The aim of the research is to know the differences between males and females, as the researcher reached to the results, the most important of which are statistically significant differences in the variable of creative thinking for males in engineering colleges.

B- Al-Shuwaili study 2002: The study was conducted at the University of Basra, it aimed to know the effect of academic preparation and programs on the intelligence variable, where the intelligence of different groups of the university graduate students was measured by "Raven" Illustrated test, those results then were compared with a mono-variance analysis, as the researcher found that there are individual differences among the research groups in this variable, therefor the researcher reached the results, that, the most important of which is the difference in the effectiveness of academic programs on the variable of the intelligence among university students.

2-1 We address two terms, they are: (curriculum, creative thinking)

A: The school curriculum: The first appearance of the word "curriculum", i.e. curriculum was in the Webster dictionary in 1856 which defines it as: it is a special course at the university. As for the 1955 edition of this dictionary, it says that the course (curriculum) should lead for obtaining a scientific degree, also another definition of the curriculum was added in this edition which was saying: The curriculum is the set of courses which were presented by an educational institute. (Amira, 1991).

The components and the elements of the curriculum are organized with a design scheme that represents a guide describing a specific arrangement for all factors that guide teaching towards specific outputs. Sometimes, the curricular design planning is called the curriculum organization which refers to the curriculum components, objectives, content, education and evaluation activities. (Good, 1973)

The curriculum's organizational scheme includes looking at the nature of each of these components and the pattern in which these components are combined together in a unified course. Robert Zeiss believes that "the design scheme of the curriculum refers to the name of an entity, that is, the name of an object, not a process." (Zais, 1976,35)

The main features of the curriculum design scheme are often in the pattern of organizing of its content, for this the names had given to the various curriculum organizations refer to content organizations, from these, the separate curriculum materials as it is followed in Iraqi universities. This sort of curriculum is considered the oldest and the first of which is common while its origins go back to the schools of the ancient Greeks, as the curricula of the subjects are focusing on the knowledge of its various branches and types, as well as what it contains of information, concepts, rules and laws, in fact, this knowledge represents an important part of the cultural heritage of humankind, which it is taught to the students in the form of study materials. Hence, these curricula derive their name (curricula of studying materials) (Amira, 1990). This curriculum is based on the basis that the school curriculum includes a number of subjects, each of which contains facts and concepts consistent and harmonious in the scope of one specialty, as specialization is one of the departments of scientific research and to these theoretical materials began to add since the nineteenth century to the curriculum (practical), therefore, each subject has its own logic, as studying its facts reveals this logic which the learner absorbs and applies it, so every material has its structure, methods and fundamentals that are trained aside from the mind. Thus, the mind is organized such an organization that helps in dealing with different life problems, each material contributes to reveal the cover on one aspect of the world in which we live in, shedding the light on a certain angle of it, If the school curriculum includes the appropriate materials, this helps students to form a balanced view for this world. (Ali and Aboud. 2012)

B: Creative thinking: -

Creative thinking is one of the thinking different levels, as it is characterized by being complicated, from the premise that creativity means the possibility of the individual achieving something from something unfamiliar, he has the ability of turning the familiar into something unfamiliar, specialists in the field of education and psychology have provided several definitions of the concept "the creative thinking" that the first group who talked about it are (Newell, Shaw and Simon), where they defined it as: A high form of behavior that appears in solving problems. (Sa'ada, 2003)

Among the most important characteristics of creative thinking as follows:

A-Sensitivity for awareness of the gaps which are involved in different life situations.

B- The creator's view for the gaps in this way may not be shared by anyone around him.

C-There are valuable sentimental elements that are formed around feelings of desire and preferences.

D-Motivating elements refers to the direction due to the action.

Basing on the above, we can say that creative thinking is a process that results solutions about it, or ideas that derive from the individual's cognitive framework, whether in relation to the information he thinks, or to the information which is prevailing in the environment, as this aiming to the emergence of new ideas. (Ibrahim, 2005)

Most of the educational studies and scientific research confirm that creative thinking can be developed by the student through:

A- Styles that use experiment and scientific research.

B- Styles that use reliable scientific laboratories and references to reach to the truth.

C- Pay more attention to how the student gets the material than pay attention to the subject itself.

D- Attention to self-learning methods.

E- Using inquiry to generate ideas and knowledge (Howeidi, 2004).

However, we may find people asking about the importance of creativity among students, that the creativity of students is not more than (2%), therefore presenting special care for this number is wasting for effort, time and money, more useful than that is focusing on general intelligence and academic achievement. Therefore, the answer that creative preparations are existing for all people at different levels, that their development can be achieved through training individuals in creative skills. (Ibrahim, 2005)

Creative thinking skills:

A- Fluency skill: The ability to produce as many appropriate ideas, images and expressions as possible within a specific unit of time. Measures of ability of fluency take many forms, including the speed of thinking by giving words in a specific format, including the rapid classification of words in special categories, or classifying the ideas according to specific requirements. The importance of teaching fluency is that it helps individuals to move easily and easily from long-term memory to ideas related to the subject matter of research or study. Accordingly, the student will be able to generate multiple responses that flow quickly and are related to a subject (Sa'ada, 2003).

B. The Flexibility Skill: The ability to generate diverse ideas that are not usually the type of expected thoughts, directing or transforming the course of thinking with the changing of the exciting, or the requirements of the situation in the sense that if a person is asked to mention the largest number of different uses of something, then he moves his thinking from one use to another, from one idea into another.

C. The skill of originality: is the ability to produce new, distinct, unique ideas, shapes or images, that every new and appropriate style that achieves the purpose is in fact an original creative behavior, as the idea is new if it did not exist before, that is, no one thought about it before its owner. (Owais, 2003)

Theories that explain creativity:

A-Behavioral theory: Behaviorists see that human behavior is in its essence represents the formation of relationships or links between stimuli and responses, in light of this, the individual has the ability to implement a creative response based on the strengthening or frustration of his creative performances. (Abu Talib, 1995).

B. Psychoanalysis Theory: The owners of this theory see that creativity is the result of the interaction of three variables of personality (the ego, the superego, and the Him) so that the realization of creativity comes by suppressing the ego to highlight on the surface the contents of unconscious or pre-feeling, creative thinking according Freud opinion represents an escape from reality into a illusional life to express pent-up nodes and rejected unconscious content, also he sees that the creator is a person who refuses to grow and being mature in dealing with real life, preferring to continue to fantastically satisfy the contents of the subconscious soul using the exaltation. (Obaid, 2000)

Cognitive theory: The owners of this theory are concerned with the ways in which you perceive things, creativity according to this theory represents the methods of obtaining and merging information for the purpose of searching for more adequate solutions. Janet believes that experience when presented is easy and simple, which provides different opportunities for people to perform different mental processes, that can excite the capabilities of creative thinking and motivate them to manage their understanding and assimilation of experiences in individual creative ways that which suit their representations (Qatami and others, 1995).

D-Factorial theory: Spearman is a pioneer of factor theory; he is a pioneer of factorial analysis theory in creativity. As he explains creativity in the light of the general mental factor called (intelligence), He talks about creativity in the

light of intelligence as a general mental factor (perception of relationships and deriving belongings), as for Guildford, he sees that creativity is determined by the creative abilities that consist of (30) abilities. That is, it constitutes one sixth of the human mental abilities, from which the total is (180) mental ability. (Hewedy, 2004).

3 .Data analysis and discussion:

A-The students of the College of Engineering has obtained the first rank in the gauge of creative thinking due to the positive impact of the studying curricula to which students are undergone, as it consists of vocabulary of a mathematical nature, it requires logical thinking, which made the students 'thinking improve, increase and organize logically. This helped them to obtain correct answers on the gauge of creative thinking, which makes them superior to the research groups in terms of this feature. This is of course due to the effectiveness of the educational programs to which they are undergone, especially the curricula.

B-Students of the College of Science have gotten the second rank because they belong to the departments of physics and chemistry and they are undergoing to scientific and mathematical courses that develop the ability to think and develop intelligence, that success in it requires flexibility and thinking, accessing to understanding and assimilating those subjects, which made their intelligence and patterns of thinking, including creative thinking grow and increase more than students of the Faculty of Medicine.

C-We can find that medical college students are in the last position or rank, even though they have obtained the highest marks in the achievement test of the preparatory stage and have obtained the highest averages that qualified them to join the College of Medicine, however, the academic curricula that they underwent during their university studies did not help them in developing thinking patterns, as they are consisting of a group of subjects that requires from them a deaf memorization and remembering later, that during years of practicing this type of mental activity we find that their level of creative thinking has decreased in comparison with their counterparts in other scientific colleges.

4. The Results

First: Results that are related to the first goal:

The average score for students in the first creative thinking test was (114.54), with a standard deviation reached to (48.94), while the average score for students in the second creative thinking test was (120.4), with a standard deviation reached to (31.65), after using the T-test for two independent samples to find out the indication of the difference between the two applications of the test, it appeared that the difference was statistically indication at the level reached to (0.01), as the calculated T-value (3.48) which was higher than the tabular T-value (2.56). This indicates the superiority of students in creative thinking in the second application

Second: Results related to the second goal:

A- The average scores of medical school students in the first creative thinking test has reached to (111.12) with a standard deviation (45.78), while the average score of the students in the second creative thinking test was (101.1) with a standard deviation (65.34), after using the T-test for two independent samples to find out the indication of the difference between the two applications of the test, it appeared that the difference was statistically indicated at the level of significance (0.01) while the calculated T-value (4.22) which was higher than the tabular T-value at (2.56), this indicates the superiority of students in creative thinking in the first application.

B - The average score for students of the College of Engineering in the first creative thinking test was (101.3), with a standard deviation (48.4), while the average score for students in the second creative thinking test was (139.2) with a standard deviation (55.46), after using the T-test for two independent samples to know the indication of the difference between the two applications of the test, it appeared that the difference is statistically indicated at the level of significance (0.01), as the calculated T value was (4.22), which is higher than the tabular T value of (2.56), this indicates the superiority of students in creative thinking in the second application.

C- The average score for the students of the College of Science in the first creative thinking test was (114.6), with a standard deviation (55.34), while the average score for students in the second creative thinking test was (121) with a

standard deviation (55.22), after using the T-test for the two independent samples to know the indication of the difference between the two applications of the test, as it appeared that the difference is statistically indicated at the level of (0.01), as the calculated T value was (4.22), which is higher than the tabular T value (2.56), this indicates the superiority of students in creative thinking in the second application.

Third: Results that are related to the third goal:

After four years have passed, the creative thinking test has been applied upon the students, the research sample in the three colleges, to find out which groups were better in creative thinking, the researchers have used a mono-variance analysis, that they have reached to the following results:

Table (3): The calculated (F)value and the tabular for the variable of the creative thinking for the research groups after the students' graduation from colleges

College students	the calculated value of (F) for innovative thinking	Tabular (F) value	statistical significance at 0.05
(20) Medicine	16,44	2,53	Not- indicated
(20 Engineering			
(20) Sciences			

Returning to the previous table, we notice that there are statistically indicated differences, as the calculated (F) value (16,44) which is greater than the tabular of (2.53), so this means that they differ in this attribute which is measured by the test.

5.The References

1 -Ibrahim, Majdi Aziz, 2005. The educational curriculum and thinking education, the world of books for publishing, distribution and printing, Cairo, Egypt,

2 -Abu Talib, Saber and others 1995. Creativity and creative thinking. Publications of Al-Quds University, The Open, Amman, Jordan.

3- Sa'ada Jawdat and Ibrahim Abdullah, 2004: The Contemporary School Curriculum, Dar Al-Fikr, Amman.

4 -Ubaid, Majed Abdul Salam. 2000. Raising the Gifted and Talented, Dar Safa for Printing and Publishing, Amman - Jordan.

5- Ali Mohsen Attia and Aboud Saad Matar, 2012: Contemporary Trends in Curriculum Building, Modern Book Foundation, 1st Floor, Lebanon.

6- Amira, Ibrahim Bassiouni, 1991: the curriculum and its components, Dar Al-Maarif, 3rd floor, Egypt

7 -Awais, Afaf Ahmed 2003. The Psychology of Creativity in Children, Dar Al-Fikr for Printing and Publishing, Amman - Jordan, 1st edition.

8 -Katamy, Naifeh, et al. 1995. Creative thinking, Al-Quds Open University publications, Amman-Jordan

9-Mar'i, Tawfiq Ahmad and Al-Hailah, Muhammad Mahmoud, 2002: Modern educational curricula, concepts, elements, foundations and operations, Al-Maisarah House for Publishing, Distribution and Printing, 3rd edition, Amman, Jordan,

10-Huwaydi, Zaid 2004. Creativity, what it is - discovery - development, University Book House, Al Ain, UAE.

11-Cartter, V.Good (ed) dictionary of educatio (New York):Me graw hill book Co, 1973

12-Robert S.Zais,Carriculum prin ciple and foundations (New York),Harper and row,1976.