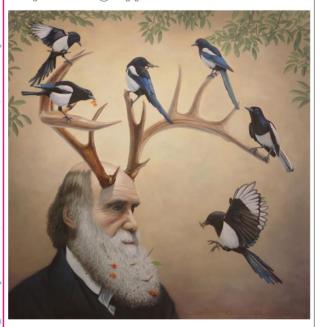# opción

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The Flexible Thinking and its Relationship to the Cognitive Motivation and the Social Interaction among University Students

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Abstract

The research aims to identify the relationship between flexible thinking, cognitive motivation and social interaction among university students. Therefore, a sample of (320) students from the morning study from the College of Education for Pure Sciences / Ibn Al-Haytham was used for the academic year (2018-2019). The use of three tools to achieve the requirements of the research: the test of flexible thinking prepared by (Ola Ahmed al-Jallad) (2016), the measure of cognitive motivation prepared by (Shaarawy, 2010). Using the statistical methods of unilateral and binary variance analysis and the Schiff equation, the results indicate that the university students have a good level of flexible thinking, cognitive motivation and social interaction.

El pensamiento flexible y su relación con la motivación cognitiva y la interacción social entre estudiantes universitarios

Resumen:

La investigación tiene como objetivo identificar la relación entre el pensamiento flexible, la motivación cognitiva y la interacción social entre estudiantes universitarios. Por lo tanto, una muestra de (320) estudiantes del estudio de la mañana de la Facultad de Educación de Ciencias Puras / Ibn Al-Haytham se utilizó para el año académico (2018-2019). El uso de tres herramientas para lograr los requisitos de la investigación: la prueba de pensamiento flexible preparada por (Ola Ahmed al-Jallad) (2016), la medida de la motivación cognitiva preparada por (Shaarawy, 2010). Utilizando los métodos estadísticos de análisis de varianza unilateral y binaria y la ecuación de Schiff, los resultados indican que los estudiantes universitarios tienen un buen nivel de pensamiento flexible, motivación cognitiva e interacción social.

Research problem :

Universities in general and colleges of education, especially in any of the countries responsible for building minds and the formation of distinctive human competencies and the ability to contribute to the construction of the future. Continuous development to catch up with the progress of the times in the development of university education for developed countries (Hussein, 2006: 18), so the modern trend requires attention and attention to this national wealth and development with the needs of society and keep pace with modernity and scientific progress In the world (Abdul Saheb and Suzanne, 2014).

Within the limits of the researchers' knowledge, there is a shortage of studies that dealt with these three variables together.

The problem of research is summarized in the following question:

What is the level of flexible thinking among university students and its relationship to cognitive motivation and social interaction?

research importance :

Universities are one of the institutions that contribute to the formation of the individual and society and the formation of features in the present and orientation through scientific progress and intellectual development and

encourage creative energies to flower (Ibrahim, 2001: 316). The university system is responsible for providing the sectors of society with the cadres that lead and lead it. The university system is unique from other systems because it is a woman that reflects the life of the Synod and what it interacts with (Al-Mikhlafi, 2009: 9).

1. The importance of the research is to address a topic that links the three variables (flexible thinking, cognitive motivation and social interaction) and looking for a relationship between them.

2. The results of this research may be useful to those who are based on educational science (teachers, managers and supervisors), as it helps them in providing a suitable environment for flexible thinking.

3. The present research dealt with the university students segment which is an important segment through its active role in building and developing societies.

4. This research is useful for new researchers to be a reference for them.

research aims :

1. Identify the level of flexible thinking among students of the Faculty of Education for Pure Sciences / Ibn Al-Haytham

2. Identify the differences in flexible thinking among students of the Faculty of Education for Pure Sciences / Ibn Al-Haytham

3. Identify the level of cognitive motivation among students of the College of Education for Pure Sciences / Ibn Al-Haytham.

4. Identify the differences in the level of cognitive motivation among college students according to sex variables, the study stage.

5. Identify the level of social interaction among the college students according to the variables (sex, grade).

6. Identify the differences in social interaction among students of the College of Education for Pure Sciences Ibn Al-Haytham according to the variables (sex and stage)

7. Identify the correlation between flexible thinking, cognitive motivation and social interaction

search limits :

1. Students of grades (I, II, III and IV) morning studies at the Faculty of Education for Pure Sciences / Ibn Al-Haytham Department (Chemistry, Physics) for the academic year 2018 - 2019.

Identification of terms: -

First: Flexible Thinking: - Arafa (Katsovs and McNamara, 2010):

"The ability of a person to anticipate, predict and respond to situations that

require a shift or change in perspective or new ideas." (Aidi, 2015: 537).

Procedural Definition:

Procedurally known to the degree to which the respondent obtained by answering the paragraphs of the test flexible thinking adopted in the research.

Cognitive Motivation

He defined him (Mahmoud, 2004) as: "Seeking knowledge according to exploration, discovery, pioneering, willingness to read and ask questions.

And defined (Mashharawi, 2010): "The tendency of the individual to pay attention to enjoy and enjoy it" (Mashharawi, 2010: 13)

Procedural Definition: It is procedurally defined to the extent that the respondent gets from his answer to the paragraphs of the cognitive motivation measure adopted in the research

Third: Social Interaction

He defined it (El-Shennawy et al., 2001) as: "The set of processes exchanged between two social parties in a particular social position or medium so that the behavior of each of them is alert to the behavior of the other party (Al-Shennawi et al., 2001: 66).

Procedural definition: Procedurally defined by the degree to which the respondent gets from his response to the paragraphs of the measure of social interaction adopted in the research.

previous studies :

- (Al-Aydi study, 2015):

The research aims to measure the flexible thinking among students of the College of Education / University of Wasit, the research was conducted in Iraq, the sample consisted of (60) students from the five departments of the College of Education, the researcher adopted the descriptive method, and a number of statistical methods were used, including the T test for one sample, The results showed that students of the Faculty of Education enjoyed a high degree of flexible thinking. (Al-Aydi, 2015: ??)

- (Kubaisi study, 2016):

The study was conducted in Iraq, the sample consisted of (48) students in the second grade intermediate distributed over two divisions, the researcher adopted the semi-experimental method, and a number of Statistical means. The Pearson correlation coefficient and the arithmetic mean, the results showed the difficulty of applying the strategy because it takes longer time and students get used to it and also showed a general weakness in the flexibility of thinking in the sample. (Kubaisi, 2016: 267-268)

Axis II: Studies related to cognitive motivation:

1) (Al-Mashharawi, 2010): The study aimed to identify the relationship between cognitive motivation and classroom environment and reflective thinking among high school students. The study was conducted in Palestine and Gaza. The sample reached (485) male and female students. Arithmetic mean, standard deviation and Pearson correlation coefficient, the results showed a good level of cognitive motivation and reflective thinking among high school students with correlation between study variables.
(Al-Mashharawi, 2010: 154)
2) Study (Jubouri, 2014):
The study aimed to identify the effectiveness of the harvest strategy for serious creativity in the achievement and cognitive motivation among students of practical organic chemistry at the College of Education for Pure Sciences / Ibn al-Haytham The study was conducted in Iraq, the sample consisted of (26) male and female students of the Department of Chemistry, and the second grade has been The adoption of a number of statistical methods, including (Man and Whitney) for the intermediate samples and the results showed the effectiveness of the strategy of serious innovation (harvest) in the achievement and cognitive motivation of students (Jabouri, 2014: a-c).
Theme III: Studies related to social interaction: -
1) Study (Tamimi, 2006): -
The study aimed to identify the level of biological interaction and the location of control among university students. The study was conducted in Iraq. The sample consisted of (800) students from Mustansiriya University. A number of statistical methods were adopted, including Pearson correlation coefficient and T-test for two independent samples. Research The sample has a high level of social interaction (Tamimi, 2006: 27-120).

2) Study (Ihsan, 2015): -
The study aimed to identify the level of social interaction and emotional sensitivity and its relationship with moral concern among university students. The study was conducted in Iraq. The research sample consisted of (400) male and female students from 6 scientific and humanitarian faculties. A number of statistical methods were adopted such as T-test for two independent samples. The results showed a high level of social interaction among university students with a correlation between the three research variables (Ihsan, 2015: C - i).
Theory Background: -
Thinking is one of the qualities that characterized the Almighty God on the factions of creatures, and thinking is where there is a human being, since

man has been able to harness a lot of things to his advantage using thinking, and is characterized by flexible thinking ability to find alternatives and options subject to solutions to the problem It is characterized by its ability to adapt to different situations (Katami and Mahmoud, 2005: 282). Thinking is mental processes and skills that can develop in an individual, Piaget believes that the individual acquires new types of thinking through experience and interaction with the environment (Absi, 2009: 10).

The smart nations are working hard to develop the human mind to think and innovate and develop the existing and innovate new, minds are the real wealth in our time and investment leads to progress always, and the ability to think and creativity comes as a result of the use of flexibility in thinking and the presence of cognitive motivation in learning and this may happen individually or collectively Through the interaction of the individual with his group in order to reach better intellectual results.

Flexible thinking:

Flexible thinking is one of the most important factors in human life. It helps the individual to overcome difficulties and avoid mistakes and solve different problems. Because of the flexibility of thinking, one can control things and move them in their favor. Helps us to benefit from new ideas and positive interaction with the variables of adapting to the surrounding conditions and dealing with problems, and flexible thinking is at the top of mental activity as man can employ the majority of other mental processes if not nearly all, ie Address all the corresponding problems to find the appropriate solutions (Abdullah, 1984) for (Aydi, 2015: 534).

Rules of Flexible Thinking:

The rules of flexible thinking are as follows:

1. Focus on the diversity of means of ends.

2. If the result does not work Fiji change the way.

3. Flexible thinkers are the most controlling and influential. (Al-Fulah, 2008) (Al-Abdi, 2015: 541).

Cognitive Motivation

Motivation is a driving force that pushes individuals to practice a certain behavior in order to reach a specific goal.It is one of the forces that influence the cognitive mental processes of the individual.It has a relative formula that varies according to different individuals, goals and importance, and that cognitive mental activity is influenced by the individual's motives. The basic process of learning, which depends on achieving the goal of the process of learning and education (Mashhadani, 2010: 9).

Functions of motivation: - Motivation motivate and activate human behavior to reach the extent of mastery, especially if the motives encourage learning, and direct the behavior towards achieving the goal, in the sense that motivation is optional, and stands to maintain the continuity of behavior as long as the need exists.

* Stimulate the learning motivation of the learner:

Stimulating the motivation of the learner of the important and difficult things can be used a number of methods to provoke the motivation of the learner such as arousing curiosity and benefit from current events and different events, and the use of different stimuli such as teaching aids, and ask thoughtful and problematic questions for learners and invite them to respond to these Questions or finding appropriate solutions to the problems raised, contributes to the motivation of the learner. (Al-Huwaidi, 2012: 101)

* Theories that dealt with cognitive motivation: -

Scientists have presented many theories that differ according to the psychology to which they belong.

The researchers believe that cognitive theory views individuals that they do not respond to external and internal events and stimuli automatically, as individuals reach the state of cognitive compatibility by focusing on cognitive processes, and this comes from the desire of the individual to possess new experiences.

As for the behavioral theory, it views the motives that arise in individuals through external and internal influences, and that the experience of the individual shows behavior and that the results of behavior are the motivation as the researchers believe that the theory of humanity came in contrast to the theory of psychological analysis, which believes that the origins of behavior is instincts (Life and death), object to the behavioral school, which believes that behavior is driven by several factors, including deprivation and reinforcement.

Third: Social Interaction

The uses of social interaction are many and varied. It is used as a process because it involves a kind of activity that is raised by certain needs in humans, including the need for love, appreciation and success, which is a case because it is used to refer to the end result of achieving these needs in humans. One of the relatively constant preparations is the distinctive responses of the individual and his social behavior, which are called reactive features, which is apparent because it includes verbal expression and movements, which is intrinsic because it involves the basic mental pro-

cesses such as cognition, remembering, thinking and imagining (Ghneim, 1973). Hassan 2015: 16).

Social interaction is based on four foundations (communication, expectation and perception, and significant symbols).

Forms of social interaction:

(A) Direct social interaction: Studies show two forms of direct interaction between two persons or groups of people face to face, such as the teacher to talk with students or parents with children (Wahid, 2001: 223).

(B) Indirect social interaction: It occurs through an intermediary such as telephone, message, e-mail, etc. (Al-Tamimi, 2006: 46).

Theories dealing with social interaction:

1) Bells Theory (1950): Interaction within the framework of this theory refers to the apparent behavior of individuals in a particular situation, and within the framework of the small group, the situation consists of persons who are directed to the behavior.

2) Behavioral theory (Skinner): The interaction within this theory is the mutual response between individuals in a social environment so that the behavior of the person is formed by the other behavior calls for the answer (Wahid, 2001: 232).

3) Simpson's theory: where the individual tends to change his judgments in unbalanced situations that are more tense than in parallel situations, where individuals tend to make similar judgments those who love and contrary to those who do not like (Maaytah, 2010) for (Ihsan, 2015: 28).

Chapter III: Research Methodology and Procedures

First: Research Methodology:

The researchers used the descriptive approach in the relational studies. (Obeidat et al., 1998: 271).

Second: Research Procedures:

Research community: The current research community is represented by students of the College of Education for Pure Sciences - Ibn Al-Haytham / University of Baghdad from the scientific disciplines and from both sexes for the morning study and for the academic year (2018-2019), and the two researchers conducted an inventory of the vocabulary of the study population, it turned out that the total number of students (2345) students A total of 1006 male students and 1343 female students.

Research sample: (Nanli, 1978) that the ratio of the number of sample to the number of paragraphs of the scale should not be less than the ratio (5: 1) in order to reduce the error of chance in the statistical analysis process

(Nunnly, 1978, p: 262), the sample reached The application to extract the results of the current research (280) students from the College of Education for Pure Sciences _ Ibn al-Haytham / University of Baghdad, they were selected by random stratified method proportional distribution of (Department of Chemistry and Physics), and by (70) students from each stage and by (35) Males, (35) females, and table (1) illustrates this.

Table (1)

Distribution of basic research sample by sex and grade variables

total	Class 4		Class 3		Class2					Class 1			six College of Education for Pure Sciences - Ibn Al Haytham	s
									t	f	m		
140	5	6	9	5	7	8	5	6	19	35	18	17	chemistry department	
140	5	9	6	5	8	7	5	9	16	35	17	18	physics department	
280	0	5	5	0	5	5	0	5	35	70	35	35	Total	

Third: Research Tools: In order to verify the objectives of the current research, the researchers:

First: Flexible Thinking Test

• Test description: The test of flexible thinking consists of (32) paragraphs, and each paragraph has three alternatives (A, B, C), and weights (one, zero) and is given one score when the correct answer, and zero for the wrong answer, and reached the highest score for the test (32 The hypothetical mean of the test was (16).

• Psychometric properties of instruments:

• Test Validity: The test is valid when it measures what is prepared to measure (Zobaie et al., 1981, 39) The researchers have verified the validity of the test through, apparent honesty.

• Virtual validity (Face Validity): This kind of honesty has been achieved by presenting the test to (10) arbitrators specialized in education and psychology, and asked them to give their views on the validity of the paragraphs in the test and to know the extent of clarity and understandable All the paragraphs were maintained by agreement Arbitrators (100%) agree that paragraphs are valid for flexible thinking testing.

• Reliability Test: To calculate the stability, the researchers applied the test and re-applied it to a sample of (50) students, selected by random strati-

fied method of four stages in the College of Education for Pure Sciences / Ibn Al-Haytham / University of Baghdad, and a time interval of (The researchers used the Koder Richardson equation (KR20), because it is more common in estimating stability, measuring the internal consistency of paragraphs, and is used in tests that give a score of one for the correct answer, and zero for the wrong answer (olive, 1999, 636) where the coefficient of stability (0.85).

• Exploratory application: The researchers sought to conduct this application in order to identify the clarity of the instructions of the scale and its paragraphs and alternatives, as well as to detect unclear paragraphs of the members of the research sample and try to modify and calculate the time taken to answer the scale and to achieve this the researchers applied the scale to a sample of (30) male and female students, randomly selected from the Department of Computing at the College of Education for Pure Sciences / Ibn Al-Haytham / University of Baghdad, and distributed equally to the sexes (males and females) and of the four grades, it turned out that all paragraphs and instructions were clear and understandable to respondents, and that Metos Approximate time to answer on the scale was 20 minutes.

• Second: the cognitive motivation measure:

• Description of the cognitive motivation measure: The measure consists of (44) paragraphs, five alternatives (applicable to a very large, applied to a large degree, applied to a medium degree, applicable to a few degrees, do not apply to) and weights, respectively (5, 4, 3) 2, 1, where the highest score of the scale (240) and the lowest score (44), and the hypothetical mean of the scale (132).

Psychometric characteristics of the scale:

• Validity Of the Scale): Honesty is an important characteristic that must be considered in the construction of psychological scales, and the honest measure is the measure that achieves the function for which it was well developed (Stanly & Hopkins, 1972p: 101), it is the honest test that measures the attribute that It is intended to be measured and does not measure others. (Rajeh, 1976, 392)

• Virtual honesty: After the adoption of the scale and adopted the theoretical definition of the scale and identify alternatives to answer, the researchers presented the paragraphs of cognitive motivation measure to a group of arbitrators in education and psychology at the University of Baghdad, and the number (10) arbitrators, and asked them to start their views on the validity Paragraphs in the measurement of cognitive motivation and to know the extent of clarity of the paragraphs in terms of content and

language and their responses appeared to be clear and understandable and all paragraphs were retained by the agreement of all arbitrators (100%) that the paragraphs are valid to measure cognitive motivation.

First: Re-test method: Stability was calculated by applying the cognitive impulse scale to a sample of (50) male and female students and re-applying it after two weeks from the first application after which the two researchers used Pearson correlation coefficient between the two application scores to find the relationship between them. (0.78).

Second: Alpha Cronbach for internal consistency (Alpha Cronbach Method): It is one of the methods of internal consistency, or homogeneity in the calculation of stability coefficients, and the idea of this method to calculate the correlation between the degrees of stability sample on all paragraphs of the scale and illustrates the coefficient of stability extracted in this way the consistency of the individual performance of a paragraph For another, ie, the internal homogeneity between the paragraphs of the scale (Cronbach, 1951, p: 298), and to ensure the stability of the scale in this way, the researchers used (100) forms of the sample stability only, and the value of the coefficient of stability of the scale of cognitive impulse (0.76)) Which is a high degree of stability.

• Method of correction of cognitive motivation scale: In order to obtain the total score of the scale, from the respondent's response to the paragraphs of the scale, five alternatives were identified in front of each paragraph (applicable to a very large, apply to a large degree, apply to a medium degree, apply to a small degree, It does not apply to (and weights, respectively, 5, 4, 3, 2, 1), as the total score of the scale was calculated by summing the respondent's scores on the paragraphs of the scale, the highest score was 240 and the lowest score was 44.

• Exploratory application: The researchers sought to conduct this application in order to identify the clarity of the instructions of the scale and its paragraphs and alternatives, as well as to detect unclear paragraphs of the members of the research sample and try to modify and calculate the time taken to answer the scale and to achieve this the researchers applied the scale to a sample of (36) male and female students, randomly selected from the Department of Computing at the College of Education for Pure Sciences / Ibn Al-Haytham / University of Baghdad, and distributed equally on the sexes (males and females) Of the four grades, it turned out that all paragraphs and instructions were clear and understandable to respondents, and that Meto It Approximate time to answer on the scale was 15 minutes.

I. Description of the Social Interaction Scale: The Social Interaction Scale

is composed of (40) clauses to be answered (it always applies to me, often applies to me, sometimes applies to me, does not apply to me rarely, never applies to me), with the highest degree of interaction scale. After reading each paragraph of the scale, the examined individual is asked to choose one of the five alternatives, and weights, respectively (5, 4, 3, 2, 1). The scale is 120 degrees.

Psychometric characteristics of the scale:

• Scale Validity: Scale validity is a necessary and required characteristics in the construction of psychological scales, honest scale is the valid measure to measure the attribute that was developed for measurement (Issawi, 1999: 254). Two types of honesty have been found for the current scale.

• Virtual validity: Face Validity: reached through a specialized judgment on the degree of measurement of the scale of the measured feature (Odeh, 1993: 370). Accordingly, the researcher presented the scale to (10) arbitrators specialized in education and psychology to verify its validity in measuring (social interaction) and its suitability for the sample under study. The percentage was adopted, where the percentage reached (80%) and the arbitrators agreed to delete only one paragraph. Being duplicate, after the agreement of the arbitrators and less than (80%) and thus became the number of final paragraphs (40) paragraph.

Reliability: Consistency represents consistency in the measurement of a feature or phenomenon prepared for measurement. It is a necessary indicator of the objective measure along with honesty (Melhem, 2000: 248-273). If an individual obtains the same or similar score in the same test or sets of equivalent questions on different occasions, we would describe the test as highly Persistence (Forward et al., 1990: 121). Stability was extracted in two ways:

• Testing and retesting: This method is based on applying the measurement tool twice to a sample of the students themselves over a suitable time period (FERKSON, 1991: 527). The idea of calculating the coefficient of stability according to this method is based on the calculation of the correlation coefficient between the scores of individuals on the test and its re-application after a period of time after the initial application (Sayyid, 1979: 161). In order to verify the stability in this way, the test was re-applied to the students of the Department of Chemistry at the College of Education for Pure Sciences / Ibn Al-Haytham, and the sample consisted of (50) male and female students, (25) males, (25) females, and two weeks (14) days after The first app for testing. The Pearson correlation coefficient between the scores in the two applications was calculated, where the stability ratio was 0.81.

B: Variance analysis using the Alpha-Cronbach equation: is the method of calculating the correlation between two random samples of vocabulary derived from a comprehensive range of vocabulary representing the vocabulary of each sample (Allam, 2000: 166). Stability of the Alfacronbach method (0.83).

• The method of correction of the social interaction scale: The social interaction scale consists of (40) clauses to be answered (always apply, often apply, sometimes apply, not rarely, never apply), and weights, respectively (5, (4, 3, 2, 1), with the highest score for the social interaction scale (200) and the lowest score (40). After reading each paragraph of the scale, the subject is asked to choose one of five alternatives.

• Exploratory research sample: - For the purpose of ascertaining the clarity of the paragraphs of the Social Interaction Scale, the clarity of its instructions, and the calculation of the response time, it was applied to a sample of (40) male and female students (20) males, (20) females, from the Department of Mathematics in the Faculty of Education for Pure Sciences. Ibn al-Haytham / University of Baghdad, and took time to complete the scale (15) minutes, and found that the paragraphs of the test and instructions are understandable and clear, and this reconnaissance procedure was first confirmed the validity of the scale of social interaction.

• The final application of research tools: Research tools have been applied to the basic research sample of (280) students equally and on four stages of study, the application started from 1/12/2018, until 30/1/2019.

Chapter Four: Results Presented, Interpreted and Discussed

First Objective: Recognize flexible thinking among university students.

To achieve this goal, the researchers applied the Flexible Thinking Scale to the research sample of (140) students. After processing the data obtained, the mean was (18,0714) and the standard deviation (3,53938), while the hypothetical mean of the scale (16), After testing the difference between the two averages with the test (t, test) for one sample, the calculated value was (6,925), which is greater than the tabular T value (1,96) at the level of (0.05) and the degree of freedom (139), It is clear that the difference between the two averages is statistically significant. This means that the students of the university have flexible thinking. That.

Table (1)

Flexible thinking among university students

Significance		* T VALUE		Hypothetical mean	standard deviation	SMA	No.	variable
function	TABLE	CALCULATE						
	1.96	6.925		16	3.53938	18.0714	140	Flexible thinking

* T-tab value is (1.96) at the level of significance (0.05) and the degree of freedom (139).

Second Objective: Identify the cognitive motivation among university students.

To achieve this goal, the researcher applied the cognitive impulse scale to the sample of (140) male and female students. After processing the data obtained, the mean was (156,2214) and the standard deviation (22,17266), while the hypothetical mean of the scale (After testing the difference between the two averages with one test sample, the calculated value was (12,925) which is greater than the tabular T value (1,96) at the level of (0.05) and the degree of freedom (139). It is clear that the difference between the two averages is statistically significant. Illustrates it.

Table (2)

Cognitive motivation among university students

Significance		* T VALUE		Hypothetical mean	standard deviation	SMA	No.	variable
function	TABLE	CALCULATE						
	1.96	12.925		120	22.17266	156.2214	140	Flexible thinking

* T-tab value is (1.96) at the level of significance (0.05) and the degree of freedom (139).

Third Objective: To identify the level of social interaction among university students.

To achieve this goal, the researcher applied the social interaction scale to the research sample of (140) male and female students. After processing the data obtained, the mean was 140,2571 and the standard deviation was 22,33891, while the hypothetical mean of the scale was (After the test of the difference between the two averages with the test (t, test) for one sample, the calculated value was (10,730), which is greater than the tabular T value (1,96) at the level of (0.05) and the degree of freedom (139), It is clear that the difference between the two averages is statistically significant. This means that the students of the university have social interaction. S with a study (Ihsan 2015) and Table 3 illustrates this.

Table (3)

Social interaction among university students

Significance function		* T VALUE		Hypothetical mean	standard deviation	SMA	No.	variable
	TABLE	CALCULATE						
	1.96	10.730		120	22.33891	140.2571	140	Flexible thinking

* T-tab value is (1.96) at the level of significance (0.05) and the degree of freedom (139).

Fourth Objective: Identify the differences in flexible thinking according to gender and grade variable among university students.

In order to identify the significance of statistical differences between males and females in flexible thinking, the two researchers showed no statistically significant differences at the level (0.05) according to the sex variable, as well as according to Variable row The researchers explain the result. Table 4 illustrates this.

Table (4)

Analyze binary variance to see differences in flexible thinking according to gender and grade variables

Significance	Value t	Average square	Degree of free	Total square	Source of Contrast
no a function	0,037	0,477	1	0,477	Gender
no a function	0,827	10,697	3	32,092	Class
no a function	0,026	0,338	3	1,015	* Sex grade
		12,935	132	1707,422	The error
			139	1741,286	Total

* Tabular value is equal to (3.84) at the level of significance (0.05) and the degree of freedom (132.1)
* Tabular value is equal to (2.60) at the level of significance (0.05) and the degree of freedom (132.3)

Fifth Objective: Identify the differences in cognitive motivation according to gender and grade variable among university students.

The researchers used binary variance analysis to find out the differences in cognitive motivation according to sex variables, and Shivieh test for dimensional comparisons of the grade variable, and in order to identify the significance of statistical differences between males and females in cognitive motivation, the result showed that there are no statistically significant differences at the level (0.05) Between males and females, and Table 5 illustrates this.

Table (5)

Analysis of binary variance to find out the differences in cognitive motivation
according to sex and grade variables

Significance	Value t	Average square	Degree of free	Total square	Source of Contrast
no function a	0,902	414,514	1	414,514	Gender
no function a	4,433	2036,463	3	6109,388	Class
no function a	0,903	414,698	3	1244,095	* Sex grade
		459,357	132	60635,105	The error
			139	68336,136	Total

* Tabular value is equal to (3.84) at the level of significance (0.05) and the
degree of freedom (132.1)
* Tabular value is equal to (2.60) at the level of significance (0.05) and the
degree of freedom (132.3)
While there is one important comparison is the comparison No. (5) and
using the test Cheivip comparisons of dimensional, there are differences of
statistical significance at the level (0.05) according to the variable variable
(second and fourth) only and for the fourth grade, because their average of
(166,2857) is greater Of the average of the second row of (148,4000), while
there are no statistically significant differences according to the rest of the
rows (I and II) as well as (I and III), (I and IV), (and II and III), (and III and
IV). Table 6 illustrates this.

Table (6)

CHEVY TEST (Cognitive Motivation)

Significance level (0,05)	VALUE SH	The difference between the two averages	SMA	No.	Binary comparisons for grade	Comparison number
			157,0571	35	the first	1
Is a function	14,308	8,6571	148,4000	35	The second	
	14,308	3,9143	157,0571	35	the first	2
Is a function			153,1429	35	the third	
	14,308	9,2286	157,0571	35	the first	3
Is a function			166,2857	35	the fourth	
	14,308	4,7429	148,4000	35	The second	4
Is a function			153,1429	35	the third	
	14,308	17,8857	148,4000	35	The second	5
Function and in favor of the fourth row			166,2857	35	the fourth	
	14,308	13,1429	153,1429	35	the third	6
			166,2857	35	the fourth	

Sixth Objective: Identify the differences in social interaction according to gender and grade variable among university students

The researchers used binary variance analysis to find out the differences in social interaction according to the sex and grade variables, in order to identify the significance of the statistical differences of sex and grade in the social interaction. , Greater than the average adult female (135,0714), at the level of significance (0.05) and table (7) shows this.

Table (7)

Analyze binary variance to see differences in social interaction according to gender
and grade variables

Significance	Value t	Average square	Degree of free	Total square	Source of Contrast
no a function	9,176	3699,415	1	3699,415	Gender
no a function	7,525	3033,903	3	9101,709	Class
no a function	2,530	1020,129	3	3060,387	* Sex grade
		403,175	132	53219,056	The error
			139	69364,743	Total

* Tabular value is equal to (3.84) at the level of significance (0.05) and the
degree of freedom (132.1)
* Tabular value is equal to (2.60) at the level of significance (0.05) and the
degree of freedom (132.3)
While the differences showed a statistically significant variable of the row
at the level (0.05), and using the test Shivip dimensional comparisons ap-
peared differences in the row variable, and for the benefit of the row (first
and fourth), and for the benefit of the average Olan (148) greater than the
average of the fourth row of 129.20 As well as for grade (second and fourth)
and in favor of the second row, because their average (148,2571) 'greater
than the average of the fourth row of (129.20), as shown in paragraphs
(3.5), and table (8) shows this.

Table (8)

CHIFF (Social Interaction) Test

Significance level (0,05)	VALUE SH	The difference between the two averages	SMA	No.	Binary comparisons for grade	Comparison number
			148	35	the first	1
NO A FUNCTION	13,405	0,2571	148,2571	35	The second	
NO A FUNCTION	13,405	12,4286	148	35	the first	2
			135,5714	35	the third	
FUNCTION	13,405	18,8000	148	35	the first	3
			129,20	35	the fourth	
NO AFUNCTION	13,405	12,405	148,2571	35	The second	4
			135,5714	35	the third	
FUNCTION	13,405	19,0571	148,2571	35	The second	5
			129,20	35	the fourth	
NO A FUNCTION	13,405	6,3714	135,5714	35	the third	6
			129,20	35	the fourth	

Goal 7: Identify the contribution of the two independent variables of cognitive motivation and social interaction to the overall variance of the dependent variable (flexible thinking):

To achieve this goal on the sample of (140) male and female students, multiple regression analysis of type (inter) and through the correlation coefficient matrix was used to identify the two independent variables of

cognitive motivation and social interaction contributing to the dependent variable (flexible thinking), and using a correlation coefficient. Pearson was all a statistical function and Table (9) illustrates this.

Table (9)

Pearson correlation coefficient to see the relationship between search variables

Pearson correlation coefficient between ((flexible thinking	The two independent variables
0,463	Cognitive motivation
0,545	Social interaction

To find out the coefficient of multiple correlation between the independent variables (cognitive motivation, social interaction) and the dependent variable (flexible thinking), it was found that the coefficient of multiple correlation was (0,600), what is the determinant of the coefficient, i.e., the ratio of the explained variance to (0.360) any statistically significant at 0,001). Indicates the value of the coefficient of determination R on the quality of the regression analysis model in the prediction and indicates that the two independent variables (cognitive motivation and social interaction), explain (36%) of the total variance of degrees of flexible thinking, and subject the coefficient of determination to the regression analysis, the ratio was Fafa is a function at the level (0,001) at the degrees of freedom (137.2) and table (10) illustrates this.

Table 10

Percentage of multiple regression analysis of the scores of the two independent variables by the dependent variable

Significance	Value t		Average square	Degree of free	Total square	Source of Contrast
	table	calculate				
			313,413	2	626,826	Regression
0,001	3	38,528	8,135	137	1114,460	Residual
				139	1741,286	Total

Table 10 shows that the computed value of the regression analysis is greater than the tabular value of 3.00 at the level of 0.001 and the degrees of freedom (137.2). This indicates that both cognitive motivation and social interaction have an effect. In the overall variance of the dependent variable (flexible thinking), Table 11 illustrates this.

Table (11)

The values of the beta coefficient and the standard error of the two independent variables in the overall variance of the dependent variable

Significance		Value t calculate	Beta modulus	Standard error	Beta Coefficient ((B	variable
function	Function	5,214	-------	1,795	9,360	Fixed limit
function	Function	3,672	0,986	0,043	0,157	Cognitive motivation
function	Function	5,579	1,499	0,043	0,237	Social interaction

The above table shows that both cognitive impulse and social interaction contribute to the dependent variable of flexible thinking, because the calculated T values are greater than the tabular T value of 1,96 at the significance level (0.05). Student socialization leads to students enjoying flexible thinking and vice versa.

Conclusions In the light of the findings of the researchers in the results of the current research we can conclude the following:

1. University students have flexible thinking.

2 - The university students have a cognitive motive.

3. University students have social interaction.

4 - There is no effect of flexible thinking according to sex variables, grade among university students.

5 - There is no effect of cognitive motivation according to gender variable among university students.

6 - There is no impact of social interaction on the variable sex and

grade among university students.

7. It was found that the variable of cognitive motivation and social interaction among students leads to students enjoying flexible thinking and vice versa.

8. Recommendations In the light of the results of the research, the researchers recommend:

1- Emphasis on enriching university courses with vocabulary that motivates students to think flexibly.

2 - Using various methods to stimulate the cognitive motivation towards learning among students, such as moral rewards.

3 - Raise the level of future teachers (students of the Faculty of Education) in all respects in order to increase the appreciation of the community for the teaching profession and thus the social interaction of this sample with the community.

Suggestions The researchers propose the following:

- Conducting research similar to the current research on other samples such as high school students.

- Study flexible thinking and its relationship to other variables such as methods of thinking, life skills, moral anxiety.

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