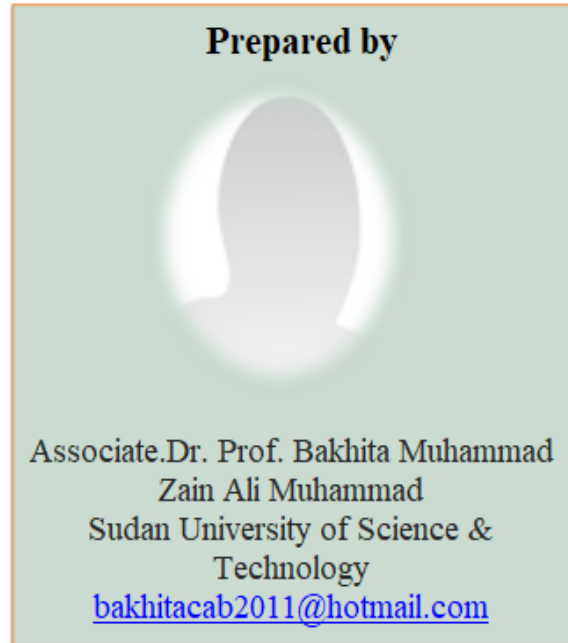


**Mental skills and their relationship to creative thinking  
(A field study for students of the Faculty of Commerce at Sudan University of  
Science and Technology)**

المهارات العقلية وعلاقتها بالتفكير الإبداعي  
(دراسة ميدانية لطلبة كلية التجارة بجامعة السودان للعلوم والتكنولوجيا)



## Abstract

The aim of this study is to identify the mental skills and their relationship to creative thinking among students of the Faculty of Commerce at Sudan University of Science and Technology (2020-2021). To achieve this goal, the researcher followed the descriptive approach, and the research sample consisted of (50) male and female students from the second and fourth years students, at the Faculty of Commerce, who were chosen by the random method. The Creative Thinking Scale (Torrance) was applied, as well as the mental skills questionnaire prepared by the researcher, and the data were analyzed using the statistical packages for social sciences (SPSS) by applying the following statistical treatments: T-test, Pearson test, and Mann Whitney test. The results were the following: Business administration students' mental skills and creative thinking came to a low degree. There is a direct, statistically significant relationship between the mental skills and creative thinking of students of business studies in the Department of Business Administration. There are no statistically significant differences in the mental abilities of business administration students according to the academic level (second/fourth). The researcher suggested some recommendations, the most important of which is the development of students' mental skills to strengthen their motivation for innovation and creativity in their field of study and to have a strong incentive to spread it in their field of work after graduation.

**Keywords:** creative thinking, mental skills, students.

## Introduction

Thinking and thought are divine blessings for human beings. Thinking represents the most complex type of human behavior, and it is a mental and cognitive activity directed toward solving a problem and making a decision. Creative thinking is one of the important psychological factors that play a superior and vital role in creating excellence and creativity in the academic field in terms of physical and mental readiness. Guilford believes that creativity is determined by mental abilities, which consist of (30) abilities. That is, it constitutes one-sixth of the human mental abilities, which total of 180 mental abilities.

Gardner emphasized that innovators give more responses in stimuli-rich environments. Janet believes that experience, when presented easily and simplified, provides opportunities for people to perform different mental operations, which can stimulate creative thinking abilities and motivate them to manage their understanding and assimilation of experiences in individual creative ways that fit their representations (Haider Abdel-Reza Trad, 2012, p. 233).

(Badr, 2005: 75) indicated that preparing individuals to face what they will encounter in the future is not limited to providing them with the most amount of information and knowledge,

but rather by giving them the opportunity to realize their creative abilities in finding many solutions to the problems they face. Therefore, focusing on the development of thinking skills has become one of the basic areas of learning that educational programs of different specializations seek to deal with to help the learner acquire them. Given that the development of the learner's thinking skills enables him/her to deal with information within the study subject in a way that gives this information new dimensions. (Abdul Hamid, 2010: 182).

Proceeding from the importance of this type of thinking as it targets the human industry, all countries in the world have taken care of its development through education processes in general and education curricula in different stages in particular. The university stage is considered one of the most important educational stages. Through this stage, young people can be well prepared by developing their thinking and creative minds.

### **The statement of the problem**

From the foregoing, the statement of the problem emerged in the following questions:

1. What is the general characteristic of mental skills and creative thinking among students of the Faculty of Commerce at Al-Neelain University?
2. What is the type of relationship in mental skills and creative thinking between students of the second and fourth levels among the sample members?
3. Are there differences in the mental abilities of business administration students according to the academic level (second/fourth)?

### **The importance of the research**

The importance of the research arises from the following two aspects:

#### Theoretical Aspect

1. The importance of the research is reflected in its ability to shed light on the nature of the relationship between creative thinking and mental skills as one of the most important aspects whose integration leads the student to achieve excellence.
2. The importance of revealing creative students as a real wealth for society and getting to know them helps in achieving the maximum degree of development.

#### Practical aspect

1. Paying attention to creative abilities reduces students' anxiety in the future, positively affects their academic achievement, strengthens their self-confidence, and makes them more efficient in solving future problems.

2. It contributes to other studies related to the development of creative thinking among students.

## **Research Objectives**

1. Determining the degree of the general feature of mental skills and creative thinking among students of the Faculty of Commerce at Al-Neelain University.
2. Revealing the type of relationship between mental skills and creative thinking among students of the second and fourth levels among the sample members.
3. Identifying the differences in the level of mental skills and creative thinking according to the study level (second/fourth) among the sample members.

## **Research hypotheses**

1. The degree of general mental skills and creativity among students of the Faculty of Commerce at Al-Neelain University is high.
2. There is a statistically significant relationship between mental skills and creative thinking among the second and fourth level students in the sample.
3. There are statistically significant differences in the level of mental skills and creative thinking according to the study level variable (second / fourth) among the sample members.

## **Research limits**

Spatial limits: College of Business Studies, Sudan University of Science and Technology.

Time limits: 2020-2021

Study population: Students of Business Studies (Business Administration) level two and four.

## **Research terms**

**Mental skills:**

Barell (Barell, 1991), " sees that the mental skill in its simple sense represents a series of mental activities that the brain performs when exposed to a stimulus, after receiving it through one of the five senses, but in its broad sense it is a process looking for meaning in the situation or experience." (Al-Atoum, Adnan, Bishara, and Muwaffaq, 2007: 214)

Procedurally: It is the degree obtained by the examinee through the mental abilities test for this research.

Creative thinking: "Thinking is defined as a mental process in which the learner develops through the processes of mental interaction between the individual and the experiences s/he acquires, with the aim of developing cognitive structures and reaching new assumptions and expectations" (Adnan Youssef Al-Atoum, 2012, p. 31).

Procedurally: It is a set of scores obtained by the student through the creative thinking scale for this research.

## **Theoretical framework and literature review**

Mental skills: A mental skill is based on the mental ability of the individual, and it is one of the important concepts in the field of psychology. This concept originated in the field of applied psychology and was linked to experimental studies at the end of the nineteenth century. The world was created by Benet and then developed by the English scientist Charles Waspeman, who rejected the term "intelligence" because it carries many meanings and replaced it with the term "general factor," which expresses the general mental energy that dominates all other mental activities, according to the requirements of his theory, known as the theory of workers (Ghubari and Abu Shaira, 2012: 13).

### Definition of mental skill

In some references, the word "fundamentals" is written in two parts to draw attention to the importance of the mental aspect in acquiring and developing these skills, which is the first step in preparing students for creative activities.

The most important basic mental skills: are relaxation, mental visualization, attention, psychological energy control, setting goals, mental retrieval, and problem-solving. There is an overlapping relationship between these skills, as the development of one of these skills helps in the development of other mental skills. We can clarify the overlap with the following points:

- Achieving an appropriate state of relaxation leads to the effectiveness of mental visualization, and at the same time, mental visualization is effective in learning to reach relaxation.
- Controlling psychological energy leads to avoiding stress, and at the same time, high stress leads to high psychological energy. Focusing attention can be developed through mental visualization, and in order for mental visualization to be effective, attention must be focused on the required visualizations.
- Attention and concentration are necessary for setting goals to develop performance, and among the general goals is the development of students' attention skills.
- The effectiveness of challenges, realistic goals, high behavior, and psychological energy increase when directed by goal setting.

- Decreased or increased psychological energy affects the ability to effectively mentally visualize, and through mental visualization of ideal performance, optimal levels of psychological energy can be identified.
- Increasing the psychological energy increases the ability to pay attention to a certain degree. Increasing the psychological energy to this degree harms the concentration of attention, and when the ability to pay attention is present, the ability to reach the optimal psychological energy develops (Rateb, 2000, p. 122).

## Steps to learn mental skills

It is necessary to learn mental skills, and these are the basic steps that can be learned:

The first step: is to educate.

It is important for the student to know the dimensions of each mental skill so that he can:

A - verify that these skills can be learned.

b- understand the role these mental skills play in influencing performance.

c- learn how to develop these skills.

The second step: is to acquire

In this step, the student is helped to acquire these mental skills through a regular training program that uses the best available information.

Step Three: is to practice.

Regular practice of these mental skills is necessary until reaching the stage of integration between the mind and body in competition, and the only way to reach a high level is more practice until it becomes a habit (Rateb, 2000, p. 123).

## Creative thinking

It is defined by Jarwan (2008: 38), where he defined thinking as "a series of mental activities that the mind performs when exposed to a stimulus that is received by one or more of the senses."

Creativity: The concept of creativity is one of the concepts that varied and varied according to the diversity and variance of specializations that dealt with it. Linguists believe that it comes in the sense of starting or making something without a previous example, and also the word "creator" was interpreted by the strange updated (Al-Mujam Al-Wajeez, 2004: 4), and this

includes the saying of the Highest. He is the Creator of the heavens and the earth, and when He decrees a matter, He only says to it, "Be," and it is." [Al-Baqarah: 117]. (Abu Hatab and Sadiq, 2004: 67).

The issue of creativity has been dealt with, with the agreement of most educators, through four aspects:

Product creative.

Creativity Process (Cognitive Path) Process

- Creator Person.

The environment that surrounds the creator (creative attitude) or the climate.

The relationship between creative thinking and intelligence: The relationship between intelligence and creativity is of interest to many researchers, especially since the scores of intelligence and creativity tests were highly correlated and correlative. In addition, there are necessary elements for creativity that cannot be guessed by traditional intelligence tests. The relationship between intelligence and creativity is not steady, and the increase of one does not lead to an increase in the other, nor is the opposite true.

Teaching Creative Thinking

Debono (2011: 22) says that everyone can improve their creativity if they can learn to jumpstart their imagination in an innovative and effective way. (Imran, 2001: 24-26) emphasized the link between thinking and creativity, which can be used in teaching and learning processes, and they are as follows:

- The mind does not grow in isolation from the social framework.
- Examples and models help give meaning to what is being learned.
- Any mind that is stimulated begins with the processes of perception and has the ability to create particles and wholes.
- Learning takes place through concentration, observation, and perception.
- Learning is something that can grow within the mind.

## Characteristics of creative thinking

Creative thinking includes a set of characteristics determined by the majority of literature and educational research, represented in flexibility, originality, and sensitivity to problems, with the addition of some extensive and penetrating studies that were clarified by Al-Samiri (2006: 4 - 41), which are as follows:

## 1- Verbal Fluency:

(Marie, 2008: 166) defines it as the ability to produce and generate a large number of ideas, alternatives, synonyms, or uses in response to a specific stimulus, and the speed and ease of generating them. Fluency is classified into four main types: (Al-Samiri, 2006: 4 - 41).

### A- Fluency:

It means the speed of the individual's thinking in giving and generating words in a new specific format.

b- Associational Fluency: It means quick thinking of related words that fit a specific situation, or the ability to produce the largest possible number of words according to certain conditions in terms of meaning.

C - Fluency in forms: It means providing some additions to certain forms to form real drawings.

D- Ideational Fluency: It is the ability to recall the largest number of ideas in a specific time. Fluency through this classification can be measured in different ways by the learner in terms of speed of thinking, classification of ideas, and the ability to produce the largest number of ideas, sentences, and meanings.

## 2- Flexibility:

Flexibility means the ability to generate many diverse and unexpected ideas, and flexibility is the opposite of mental inertia, which focuses on pre-defined mental patterns that are not subject to change. There are several types of flexibility, including:

Spontaneous Flexibility: (Majed, 2012: 50) sees that spontaneous flexibility refers to the individual's ability to shift the focus of his thinking in multiple directions easily and easily, away from the pressure of instructions or urgency, so that he is automatically given a number of responses that do not belong to one category.

Adaptive Flexibility: It is the individual's ability to change his mental orientation so that he is in the process of looking at solving a specific problem, and it can be seen as the positive side of the actual adaptation in the flexible person, unlike the mentally rigid person (Al-Asaar, 2000: 44).

3- Originality is one of the characteristics most closely related to creativity and creative thinking, which means novelty and uniqueness, and it means the individual's ability not to repeat common ideas, and to produce new ideas that no one has come up with before and to depart from the ordinary, expected, and traditional, provided that it is of value at the level of the individual or society. (Perkins, 2005: 78)



4- Sensitivity to Problems: It means awareness or feeling that there are problems, needs, or elements of weakness in the environment or the given situation and identifying them, or seeing defects and shortcomings that others do not see (Sa'ada, 45:2006).

5- Elaboration: It means the individual's ability to make new additions and additions to a particular idea, and thus the student with the ability to add details is described as the one who can deal with an idea or work and then specify its details (Hanura, 2003: 87).

## **Characteristics of the creative person**

Al-Atoum and Bishara (2007: 78) mentioned that the characteristics of the creative person lie in:

- 1- The ability to evaluate his\her production.
- 2- Excellence in flexibility and freedom of expression.
- 3- He is vigilant and observant.
- 4- The ability to solve problems with unconventional solutions.

## **Obstacles to creative thinking**

Obstacles related to the student's personality: The creative student may suffer from psychological problems that lead to poor psychological and social compatibility, he may feel frustration, failure, tension, and anxiety, turning his life into psychological conflicts that may destroy him, which leads him to abandon creative activities, so the loss is greater for himself and his community.

Obstacles related to the school, include a traditional climate represented by a lack of adequate facilities and equipment or curricula. The presence of an authoritarian and controlling teacher imposes strict organization in the classroom.

Obstacles related to the family: they mean the set of behaviors that take place within the family and are carried out by the father and mother, which would prevent the growth of creativity in the children.

Obstacles related to society: focus on and maintain the status quo. Opposition to new ideas that help creativity. Competition is harmful to the interest of work (Abdul Hamid, 2003: 87).

## **The Islamic viewpoint on creative thinking:**

Islam is the spirit of thinking because its theory is the readable book of God, which is the Qur'an, and the visible book of God, which is the universe. And God Almighty makes it clear that thinking and remembrance are for those with intellects only, (Say: Are those who know alike and those who do not know? Only people of understanding remember (Surat Az-Zumar: 9).

Theoretical trends that explain creativity: There are many theories that explain creative thinking, including:

**Behavioral Theory:** Behaviorists see that human behavior, in essence, consists in the formation of relationships or associations between stimuli and responses, and through the concept of procedural conditioning, the individual reaches creative responses in association with the type of reinforcement that enhances behavior from the formation of the relationship between the stimulus and the response (Nayfeh Qatami et al., 2008, p. 74).

**Psychoanalytic theory:** The owners of this theory see that creativity is the outcome of the interaction of three variables (the ego, the superego, and the He), and if creativity is achieved, it comes by suppressing the ego in order to justify the contents of the unconscious or pre-consciousness (Al Sultani, 1984: p. 44).

**Associative theory:** This theory falls within the associative doctrine. Among the most prominent proponents of this theory are Maltzman and Mednick, who see creativity in organizing the interconnected elements in new structures that are compatible with the requirements.

**Cognitive Theory:** The owners of this theory are concerned with the ways in which things are perceived, and creativity, according to this theory, represents the methods of obtaining and integrating information for the purpose of searching for the most adequate solutions (Trad, 2012, p. 233).

**Factor theory:** It is often called trait theory. Traits are the characteristics that characterize the individual and that can be studied based on the presence and highlighting of the differences between individuals. (Intelligence), and creativity is talked about in the light of intelligence as a general mental factor (perception of relationships, and deduction of related matters) (Shaker, 2008, p. 79).

### **Presentation and analysis of previous studies:**

**Bashiri's study (2016)** entitled "Creative thinking and its relationship to academic achievement among students of the Institute of Science and Techniques of Physical and Sports Activities at the University of M'Sila." The study aimed to know the level of creative thinking and reveal its relationship to aspects of academic achievement among students of the Institute of Science and Techniques of Physical and Sports Activities. There is a statistically significant relationship

between creative thinking and academic achievement among students of the Institute of Science and Techniques of Physical and Sports Activities, and in light of the research objectives and the nature of the study, and in order to test the research hypotheses and determine the extent of their achievement, we applied the creative thinking test of Sayed Khairallah, on a sample of students of the Department of Physical Education, the second year of the master has 60 students divided into three levels according to their academic achievement (good, average, poor academic achievement). The researcher reached the following conclusions: The level of creative thinking among students of the Department of Physical Education is high. There is a direct relationship between creative thinking and academic achievement among students of the Department of Physical Education.

**The study of Al-Saleh Munira (2014)** entitled “Creative Thinking and its Relationship to Academic Achievement among Female Students of the Special Education Department at the College of Applied Studies and Community Service. King Saud University. The study aimed to identify the relationship between creative thinking and academic achievement among female students of the Special Education Department at the College of Applied Studies at King Saud University. The study sample consisted of (75) female students who were randomly selected from among the third-level students of the Special Education Department at the College of Applied Studies / King Saud University, and the Torrance Verbal Test for Creative Thinking was used (the image, and the cumulative average scores in the 2011 tests) ) of the sample members for the second semester (2010), and the current study used the descriptive approach in collecting special data regarding the variables of creative thinking and academic achievement. The students of the Department of Special Education, the third level at King Saud University, and the study recommended conducting more studies on the relationship between achievement and the different thinking skills

**Jadallah’s study (1992):** entitled “Manifestations of creativity and talent among academically superior students at the University of Jordan.” For students of talent and creativity, two main aspects of their performance were investigated, the first relates to behavioral patterns, achievements and activities, and the second relates to some characteristics and creative tendencies. The study was conducted on a sample of 246 male and female students from the University of Jordan in the College of Arts and the College of Economics, Administrative Sciences and Engineering, and the sample included only third and fourth year students. Two tools were developed for this study, the first measures creative characteristics and tendencies and consists of 22 items, and the second instrument measures actions, activities, and achievements that express creativity and talent through their actual performance, and it consists of 19 items. The results showed that there was a significant effect of the gender factor on creative characteristics. Males were distinguished with more creative characteristics than females, while there was a significant effect of the academic and specialized excellence factors on the creative characteristics.

## Commenting on previous studies

The researcher notes that the previous studies aimed to study creative thinking with a number of other variables such as academic achievement, academic level, gender, age, school stage, problem-solving, critical thinking, different environments, and the school stage in which the studies were applied. This study was also applied at the undergraduate level. We find that most of the studies agreed with the current study in using the tool, which is the Torrance Creative Thinking Test, to reach the required results.

The previous studies differed from the current study in their focus on studying the differences between males and females in creative thinking, while the current study did not focus on it. In light of the results of the previous studies, it can be noted the most important benefits of the previous studies, as follows:

1. Assisting the researcher in choosing the sources of the current study.
2. Enriching the theoretical side, choosing the study method, and choosing the appropriate statistical measures and methods for this current study.
3. Benefiting from the results of previous studies in support of the research problem and its importance in addressing it.
4. Comparing the results of the current research with the results of previous studies.

## Study methodology and procedures

This section is devoted to the research methodology and procedures, which included the research methodology, society, sample, tools, and methods of data analysis.

First: Study methodology: In this research, the researcher relied on the descriptive correlative approach to study the relationship between the variables of the research, and it is defined as an approach that is presented by describing what is an object, collecting data, interpreting it, and determining the relationships between facts.

Second: The study population: It is defined as all individuals, things, or elements who have observable characteristics (Abu Allam, 2004). The study community consists of male and female students of the College of Business Studies, Department of Business Administration, Sudan University of Science and Technology.

Third: The study sample: The selection of the sample is one of the important steps and stages of the research. The researchers, specialists in the field of research, indicate that the size of the research sample depends on the research method and the number of the study sample members, and the composition of the study sample from a simple random sample of the study population of (150) whose size is (80). The random sample rate was (53%). Upon application, (30) answers were deleted due to non-fulfillment of the conditions, and the non-response to the questionnaire. Thus, the sample became a component of (50), including (35) students, and (15) female students.

~ 101 ~

Fourth: Study tools: The researcher used the following tools to gather information:

1/ Mental skills questionnaire consisting of linguistic, mathematical, visual, and perceptual abilities.

2/ Torrens Scale for Creative Thinking.

Description of the Mental Skills Questionnaire: It was prepared by the researcher, where data were collected from the theoretical framework and measurements related to intelligence, which is the component of linguistic, mathematical, visual, and cognitive ability. In order to know the psychometric properties of the items on the mental skills scale for the students of Sudan University of Science and Technology, the researchers applied its modified form, under the guidance of the arbitrators, which consisted of (20) items on an initial sample of (20) examinees who were chosen in a simple random way from the current research community and after correcting the responses, the researcher monitored the scores and computerized, and then the checked the validity of the internal consistency of the items.

To find out the consistency of the items with the total score of the mental abilities scale of Sudan University of Science and Technology students when applied in the current research community, the researchers calculated the Pearson correlation coefficient between the scores of each item with the total score of the scale and the following table shows the results of this procedure:

Table No. (1) shows the correlation coefficient of items with the total score of the mental skills questionnaire for students of Sudan University of Science and Technology when applied in the current research community

Item	correlation coefficient	item	correlation coefficient
1	-.021	11	.686
2	.530	12	.298
3	-.165	13	.092
4	.170	14	.396
5	.050	15	.314
6	.219	16	.187
7	.142	17	.419
8	.300	18	.293
9	.241	19	-.127
10	-.093	20	.490

The researcher notes from table (1) that all the correlation coefficients for all statistical functions are at the level of significance (0.05) except for the correlation of the following items (1)(3)(5)(10)(13)(19). It does not affect the scale. As for the rest of the (14) phrases, this picture has good internal consistency since it is applied to the examinees in the current research community.

Stability coefficients: To find out the stability percentage of the total score of the mental abilities scale for students of Sudan University of Science and Technology in its final form in the current research community, the researchers applied the equations ((Alpha Cronbach and Spearman-Brown)) to the data of the initial sample. The results of this procedure showed the results presented in the following table:

Table No. (2) shows the results of the stability coefficients for the total score of the mental abilities scale for students of Sudan University of Science and Technology in its final form when applied in the current research community:

The Scale	No. of items	Stability coefficients	
		Alpha	Q-B
Mental abilities questionnaire	14	.857	.737

The researcher notes from table (2) that the stability coefficients for the total degree of mental skills of the students of Sudan University of Science and Technology as a whole are greater than (0.72), which confirms the appropriateness of this questionnaire in its final form to measure the mental skill of the examinees in the current research community.

Description of the Creative Thinking Scale: The researcher chose the Torrens Scale for Creative Thinking because it has several advantages:

A/ It enables the researcher to collect data in a short period of time. B/ The sample members are shown for the same items in the same picture. C / does not allow the researcher to interfere in the answers of the examinees (Abougadou, 2004: 144).

Psychometric characteristics:

To find out the psychometric properties of the items on the scale of creative thinking for students of Sudan University of Science and Technology, the researcher applied its modified image, under the guidance of the arbitrators, which consisted of (10) items on an initial sample of (20) examinees who were chosen in a simple random way from the current research community and after correcting the responses, the researcher monitored the scores and computerized them.

The validity of the internal consistency of the items:

To find out the validity of the consistency of the items with the total score of the creative thinking scale for students of Sudan University of Science and Technology when applied in the current research community, the researchers calculated the Pearson correlation coefficient between the scores of each item with the total score of the scale and the following table shows the results of this procedure:

Table No. (3) shows the correlation coefficient of items with the total score of the creative thinking scale for students of Sudan University of Science and Technology when applied in the current research community.

Item	correlation coefficient	Item	correlation coefficient
1	.694	6	.562
2	.733	7	.415
3	.640	8	.541
4	.154	9	.532
5	.513	10	.566

The researcher notes from the previous table that all the correlation coefficients for all statistical functions are at the level of significance (0.05), and it has a strong correlation coefficient when it is applied to the subjects in the current research community.

To find out the stability ratio of the total score of the creative thinking scale for students of Sudan University of Science and Technology in its final form in the current research community, the researcher applied the equations (Alpha Cronbach and Spearman-Brown) to the data of the initial sample. The results of this procedure showed the results presented in table (4).

Table No. (4) shows the results of the stability coefficients for the total degree of the creative thinking scale for students of Sudan University of Science and Technology in its final form when applied in the current research community.

	No. of items	Stability coefficients	
<b>The Scale</b>	<b>10</b>	Alpha	Q-B
The scale of creative thinking for students of Sudan University of Science and Technology	14	.840	.715

The researcher notes from table (4) that the stability coefficients for the total degree of the creative thinking scale for students of Sudan University of Science and Technology as a whole are greater than (0.70), which confirms the appropriateness of this scale in its final form to measure the creative thinking of students of Sudan University of Science and Technology among the examinees in the current research community.

## Discussion and results

Presentation of the result of the first hypothesis: To verify the validity of the first hypothesis of the current research, which states: "The mental skills and creative thinking of students of business administration are characterized by a high degree." To verify the hypothesis,



the researcher conducted a t-test for the mean of one population, and table (5/A) shows the results of this procedure.

Table No. (5/A) shows the result of the T-test for the average of one community to judge the general characteristic of the level of mental abilities of students of business administration

Conclusion	Average	Standard deviation	Criterion value	T-Calculated value	Degree of freedom	Significance level	variable
Low mental skill	27.44	4.959	28	-.565	24	.578	Mental ability skill

Table No. (5/b) shows the result of the t-test for the average of one community to judge the general characteristic of the level of creative thinking, business administration

Conclusion	Average	Standard deviation	Criterion value	T-Calculated value	Degree of freedom	Significance level	variable
Low thinking	25.16	7.998	33	-4.901	24	.000	Creative thinking

Looking at tables (5a and 5b), we notice that each of the skills of mental abilities and creative thinking came to a low degree, where the calculated value of (T) for mental skills was (565.-) at the level of significance (578.) As for creative thinking, the calculated value of (T) was (-4.901) at the significance level (000.), the result was a decrease. It differed from the study of Bashiri (2016). Where the level of creative thinking among students of the Department of Physical Education was high. Referring to the literature review of scientific research, we find that mental skills decline as a result of the student's failure to attend early to the lecture, to comprehend, recall, and quickly retrieve information, the result will inevitably be the opposite of what came because s/he did not activate her/his mental skills. The researcher believes that these students tend to social aspects more than academics and do not seek to activate memory. As for creative thinking, by reference to the research literature review, we find that the reason for the decline in the innovative thinking of business administration students is the excessive preoccupation with politics and modern technology, or the parent's preoccupation with the



students, which develops the skill of creative thinking. Through the students' responses, the researcher noticed the superficial thinking of these students, and some of them consider their thinking normal. Since these students are in a sensitive department, this research should draw the attention of families and those interested in education to pay attention to this issue because there are many obstacles that hinder creative thinking, including the student's personality, family, university, peers, and society (Abdul Hamid, 2003: 87). There is a direct, statistically significant relationship between the mental skills and creative thinking of students of business studies in the Department of Business Administration.

To verify the second hypothesis, the Pearson correlation coefficient was calculated, and the results of this procedure are presented in table (6). The hypothesis states: “There is a statistically significant correlation between the mental skills of students of business studies (business administration) and creative thinking”.

Table No. (6) shows the result of the Pearson correlation coefficient to find out the significance of the correlation between the mental abilities of students of business administration and creative thinking:

The independent variable	The number	the value of correlation with thinking	the value of the probability	conclusion
Mental abilities	25	.618**	.001	There is a statistically significant direct correlation

Looking at table (6), we find that the value of the correlation with thinking is equal to (\*\*618.) with a probability value of (001.) The result is that there is a statistically significant direct correlation relationship. This result agreed with the study of Bashiri (2016). There is a direct relationship between creative thinking and academic achievement among students of the Department of Physical Education. It also differed from the study of Al-Saleh (2014), which resulted in the absence of a statistically significant relationship between the variables of academic achievement and creative thinking among a sample of students of the Department of Special Education at the third level at King Saud University. The researcher believes that the direct relationship came from the decline in mental skills, which was followed by a decrease in the level of creative thinking. It is the lower the mental skills of the student, the lower the level of thinking and creativity follows.

The third hypothesis: To verify the validity of the third hypothesis of the current study, which states: “There are statistically significant differences in the mental abilities of business administration students according to the academic level. To verify the validity of the hypothesis, the researchers conducted the (Mann Whitney test), and table (7) shows the results of this procedure.

Table No. (7) shows the results of the Mann Whitney test to find out the differences in mental skills among business administration students by academic level

Attribute	Class level	Average ranks	Total ranks	(z) value	Significance Level	Conclusion
Mental skills	First	12.61	176.50	-.302	.763	There are no significant differences
	Fourth	13.50	148.50			

Looking at table (7), we find that the average ranks for the first level were (12.61) with a total of (176.50), and also we find that the average ranks for the fourth level were (13.50) with a total of (148.50), where the value of (z) (302.-) came at the significance level (763). The result was that there were no statistically significant differences, and there was no similar result in the previous studies. This result indicates the importance of the variable (the academic level), where the researcher recognizes the differences at the different levels because the students of the fourth year have different interests that focus on achieving the greatest rate of scientific excellence and creativity because the stage has its own interests. But when the result came with no difference, the researcher explains it in the lack of seriousness, or perhaps the concern is common and there is little difference.

## Findings, recommendations, and suggestions:

### Results

The results of the research came as follows:

1. The mental skills and creative thinking of students of business studies in the Department of Business Administration are low.
2. There is a direct statistically significant relationship between the mental abilities and creative thinking of the sample members.
3. There are no statistically significant differences in the mental abilities of the academic level (first / fourth) among the sample members.

### Recommendations

In light of the findings of the researcher, the following recommendations were made:

1. Universities are the complement to educational institutions, as they bear a great responsibility. Therefore, they must change their traditional curricula, develop them, and enrich them to keep pace with time and its continuous developments, and use modern methods of teaching, which will identify the skills of the mind to raise the degree of innovation among students.

2. The Ministry of Higher Education should strive hard to develop the infrastructure of universities in order to bring out a creative and distinguished generation in all fields.

## Suggestions

From these results, the following suggestions were made for future research:

1. The effectiveness of a program for developing creative thinking skills for students with low intelligence and creativity.

2. Attitudes of university professors in using electronic digitization to develop creative thinking among university students.

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