

## **The Level Of Creative Thinking Among Fifth-Grade Students Of Primary Education In The City Of Touggourt (Algeria)**

**Zineb Youcef <sup>1</sup>, Mohammed Saci Chaib <sup>2</sup>**

- 1- Kasdi Merbah University, Ouargla (Algeria), Psychology and Quality of Life Lab, [youcefzineb2007@yahoo.fr](mailto:youcefzineb2007@yahoo.fr)
- 2- 1Kasdi Merbah University, Ouargla (Algeria), Psychology and Quality of Life Lab, [chaib.saci@univ-ouargla.dz](mailto:chaib.saci@univ-ouargla.dz)

Received: 05-02-2025

Accepted: 23-05-2025

Published: 01-06-2025

---

### **Abstract:**

The Current Study Aims To Reveal The Level Of Creative Thinking Among Fifth-Grade Students In The Fourth Educational District In The City Of Touggourt. To Achieve The Objectives Of The Study, The Descriptive Exploratory Method Was Used, Where The Torrance Test Of Creative Thinking, Form A, Consisting Of Three Activities Covering Four Dimensions (Fluency, Flexibility, Originality, And Detail), Was Applied. A Simple Random Sample Was Selected From The Fourth Educational District In Touggourt, Including 130 Students, Of Whom 70 Were Female. After Collecting Data And Analyzing The Results Using The SPSS V20 Statistical Package For Social Sciences, The Results Showed That The Level Of Creative Thinking Among Fifth-Grade Students Was Low. The Results Also Indicated Significant Differences In Creative Thinking Between Male And Female Students, With Females Showing Higher Levels Of Creativity.

**Keywords:** Creative Thinking; Fifth-Grade Students.

## 1. Introduction

Thinking is one of the higher mental processes that have contributed to the advancement and improvement of human life, as well as the ability to deal with the universe and find remarkable solutions to the problems and crises faced by humans. In fact, there is no meaningful work without deep thinking, and the thinking style that an individual adopts and uses is an additional strength for them. (Kawar, 2017, p. 3) Through thinking, humans interact with the surrounding objects, and at the same time, they address the situations they encounter.

Humans use the process of thinking when they face a question or encounter a problem. Thinking only occurs when there is a problem that the individual feels and is affected by, and which requires a solution. (Mustafa Nimer, 2013, p. 7).

The ultimate goal of education in the twenty-first century is to teach thinking in all its forms to every individual. Here, the role of the educational institution becomes evident in preparing individuals who are capable of solving unexpected problems, possessing the ability to think of various alternatives for ever-changing life situations. Therefore, the focus on studying and teaching innovation has become a global trend due to its positive effects on the development and progress of societies, especially since the challenges of this era require creative approaches.

Guilford believes that innovation is the key to education in its fullest sense and the key to solving most of the intractable problems facing humanity. Therefore, we must open the doors wide to introduce innovation into all fields, especially in the field of education. (Al-Qaisi & Al-Tamimi, 2000, pp. 36-37)

The focus on thinking, its development, and its teaching is likely due to the increasing decline in the level of education and its outputs, as well as the deterioration of the skills of university graduates to a level that does not align with the needs of the job market or meet the requirements of modern development. (Mustafa Nimer, 2013, p. 8).

Movements advocating for the development of the mind and thinking skills in general, and creative thinking skills in particular, have emerged. The focus on developing thinking has become an urgent

necessity to prepare a generation capable of keeping up with the rapid changes and cognitive advancements that characterize this era. (Abdulaziz, 2014, p. 2)

Studies by Guilford, Torrance, and Goff have confirmed that nothing can contribute more to raising the level of human development, well-being, and progress than enhancing the creative performance of nations. (Abu Jumah, 2015, p. 12)

If we look at our current reality, we find that the prevailing approach in curriculum design still relies on the principle of accumulating information and laws. Moreover, the vast majority of teachers adhere to traditional teaching methods, which require them to deliver a massive amount of information to students. This results in a significant accumulation and repetition of information in exams. Despite students succeeding in these exams at the end of the school terms, traditional methods remain unable to process, evaluate, synthesize, and connect education in schools with the practical world outside, or generate new, innovative ideas.

Therefore, many studies have been conducted on creative thinking, some of which aimed to investigate the factors and variables that influence creative thinking among students. One such study is the research by Al-Rawashdeh and Al-Qudah (2003), which aimed to examine the impact of gender on the development of creative thinking. Another study, conducted by Kim (2003), sought to identify the creative thinking ability of high school students. The results showed that the ability to think creatively was high, and that females outperformed males on the Torrance Test of Creative Thinking. Al-Shurayda (2005) also conducted a study aimed at revealing the level of creative thinking ability among secondary school students. The results of this study indicated that the level of creative thinking ability was low, with statistically significant differences in creative thinking levels attributed to the gender variable.

As for the study by Talal (2009), it aimed to examine the impact of teaching science according to the science and technology approach on the development of creative thinking among seventh-grade students. The researcher found statistically significant differences between the

mean scores of the experimental and control groups in the post-test application of the creative thinking test in favor of the experimental group. The study also found no statistically significant differences between the mean scores of the groups related to gender. Another study by Salah Ahmed Al-Naga (2010) aimed to assess the level of creative thinking among high school students, and the study concluded that the level of creative thinking among high school students was low.

The study by Al-Imam (2011) revealed that creative thinking among students at the College of Education is characterized by a low level, while statistically significant differences in creative thinking were found related to the gender variable, favoring males.

The study by Dawood (2011) aimed to assess the level of creative thinking skills among students in the preparatory stage. The study concluded that the level of creative thinking skills among students was weak, and there were statistically significant differences in the mean scores of students in creative thinking skills according to the gender variable, favoring females. (Abani, 2021, pp. 52-53).

The study by Al-Hudabi et al. (2011) aimed to assess the level of creative thinking skills among student-teachers in the scientific departments of the College of Education and Applied Sciences in Hajja City. The results showed statistically significant differences between males and females, with females performing better in creative thinking skills.

Similarly, Al-Aid's study (2011) aimed to assess the level of creative thinking in mathematics among female students in the third year of middle school. The study concluded that the level of creative thinking among these female students was weak. (Abdulaziz, 2014, pp. 61-62)

As for the study by Nasruddin (2020), it aimed to explore the relationship between creative thinking and social status among high school students in Jerusalem. The results showed that the level of creative thinking among high school students in Jerusalem was high, with statistically significant differences based on gender, favoring males.

From the previous studies, we observe that they varied with respect to the gender variable, and most of them focused on various stages of education, including middle, secondary, and university education. However, the research on the primary education stage has not been extensively addressed. Therefore, this study aims to highlight this stage and focus on it, given the importance of this stage in developing thinking skills among learners. Thus, the problem of the study is summarized in the following questions:

- What is the level of creative thinking among fifth-grade students in Touggourt City?
- Are there any differences in creative thinking among fifth-grade students attributed to the gender variable?

**Hypotheses of the study:**

1. We expect that the level of creative thinking among fifth-grade students in Touggourt City is low.
2. There are differences between male and female students in the level of creative thinking and its dimensions (fluency, flexibility, originality, and elaboration)

**Objectives of the study: The current study aims to:**

1. Identify the level of creative thinking among fifth-grade students in Touggourt City.
2. Investigate the relationship between the level of creative thinking and the gender variable among fifth-grade students in Touggourt City.

**Importance of the study:** The importance of the current study lies in:

1. The significance of the topic of creative thinking, as it plays a crucial role in shaping and preparing a generation capable of facing various problems with more effective solutions. Creative thinking is a process that leads to producing something different, and it equips students with the ability to contribute to finding explanations or solutions to the problems they encounter. Additionally, knowing the level of creative thinking among elementary school students can contribute to the success of educational planning.
2. The importance of the elementary education stage, where all cognitive skills such as memory, thinking, and attention emerge, especially in

the second and third stages, leading to the development of creative thinking.

### **Scope of the Study:**

- Humanly: A sample of fifth-grade students in Touggourt.
- Temporally: The academic year 2020/2021.
- Geographically: The fourth educational district in Touggourt.

## **2. Operational Definition of the Study Variable:**

**Creative Thinking:** It is a purposeful mental activity that results in the largest possible number of ideas or solutions to problems. These solutions are characterized by novelty, variety, and non-repetition. It is measured by the score that the student achieves on the Torrance Test of Creative Thinking, specifically designed for this purpose, and includes:

**A- Fluency:** Fluency is defined as the score a fifth-grade student achieves on the Torrance Creative Thinking Test, Form A, in the fluency skill.

**B- Flexibility:** Flexibility is defined as the score a fifth-grade student achieves on the Torrance Creative Thinking Test, Form A, in the flexibility skill.

**C- Originality:** Originality is defined as the score a fifth-grade student achieves on the Torrance Creative Thinking Test, Form A, in the originality skill.

**D- Elaboration:** Elaboration is defined as the score a fifth-grade student achieves on the Torrance Creative Thinking Test, Form A, in the elaboration skill.

## **3. Theoretical Framework of the Study:**

**First: Creative Thinking:** It is worth mentioning that the multiple definitions of creative thinking arise from the various aspects of the creative process, in addition to the different perspectives of researchers on creativity due to their differing intellectual starting points. Some definitions of creative thinking include:

Fathi Jrouan defines it as: "A complex and purposeful mental activity driven by a strong desire to search for solutions or reach original results that were not previously known." (Jabr, 2004, 33).

Ads defines it as thinking that leads us to new ideas and results that no one has previously reached. The creative individual may arrive at this through independent thinking, and it may be the result of another creative person's work, each working independently, with these ideas and results appearing to both without any connection between them in joint work. It is also thinking directed toward its goal in an irregular manner, and its outcome cannot be predicted, as it does not follow specific steps, which distinguishes it from other types of thinking. (Ads, 1996, 33)

Kamel defines it as: "A thinking style used by an individual to produce as many ideas as possible about a problem they are facing, with these ideas characterized by fluency, flexibility, and originality."

Guilford defines it as: "Thinking in an open tunnel, where the production is characterized by a unique feature, which is the diversity of the answers produced that are not determined by the given information." (Ma'amar, 2006, 85).

Treffinger (2000) defines it as a mental process characterized by comprehensiveness and complexity, involving cognitive, emotional, and ethical factors that intertwine to form an active and unique mental state. It is a purposeful behavior that does not occur in isolation or without valuable cognitive content, as its goal is to find original solutions to existing problems in a field of knowledge or human life. Therefore, it is typically divergent thinking that challenges and penetrates existing, familiar, and accepted principles.

Torrance defines creative thinking as a process of identifying problems, recognizing weaknesses and gaps, searching for predictable solutions, and reformulating hypotheses based on testing them, with the aim of generating new solutions through utilizing available data, then disseminating the results and presenting them to others. (Pare, 1977, 125)

In light of the above, creative thinking can be defined as a purposeful mental activity that generates as many ideas or solutions to problems as possible, with these solutions characterized by novelty, diversity, and non-repetition.

**Secondly: Components (Skills) of Creative Thinking:**

A review of the most common and important creative thinking tests, such as the Guilford and Torrance tests, indicates the key skills of creative thinking that these tests have in common and that researchers have tried to measure: "fluency, originality, flexibility, and elaboration (details)".

**1- Fluency:** It refers to the individual's ability to generate as many ideas, alternatives, or synonyms as possible when responding to a situation or problem. These ideas can be verbal or performative, with open-ended conclusions, in addition to the ease of recalling these ideas. (Al-Sarour, 2002, 119), (Sabri & Al-Ruwaihi, 2019, 19).

Fluency ability measures take various forms, such as: speed of thinking by providing words with a specific tone starting with a certain letter or syllable, or providing words ending with a certain letter, as well as mental activities where the child is asked to categorize words into specific categories. (Pare, 1977, 175).

**2- Flexibility:** Guilford defined it as the ability to quickly generate ideas that belong to different types of ideas related to a specific situation. (Al-Harithi, 2000, 68). Torrance views it as the individual's ability to think in different directions, encompassing various categories of responses, ensuring that their production includes multiple types of ideas. (Mahboub, 2009, 47).

**3- Originality:** It refers to the ability to produce unfamiliar ideas characterized by novelty and uniqueness, where an individual's thinking goes beyond the usual and conventional. Originality is a fundamental element of creative thinking, as it is one of the most closely associated traits. It depends on the value, quality, and novelty of the ideas; the less common the ideas are, the greater their originality.

It also means excellence in thinking, rarity, and the ability to penetrate beyond the ordinary ideas. It represents the aspect of distinction in creativity (Al-Ubaidi, Al-Ubaidi, and Al-Ubaidi, 2010, 55), (Sabri and Al-Ruwaihi, 2019, 20), (Jrouan, 2007, 79).

2- Elaboration: It refers to the ability to add new and diverse details to an idea or solution to a problem or artwork, which helps to develop, enrich, and execute it. (Jrouan, 2007, 79)

This creative ability includes providing multiple details for limited items, such as expanding a summarized idea, clarifying a strategy, elaborating on an ambiguous topic, or enhancing the eloquence of a text by rewriting it with added rhetorical devices and images. (Qatami, Hamdi, Qatami, Sobhi, and Abu Taleb, 2008, 23).

### **Thirdly: Characteristics of Creative Thinking:**

- 1) It is a process that leads to producing something different.
- 2) It is characterized by the ability to see many problems, which contributes to reaching explanations or solutions to these problems.
- 3) Creativity exists in every individual, not limited to a select few, but it reaches its peak and maturity in some people, and may not occur in others.
- 4) It is learnable and can be developed by the family and anyone involved in the socialization process (Abu Athera, 2010, 49-50).
- 5) A keen interest in new ideas, opinions, concepts, experiences, and methods.
- 6) The search for alternatives for everything and the readiness to adopt new ones.
- 7) A willingness to spend time and effort in searching for new or alternative ideas and attempting to develop unfamiliar or novel ideas.
- 8) Moving away from traditional intellectual patterns and adjusting attention to a new intellectual path.
- 9) Developing a spirit of initiative and proactivity in dealing with all matters and issues (Mustafa Nimer, 2013, 96).
- 10) Creative thinking is a mental process aimed at achieving the benefit of the individual or society.
- 11) Creative thinking is a qualitative form of thinking, meaning it is linked to specific areas, such as verbal creativity, visual creativity, artistic creativity, or musical creativity. (Hammadna 24,2014)

#### 4. Methodological Procedures of the Study:

**Study Methodology:** The descriptive method is considered the appropriate method to assess the level of creative thinking ability, as it provides information and facts about the phenomenon being studied.

**Study Population:** The study population consists of all the students in the fifth grade of primary school in the fourth educational district in Touggourt, which includes seven primary schools as shown in Table 1.

**Table (1) shows the number of schools and cohorts in the study population.**

| No.   | School                         | Number of Classrooms | Number of students |        |    |        | Total |
|-------|--------------------------------|----------------------|--------------------|--------|----|--------|-------|
|       |                                |                      | M                  | %      | F  | %      |       |
| 1     | Hai Al-Soumam                  | 2                    | 39                 | 53.42% | 34 | 46.58% | 73    |
| 2     | Mohammed Ashbi                 | 2                    | 32                 | 44.44% | 40 | 55.56% | 72    |
| 3     | Ahmed Al-Shaoush               | 2                    | 23                 | 46.94% | 26 | 53.06% | 49    |
| 4     | Al-Bahri Bin Lamnour           | 2                    | 19                 | 57.58% | 14 | 42.42% | 33    |
| 5     | Mohammed Al-Akhder Bin Lamnour | 2                    | 44                 | 61.11% | 28 | 38.89% | 72    |
| 6     | Mohammed Miqdad                | 2                    | 28                 | 51.85% | 26 | 48.15% | 54    |
| 7     | Jilani Kina                    | 2                    | 36                 | 54.55% | 30 | 45.45% | 66    |
| Total |                                |                      |                    |        |    |        | 419   |

It can be observed from Table 1 that the number of schools in the fourth educational district in the city of Touggourt was 7 schools, consisting of 13 classes in the fifth grade of elementary school. The total number of students in this level was 419, including 221 males (52.74%) and 198 females (47.26%).

**Study Sample:** The study sample was selected using a simple random method from the fourth educational district in Touggourt. Two schools were randomly selected from the total number of schools in the district. The study sample included four educational classes from a total of 13, representing 30.77%. The sample comprised 130 students, with 60 male students and 70 female students, representing 31%.

**Table 2 shows the characteristics of the sample**

| School           | Students | Number | Percentage |
|------------------|----------|--------|------------|
| Mohammed Ashbi   | Males    | 32     | 26.62%     |
|                  | Females  | 44     | 33.85%     |
| Mohamed Migdad   | Males    | 28     | 21.53%     |
|                  | Females  | 26     | 20%        |
| The whole sample | Males    | 60     | 46.15%     |
|                  | Females  | 70     | 53.85%     |
| Total            |          | 130    | 100 %      |

It is evident from the table that the study included two schools, with a total of 130 students, consisting of 60 male students (46.15%) and 70 female students (53.85%). Since the study population consists of 419 students, the overall percentage of the study sample is estimated to be 31%, which is an acceptable percentage.

5. **Study Tool:** The study relied on the Torrance Figural Form A Scale, translated by Abdullah Suleiman and Fouad Abu Hatab.

**5. 1. Tool Description:** Torrance mentions that he selected some incomplete figures from Frank's tests for his current tests, and then rephrased and reconstructed them into two equivalent forms: Form A and Form B. These are considered part of his current non-verbal creative thinking tests, and the responses of individuals to these tests allow for the estimation of some components of creative ability, including originality, flexibility, fluency, and elaboration.

- The Torrance test used in this study consists of three activities (Zamzami, 2010, 136).

**5. 1. 1. The first activity (Picture Construction):** In this activity, the participant is asked to observe the curved shape and think of an image or subject where this shape is a part of it. They are encouraged to come up with an idea that no one else would think of, and then add new thoughts to their initial idea to create an interesting story. The participant should also think of a name or title for the story, where the title should be as unusual as possible.

After completing the first activity, the participants are asked to proceed to the second activity.

**5. 1. 2. The second activity (Completing the Pictures):** In this activity, the participant is asked to add some lines to the incomplete shapes, draw interesting topics or pictures, and try to think of images or subjects that no one else would think of. The participant should build on their initial idea by adding to it and write a title below each drawing.

Once the second activity is completed, the participants are asked to proceed to the third activity.

**5. 1. 3. The third activity (The Lines):** In this activity, the participant is asked to draw pictures or create topics using two parallel lines. These parallel lines should be the main part of the drawing, and the participant can add lines or marks between the lines, on them, or outside them, anywhere they wish, to complete the image. The participant is encouraged to think of things that no one else would think of, create as many different images or topics as possible, and provide as many ideas as they can for each image. Each drawing should have a title.

- Each activity is allocated 10 minutes for completion (Amir Khan, 1990, 253-259).

**5. 1. 4. Correction Instructions:** Torrance stated that the three activities in the picture battery are evaluated based on fluency, flexibility, originality, and elaboration, except for the first activity, which includes only two skills: originality and elaboration. Therefore, fluency and flexibility are only calculated in the second and third activities (Amir Khan, 1990, 256).

**5. 2. 1. The first activity:**

**Originality:** The originality score for this activity is calculated based on the rarity of the response or idea within the study sample. Torrance (1972) used a scale ranging from 0 to 5, where a response or idea with a frequency of 5% or more is given a score of 0, an idea with a frequency between 4.99% and 4% receives a score of 1, a response with a frequency between 3.99% and 3% gets a score of 2, a response with a frequency between 2.99% and 2% is given a score of 3, an idea with a frequency between 1.99% and 1% is awarded a score of 4, and responses demonstrating creativity and strong imaginative thinking

that are not part of the common responses (i.e., less than 1% frequency) receive a score of 5 (Amir Khan, 1990, 272), (Al-Ashaal, 2007, 148).

**Details:** The detail score is calculated by awarding a point for each meaningful detail or addition that the examinee adds to the main idea, provided that the basic idea itself is meaningful (Amir Khan, 1990, 276), (Al-Ashaal, 2007, 149).

**5. 2. 2. Activity Two:** This activity includes the following skills (fluency, flexibility, originality, details), and they are calculated as follows:

**Fluency:** This is the number of responses provided by the examinee, or the number of shapes they completed. In this activity, the examinee receives a fluency score ranging from 0 to 10, with the maximum score for fluency being 10 points.

**Flexibility:** This is the number of shifts in thinking that appear in the examinee's responses. It is calculated by adding up the number of categories in which the responses fall, considering both the drawing and the title.

**Originality:** To correct the originality of Activity Two, Torrance used a scale ranging from zero to two points based on the frequency of the response, as follows:

- Score Zero (5% or more)
- Score One (2% - 4.99%)
- Score Two (Less than 2%)

Each of the ten shapes is scored individually.

**Details:** The details score for the "Completing Pictures" activity can be obtained in the same way as in the first activity (Ameer Khan, 1990, 289).

**5. 2. 3. Activity Three:** This activity consists of 30 pairs of parallel lines, and it also measures the four skills (Fluency, Flexibility, Originality, and Details).

**Fluency:** The fluency score for this activity is calculated by counting the number of responses completed by the examinee, excluding repeated responses or those irrelevant to the stimulus.

**Flexibility:** The flexibility score can be obtained by counting the number of different categories in which the responses fall. Torrance

used a category list that he found to be suitable for approximately 99% of individuals' responses. Torrance also pointed out that new categories should be added for responses that are difficult to classify within the existing categories.

**Originality:** The originality score for this activity is calculated using a scale ranging from 0 to 3 points. A score of (0) is given for responses that occur 10% or more in the study sample, a score of (1) is given for responses that occur between 5% and 9%, a score of (2) is given for responses that occur between 2% and 4%, and a score of (3) is given for responses that occur less than 2%. (Amir Khan, 1990, 299).

Torrance suggests awarding additional points in the originality dimension for Activity 3 if pairs of parallel lines are integrated. (Amir Khan, 1990, 306).

The rules for scoring the details of the parallel lines activity are the same as the scoring rules for Activity 1 (Image Formation) and Activity 2 (Image Completion). (Amir Khan, 1990, 306).

### 5. 3. The psychometric properties of the Torrance Scale:

- **Validity:** The validity was calculated in the standardization sample in the Saudi environment using construct validity, which includes:

a) Internal consistency: Correlation coefficients between the sub-scores of the Torrance Test of Creative Thinking (fluency, flexibility, originality, details, and the total score of the test) were calculated, and the correlations ranged from 0.24 to 0.88, all statistically significant.

b) Correlation coefficients with other tests: The correlation coefficients between the sub-scores of the Torrance Test of Creative Thinking - Picture Version (fluency, flexibility, originality, details) and the sub-scores of the Torrance Test of Creative Thinking - Verbal Version (fluency, flexibility, originality, details) were calculated. Some of these correlations were not statistically significant. This was explained by the fact that creative thinking ability cannot be measured with just one test; it requires assessment through both verbal and pictorial creative thinking tests, as it is a qualitative ability. (Amir Khan, 1990, 261)

Correlation coefficients were also calculated between the sub-scores of the Torrance Test of Creative Thinking - Picture Version (A) and

the students' scores on verbal and pictorial intelligence tests as well as academic achievement. The correlation coefficients between the dimensions of the creative thinking test and the intelligence tests were not statistically significant, indicating that the creative thinking tests measure cognitive abilities that differ from those assessed by intelligence tests.

The results also indicated no statistically significant correlation between the dimensions of creative thinking and academic achievement. (Amir Khan) attributed this to the nature of tests conducted in Saudi schools, which are restricted and limited to specific types of responses that do not provide students with the opportunity to express their opinions and knowledge, unlike creative thinking tests, where there are no right or wrong answers.

c) Factor Analysis: Factor analysis was conducted on the battery of pictorial creative thinking using the principal components method for the sub-scores of the pictorial battery. The number of extracted factors was three before rotation. After performing an orthogonal rotation of the axes using the Varimax method, it was found that the high loadings were distributed across three factors. It was observed that one of the three activities constituting the pictorial battery loaded onto a single factor, meaning each of these factors was specific to an activity, except for the second activity, which loaded onto two factors, and the first activity, which loaded exclusively onto the third factor after detailing.

Thus, we find that the factors of fluency, originality, flexibility, and elaboration did not emerge as separate factors.

- Reliability:

#### **a) Scoring Reliability:**

The researcher scored 20 answer sheets from Torrance's Test of Creative Thinking, Figural Form (Form A). The same answer sheets were also scored by a master's student in the psychology department who was trained in scoring this type of test. The correlation coefficient between the two scorers was calculated, and the correlation values were as follows:

Fluency: 0.99

Flexibility: 0.98

Originality: 0.90

Elaboration: 0.92

**b) Reliability Calculation Using Cronbach's Alpha:** Cronbach's alpha coefficient was calculated for the pictorial battery, and the result was  $\alpha = 0.67$ .

Validity in the Current Study:

Validity was calculated using internal consistency validity to measure the extent to which the dimensions are related to the scale as a whole, as well as the interrelation between the dimensions. The results were as follows:

**Table 3 illustrates the correlation coefficient values.**

| The dimensions: | 1 | 2    | 3    | 4    | 5    |
|-----------------|---|------|------|------|------|
| 1. Fluency      | - | 0.97 | 0.89 | 0.69 | 0.94 |
| 2. Flexibility  |   | -    | 0.84 | 0.64 | 0.91 |
| 3. Originality  |   |      |      | 0.68 | 0.91 |
| 4. Elaboration  |   |      |      | -    | 0.87 |
| 5. Total score  |   |      |      |      | -    |

Significant at the 0.01 level

It is observed from Table 3 that the correlation coefficients between the dimensions themselves and between each dimension and the total score were all high, ranging from 0.64 to 0.97, and are significant at the 0.01 level, which indicates the validity of the scale.

The correlation between the sub-scores of each dimension in each activity and the total score for the dimension was also measured, and the results were as follows:

**Table 4 shows the correlation between the sub-scores of the originality dimension and the total score for the dimension**

| Number                 | The correlation (Total score for originality) |
|------------------------|-----------------------------------------------|
| Originality Activity 1 | 0.34                                          |
| Originality Activity 2 | 0.85                                          |
| Originality Activity 3 | 0.88                                          |

**Table 5 shows the correlation between the sub-scores of the fluency dimension and the total score for the dimension**

| Number             | The correlation (Total score for fluency): |
|--------------------|--------------------------------------------|
| Fluency Activity 2 | 0.86                                       |
| Fluency Activity 3 | 0.87                                       |

**Table 6 shows the correlation between the sub-scores of the flexibility dimension and the total score for the dimension**

| Number                 | The correlation (Total score for flexibility): |
|------------------------|------------------------------------------------|
| Flexibility Activity 2 | 0.85                                           |
| Flexibility Activity 3 | 0.87                                           |

**Table 7 shows the correlation between the sub-scores of the elaboration dimension and the total score for the dimension**

| Number                 | The correlation (Total score for elaboration): |
|------------------------|------------------------------------------------|
| Elaboration Activity 1 | 0.65                                           |
| Elaboration Activity 2 | 0.80                                           |
| Elaboration Activity 3 | 0.54                                           |

It is observed from the previous tables that the sub-scores of each dimension are significantly correlated with the total score for that dimension, with correlation coefficients ranging from 0.54 to 0.88, all of which are statistically significant, except for the correlation between the originality score of Activity 1 and the total originality score, which was 0.34 and not statistically significant. This may be due to the fact that Activity 1 includes only one shape, whereas Activity 2 contains ten incomplete images, and Activity 3 includes 30 pairs of parallel lines.

From the above, we can conclude that the scale has a high degree of validity.

**The reliability in the current study:** was confirmed by calculating Cronbach's alpha coefficient, which was 0.83, indicating the reliability of the scale.

#### **5. 4. Statistical Methods:**

- Pearson Correlation Coefficient: To calculate the internal consistency validity between the dimensions and the total score, as well as between the sub-scores and the total score for each dimension.
- Cronbach's Alpha Coefficient: To calculate the reliability of the scale.
- Independent Samples t-Test: To calculate the significance of the differences between genders (males and females) in the second hypothesis.
- Mean and Standard Deviation: To calculate the level of creative thinking in the first hypothesis.
- One-Sample t-Test: To calculate the differences between the mean and the third quartile of the sample.

## 6. Presentation of the study results and discussion:

**Presentation of the results of testing the first hypothesis and discussion:** The first hypothesis states: "We expect that the level of creative thinking among fifth-grade students in the city of Touggourt is low."

To test this hypothesis, the quartiles were used, and the third quartile was extracted for the entire test as well as for each dimension individually. Then, a one-sample t-test was used to calculate the significance of the differences between the sample's mean and the third quartile as a benchmark. The results were as follows:

**Table 8 shows the differences between the mean and the third quartile**

| Variable    | Mean  | Standard deviation | Third quartile | Degrees of freedom | T-test | Significance level |
|-------------|-------|--------------------|----------------|--------------------|--------|--------------------|
| Fluency     | 10,23 | 4,66               | 13.43          | 129                | 7.82   | 0.000              |
| Flexibility | 8,74  | 3,75               | 11.30          |                    | 7.769  | 0.000              |
| Originality | 10,06 | 6,48               | 13.64          |                    | 6.292  | 0.000              |
| Elaboration | 9,26  | 7,75               | 13.33          |                    | 5.980  | 0.000              |
| Total score | 38,29 | 19,39              | 48.25          |                    | 5.854  | 0.000              |

The table shows that the mean value for the fluency dimension was (10.23), and the third quartile value was (13.43). The mean value for the originality dimension was (10.06), and the third quartile value was (13.64). The mean value for the flexibility dimension was (8.74), and the third quartile value was (11.30). The mean value for the elaboration dimension was (9.26), and the third quartile value was (13.33). As for the overall mean for the entire test, it was (38.29), and the third quartile value was (48.25). The t-value for the overall test was (5.854), while for the fluency dimension, it was (7.82), for originality, it was (6.292), for flexibility, it was (7.769), and for elaboration, it was (5.980). All t-values were statistically significant at the 0.01 significance level, as the p-value (Sig=0.000) was less than the significance level (0.01). This indicates that there are statistically significant differences between the mean of creative thinking and its dimensions, and the third quartile, in favor of the third quartile.

Therefore, the level of creative thinking among fifth-grade students in the city of Touggourt is low.

The results of this study are consistent with the study by Al-Shuraidda (2005), which showed that the level of creative thinking ability was low, and the study by Salah Ahmed Al-Naqa (2010), which indicated a decline in the level of creative thinking among secondary school students. The results also align with the study by Al-Imam (2011), which demonstrated that creative thinking among students at the College of Education was low, and the study by Dawood (2011), which found that the level of creative thinking skills among students was weak. Additionally, the results agree with the findings of the study by Al-Eid (2011), which concluded that the level of creative thinking among female students in the third intermediate grade was weak.

The results of this study differ from the study by Kim (2003), which showed that the ability for creative thinking among secondary school students was high, and from the study by Nasser al-Din (2020), which revealed that the level of creative thinking among secondary school students in Jerusalem was high.

This can be attributed to the use of traditional teaching methods, as teaching lacks the application of strategies and techniques that could help generate a wide variety of new and creative ideas. Many studies have proven the effectiveness of modern teaching strategies in developing creative thinking among students. For instance, the study by Barhoum (2013) showed that there were differences in creative thinking skills in favor of the experimental group, which was taught using the Six Thinking Hats strategy. Additionally, the study by Al-Khatib (2011) aimed to examine the impact of using brainstorming strategies in developing creative problem-solving skills among female university students, and the results showed statistically significant differences in favor of the experimental group.

The low level of creative thinking can also be attributed to the teacher, who has a significant deficiency in the in-service training process. This training should equip him with new knowledge and various educational activities to overcome the difficulties he faces. The use of traditional methods negatively affects his teaching performance, which in turn impacts the students' academic achievement and the development of their creative thinking.

**Presentation and discussion of the results of testing the second hypothesis:** The second hypothesis states that:

Males differ in creative thinking and its dimensions (fluency, flexibility, originality, and elaboration) from females. To test this hypothesis, it was converted into a null hypothesis, which states:

"There are no statistically significant differences in creative thinking and its dimensions (fluency, flexibility, originality, and elaboration) among fifth-grade students based on gender."

To calculate the significance of the differences between the means of the students' scores (males - females) in the creative thinking test and its dimensions individually, an independent samples t-test was used. The results were as follows:

**Table (9) shows the significance of the differences between males and females in the dimensions of the creative thinking test and the test as a whole**

| Dimension    | Gender  | Sample | Mean  | Standard<br>Deviation | T-test | Degrees<br>of<br>freedom | Significance<br>Level |
|--------------|---------|--------|-------|-----------------------|--------|--------------------------|-----------------------|
| Fluency      | Males   | 60     | 8.43  | 4.296                 | 4,339  | 128                      | 0.000                 |
|              | Females | 70     | 11.77 | 4.437                 |        |                          |                       |
| Flexibility  | Males   | 60     | 7.28  | 3.469                 | 4,362  |                          | 0.000                 |
|              | Females | 70     | 9.99  | 3.565                 |        |                          |                       |
| Originality  | Males   | 60     | 8.63  | 6.357                 | 2,366  |                          | 0.000                 |
|              | Females | 70     | 14.29 | 6.384                 |        |                          |                       |
| Elaboration  | Males   | 60     | 17.35 | 6.295                 | 2,662  |                          | 0.000                 |
|              | Females | 70     | 10.90 | 8.528                 |        |                          |                       |
| Overall test | Males   | 60     | 31.70 | 17.382                | 3,767  |                          | 0.000                 |
|              | Females | 70     | 43.94 | 19.358                |        |                          |                       |

From Table (10), we can see that the mean score for females in the overall score and the sub-scores of thinking skills (dimensions) is higher than the mean scores for males. Using the independent samples t-test, the results showed statistically significant differences at the 0.01 significance level in creative thinking and its skills (dimensions) in favor of females. Therefore, we accept the proposed hypothesis, and it

can be concluded that there are statistically significant differences in creative thinking based on gender in favor of females.

\* The results of this study are consistent with the findings of Dawood (2011), which concluded that there are statistically significant differences between the mean scores of students in the level of creative thinking skills according to the gender variable, in favor of females. Additionally, the study by Al-Haddabi et al. (2012) showed statistically significant differences between males and females in the level of creative thinking skills, in favor of females.

The results of this study differ from the findings of Al-Rawashdeh and Al-Qudah (2003), which showed no differences in the level of creative thinking attributable to the gender variable. Additionally, the study by Al-Imam (2011) found statistically significant differences in creative thinking among students at the College of Education, attributed to the gender variable, in favor of males. The study by Nasser El-Din (2020) also revealed statistically significant differences in creative thinking based on gender, with the differences favoring males.

These results can be attributed to the individual differences between males and females, which may have an impact on creative thinking. These differences are numerous, including the way of organizing thinking, the strength or weakness of memory, quick wit, or flexibility in thinking. Additionally, the nature of social upbringing and the females' desire to showcase their various abilities in studies, including their innovative capabilities, contrast with males, who have interests that are not as prevalent in females.

## 7. Summary of the Study:

The aim of the study was to explore the level of creative thinking among fifth-grade students, which is an important topic for keeping up with developments in the scientific and technological fields. Focusing on creative thinking is like preparing for the future, as the creative individual is better adapted to the future, its needs, and its fluctuations.

The results showed that the level of creative thinking is low, and it also revealed that females excel in creative thinking compared to males. Based on this, the following recommendations can be made:

- Making adjustments to the activities included in the textbooks to ensure the development of creative thinking.
- Organizing training courses for teachers to train them on methods and strategies for fostering thinking skills among students.
- It is essential to raise teachers' awareness of the importance of diversifying teaching methods that move away from traditional approaches, and help students engage in imagination and creative thinking. Additionally, attention should be given to effective teaching methods, with a focus on the more effective use of educational tools by teachers.
- Implementing a training program aimed at developing the level of creative thinking among students at this stage.
- Conducting a study to explore the relationship between creative thinking and certain psychological, social, and economic variables.