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Effectiveness of the Formal Aspect of the Torrance Test Identifying Levels of Creative Thinking among Tenth Grade Students: A Case Study

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Abstract: This qualitative study aims to identify levels of creative thinking, including the skills of fluency, originality, details and flexibility, among a group of tenth grade students in Palestine from Jerusalem and Ramallah schools, according to the gender variable, using the formal aspect of the Torrance test of creative thinking. The study sample consisted of students females selected from Secondary School for Girls and males from one of the Excellence School. The results differences in the degree of originality, flexibility and details in favor of female students, and a difference in the degree of fluency in favor of male students, which reflects the societal context with regard to their creative thinking skills. In light of these findings, the researchers recommend the manner of presenting the educational curricula be reconsidered and that teachers be given training in the use of creative thinking strategies and enrichment activities during the presentation of educational content, thus also enhancing creativity among their students.

Keywords: Torrance test, Creative thinking, Higher Order Thinking

Introduction

A gifted and talented child is a gift from God to the family in particular and to society in general. All that we witness of development is the result of the thought of talented people who knew the problems of their societies, and produced inventions that developed the means of progress, advancement and prosperity. Obviously, caring for the gifted child is a joint, reciprocal and integrated responsibility between the family, the school and the gifted (Al-Khamisi, 2007).

There is a growing feeling among educators that thinking is a skill that should receive immediate attention, and that thinking is a skill that can be developed through the practice of some basic skills (Al-Surour, 2007). It appears that high IQ scores are not thinkers, and on the other hand, people with lower IQ scores are more effective thinkers (Faydi, 2007). Teaching and training gifted thinking aims to prepare individuals who are capable of creative thinking and directing their ideas towards progress and growth rapidly; This requires preparing students through many programs prepared for this field (Al-Husseini, 2012). The issue of talent has received great attention from educators, and many theories have emerged that explain talent, including Renzulli's theory (Al-Surour, 2007).

In light of the developments that the contemporary world is witnessing in various fields of knowledge, it is necessary to pay attention to creative and talented people who are able to solve problems and adapt to the change that occurs in the surrounding environment in order to keep pace with that and provide everything new in various fields.

In addition to dealing positively with the changes of the times to serve the modern trends, there are many motives for paying attention to thinking and developing its skills, including the production of learners who possess self-learning tools and the motivation to search for knowledge. (Al-Khamisi, 2001).

Creativity metrics are important to measure the creative abilities of different students in creative drawing or writing. Accordingly, there were many tests, some of which include verbal situations and some include explanatory situations Rousan (2001) argues that there are a number of measures to determine creativity such as the Torrance Scale, Guilford Scale, Wasch, Kogan, Klaus-Erian, and others.

We have a case study to compare the creative thinking of tenth grade students in Al Majeda Waseelah High School and the School of Technological Excellence by applying the Torrance formal Aspect Test Model (B). We will talk about the proposed program for developing creative thinking among students and the role of the school in developing creative thinking. This study aims to reveal the level of creative thinking among tenth grade students in different Palestinian environments, and for this purpose, the formal aspect of Torrance Test of Creative Thinking will be applied to a group of tenth grade students from Al-Majda Waseelah High School for girls in Ramallah and the School of Excellence in Science in Jerusalem. It also aims to develop the basic skills of teachers by training them in metacognitive skills and strategies that help students think creatively. The importance of this study lies in the importance of revealing the level of creative thinking of students and their selection to enroll in special educational programs. It gives those in charge of the educational process the need to reconsider the curricula and present them with new methods that focus on active learning. In addition to the need to provide enrichment activities that raise the creativity level of students.

Defining Creative Thinking and Explanatory Theories

The concept of creative thinking is a broad concept, with researchers differing in its definition. Therefore, there is no single concept defined for this term; In fact, there are several concepts associated with thinkers, and each of them has its own way of looking at the nature of the study that deals with creative thinking. A third team of scientists think creatively through the mental matters that directly interfere in its formation, and the following are several definitions of creative thinking. Whereas, creative thinking is “the individual’s ability to produce that is characterized by the greatest intellectual fluency, flexibility, originality and far-reaching ramifications, in response to a problem or exciting situation (Khairallah, 1981). It is also known as the “ability to produce something new and come up with of useful information (Joane, 1993). It is also indicated that creative thinking is “the thinking through which we get to the new ideas or results that no one else has preceded, and the creative individual may reach them with independent thinking, and the results are irrelevant.” Thus, it is also believed that he is heading towards his goal in a disorganized and unpredictable way, because it does not go within specific steps, and this is what distinguishes it from others (Adas, 1996). The studies paid special attention to the level of students' intelligence and creative education, as (Paul Torrance) created a program to solve future problems in schools by presenting a project that contains creative solutions to future problems by focusing on students' creative strengths and talents. students in a variety of ways (Treffinger et al., 2012). Paul Torrance traveled on his intellectual journey in 2001 to explore psychology and ancient science, including Native American traditions, to create a foundation for inner intelligence. And work to develop and enhance ways of creative thinking through the focus of children in the pre-school stage. Even Paul Torrance in his study of seven ways to develop creative thinking and raise the level of intelligence in children; Among the most important of them: a section that examines the effort made in the process of developing creative thinking in children. And a department that studies leadership for the process of inner intelligence and creative thinking as well as the ability to use a multi-sensory approach, including intuition, reasoning, and visualization to draw on children's inner knowledge about how to solve problems (Sisk, 2016). A study (Grantham, 2013) confirmed that at the national level, the dark-skinned male community is underrepresented in gifted programs compared to others (U.S. Department of Education, Office of Civil Rights, Civil Rights Data Collection). This is attributed to the unconstitutional segregation system in schools in the country. This article draws attention to how Torrance appreciates different types of intelligence in students who are unfamiliar with society, and uses his scholarship to highlight creative ways students of color think using Torrance's workgroup as a guide.

The study also aimed (Basileh, 2015) to reveal the role of creative thinking and the ability to solve problems in the achievement in mathematics for the secondary stage during 2012-2013. The results showed that there were statistically significant differences at the level of significance of 0.05 between the average scores of students with regard to creative thinking and ability On solving problems as reflected in the average. In light of these results, the researcher recommended using teaching strategies that develop creative thinking and problem-solving skills, and holding training courses for mathematics teachers.

The Importance of the Societal Context in Increasing Creative Thinking

The creative thinking process is greatly influenced by society and the environment in which individuals live, and is influenced by customs, traditions, political and social conditions and cultural heritage. There are societies that encourage independence and self-reliance and encourage development and progress without restrictions, while there are societies that do not encourage independence and intentionally suppress abilities. While humanity seeks to modernize, there are a number of factors that can increase the individual's motivation and motivate him to think creatively, or perhaps hinder him in some individuals, including:

- Subjective factors: They are divided into:

- The biological structure of the individual, which helps creativity due to the person having above average mental abilities and a high IQ.
- Feeling of freedom and security, which is one of the basic needs. Wars make the student feel frightened, confused, and distracted.
- The concept of self-actualization: Individuals who know their abilities correctly have a high self-concept and are therefore able to achieve their goals and show their creativity.
- The ability to analyze and synthesize by analyzing things into their basic parts and then installing them to be an integrated unit. Fixing concepts to form relationships refers to creativity.

- Environmental factors:

It is related to society, its culture and the surrounding environment such as family, school and classroom, where the development of creativity requires a teacher who cares about students, takes into account individual differences, values their achievements, creates opportunities for them and motivates them to interact and interact with society. It is divided into:

- Economic and cultural level: If the individual has a good economic and cultural level, awareness and culture, his ability to achieve and produce creativity increases.
- The educational method: If the method of teaching that takes into account individual differences when teaching students is absent, there will be a weakness in creativity and difficulties in emotional expression will appear.

Explanatory Theories (Theoretical Framework):

Although constructivist theory has added new dimensions to learning; Researchers moved towards new ideas based on cognitive psychology, and as a result of these developments, a supra-mental approach to education emerged in the early seventies, based on the work of some researchers such as John Flavel, who developed some ideas about how learners understand themselves, and how they reveal learning processes Above the underlying mindset of acquiring knowledge, this interest in this concept developed in the eighties, and it continues to receive great interest at both the theoretical and applied levels, as it has proven effective in various academic and educational fields (Flavel, 2004). However, the nature of the learner's culture is clearly visible in the educational system. The educational process cannot be separated from society and culture. Understanding the ecosystem - as Bernfrunber mentioned - provides a deep understanding of how and why students interact with near and far situations and how they learn from them. It also has an impact on moral development and the relationship of students with each other, because the student develops through his environment that affects his behavior, as the individual is not only affected by genetic formation, but also includes his social culture and the influence of people around him (Brendtro, 2006). And this was confirmed by Renzulli. In his model, which made important additions, such as expanding the concept of talent and excellence, and also highlighting the role of motivation in increasing the level of achievement and highlighting the importance of interaction between general abilities, creativity and motivation (Renzulli, 1999).

Description and significance of the Torrance Test of Creative Thinking:

The Torrance Test of Creative Thinking, established by Torrance in 1966, is one of the most widely used measures of creativity and innovation, and has been selected internationally for being free of cultural bias. The Torrance test has been translated into several languages, so during our study we used the test in Arabic, and the

Torrance test is divided into two parts. The second section is formal: it includes three tests (sub-activities), namely: building pictures, completing the picture, parallel lines.

The utility and importance of the Torrance Tests of Creative Thinking is that it is a way for researchers to identify and select talented students to enroll in their educational programs. Gifted and gifted students need educational care and services distinct from the traditional programs and services available in regular schools (Obeid, 2000). The philosophy of establishing special programs for the education and education of the gifted and talented is based on justifications, the most important of which are the shortcomings of public education curricula and the welfare and development of society (Judge, 2008). The teacher seems to have practically no choice but to focus on the majority, which is usually in the middle. Perhaps the teacher pays more attention to those who have below average abilities, but the superior students have no chance but to be occupied with additional tasks and issues of the same level given to the majority at best (Mukhtar, 2005). Studies have shown that gifted students require differentiated educational care in addition to what is normally provided in regular school programs. Adjustments to the educational system are necessary to solve the problem of students who are at the bottom of the ability ladder, and Gifted psychologists use the same logic in their defense of the need for talented and talented individuals for special programs.

Gifted and gifted children represent a very important national wealth that should not be wasted due to neglect and lack of care (Ferrman, 2005). The position of society in facing the challenges posed by the nature of age depends to a large extent on the extent of care provided to this group and the provision of appropriate educational opportunities that can help each child reach his full potential. It is no secret to anyone that the current and future conflict between the countries of the world is governed by their capabilities in the scientific, technical, economic and military fields. There is no doubt that minds can play a prominent role in achieving national achievements at these levels. Through this role, the gifted and talented contribute to the well-being and development of society and ensure its security and future (Al-Qadi, 2008).

Configuration Test Validation for Torrance B Test:

This scale consists of several pages. The first includes basic data about the student, and instructions for applying the test. The second includes the test that the student will answer in the specified time. The test executor makes sure that each student writes down their data and asks the students to continue while reading the instructions. The time allowed is 10 minutes. This test consists of three dimensions: fluency, flexibility, and originality, and each dimension has a different correction method. In fluency, responses must be reviewed before starting the test correction to exclude what is repetitive, as well as to determine the appropriateness of the response in the stimulus and to exclude what is irrelevant in the stimulus, the fluency score is calculated by calculating all responses minus repetitive or irrelevant responses to the stimulus. Flexibility is calculated by adding the number of categories in which the responses are, taking into account the fee produced by the examinee. The number of response categories is calculated by classifying the drawings he produced, such as human, animal, celestial, flower...etc. These categories are also included in the sample. college prior to awarding the degree. As for originality, its degree is estimated based on the rarity that emerged from the performance of the study sample. It depends on the responses of others, and the frequency of the response between the group. An answer cited with a score of 5% or more gets a score of zero, an answer cited with a score (4-4.99%) takes a score of 1, and an answer reported (3%-3.99%) is a score of 2. The response that was mentioned at a rate of (2%-2.99%) takes a degree of 3, and the response that was mentioned at a rate of (1%-1.99%) is given a degree of 4, and the response that was mentioned at a rate of less than 1% takes a degree of 5.

In this study, the test was standardized, so that we only analyzed the formal aspect of the test by focusing on the following: fluency, flexibility, originality, detail, and title. Fluency: Every picture drawn takes a degree.
Flexibility: The number of categories in the drawing is determined for the student (human, animal, plant, buildings and each category takes a grade.
Originality: Estimated up to 5 degrees according to the response rate in each drawing.
Details: A score is calculated for each meaningful part, not counting the duplicate parts.
Title: Calculate up to a maximum of 3 marks depending on the accuracy and strength of the description and analysis.

Method

The two researchers used the qualitative approach (case study) on a sample of ten students of the tenth grade in Palestine, five students from Al-Majda Wassila Secondary School, and five students from one of Beit Hanina schools. They were selected intentionally, taking into account some characteristics such as gender and place of residence to enrich the study and the possibility of a more holistic understanding, and in order to preserve the privacy of the respondents, they were given pseudonyms. The researchers used the formal aspect of the Torrance test of creative thinking. This study was conducted during the second semester of 2022.

Participants

First: Y.M

Y.M from the tenth grade c is studying at Al-Majda Waseelah, her academic level is excellent, she lives in a middle-income family, loves to read and learn about ancient civilizations and myths, she feels that she knows about the personality of others, so she tends to read in the field of psychology. She participated in a few competitions for family reasons, and when she was able to participate, she wins or advances to advanced stages. She loves to make friends, loves to make others happy, loves to be always positive and optimistic, loves to prepare food and eat delicious food.

Second: S. A

S.A., born in Palestine in Ramallah and Al-Bireh Governorate, from a middle-income family, studies at Al-Majda Wasila Secondary School for Girls, Birzeit in the tenth grade. Before that, she joined two schools: the first in one of the Latin Patriarchate schools, and then an UNRWA school, she loves to study and research outside the academic framework She loves to research social matters, self-development, mind and business management, and keeping pace with technological development in harmony with the times on this planet. It includes a course of design professions, a course on converting psychological stress into a motivating friend, and a course on setting goals and making decisions she also aspires to take courses in programming and artificial intelligence, where her friend and she participated in the Palestine Science and Technology Fair and got eighth place out of a thousand projects at the national level. Music and reading a book, and she also loves watching football. No wonder we are the sons of the great Palestine, and we must be children worthy of it.

Third: SH.P

SH. P. 16 years old, she studied from the first to the seventh grade in a public school, then moved to live in Birzeit, then moved to the agency school until the ninth grade and then a government school, from Hebron she live at the present time in Birzeit. Her hobbies are drawing, reciting poetry, reading books, loves her cats, Her family, her friends, the music, the books, the calm.

Fourth: A. O

A.O. From the northern West Bank, she studies in a government school, imbued with Islamic, national values and adhere to them, familiar with the local and international arena, and economic and sports news, writer in the Syrian literary magazine Shaheb electronically, member of the Arab Culture Club with a card signed by the Ministry the culture, she won first places in speaking and writing competitions, attended the first youth cultural conference that was held at the Military University with twenty training hours, concluded the ambulance course from Medical Relief with sixteen training hours, read nearly two hundred books, and wrote hundreds of thoughts, some of which were published in magazines and books Culturally, she achieved an advanced position with my colleague in the International ISEF program and we aspire to patent. she branches out in the field of programming and artificial intelligence, the next global language. She conducted several interviews and appeared on several Arab and local screens.

Fifth: M. p

M.P. A student in the tenth grade at Al-Majda Wasila Secondary School for Girls. She studied the eighth and ninth grades in an UNRWA school. She loves sports of all kinds, is good at writing and speaking, and tries hard to develop herself in all these matters.

Sixth: Yazan

He is considered one of the most outstanding students, as his average has not been less than 95 in recent years. He likes to feel respected among people. He loves pranks and humor and he feels like the humor empties part of his inner frustration. He doesn't feel reassured in this country, knowing that her best friend was martyred two years ago, so his ambition is to become successful in the matriculation, study abroad and become a programming engineer. His hobbies are reading, she memorized four parts of the Qur'an, and his favorite place is the mountains.

Seventh: Hamza

He lives in a good environment, he has the support of his parents, but he beards a great responsibility, as he is the eldest among his brothers and often he is responsible for them, knowing that his mother and father work. He feels that he integrates more than his friends, his goal is to establish a contracting company with his friends so that he is the builder, and his first friend is responsible for the water, and his friend is responsible for laying the pipes, and the last is the construction official, his favorite place is trees and nature and his hobby is mountaineering.

Eighth: Rami

He lives in the old town, and his family income is low, so during summer vacation he helped my father to work to improve their income. When he felt sad he went to sleep but his favorite place when he was in the sea. His hobby is swimming and he has a great passion for cars. His goal is to become an electronics engineer in a leading company.

Ninth: Muhammad

He is a student who tends to scientific disciplines more than literature. He loves horse riding and his hobby is playing football. His ambition is to become a computer engineer, so he feels that he has to make a great effort in scientific subjects such as mathematics. He will be good with his family and friends. When he was sad, he preferred to go out with friends, and his favorite place is the sea.

Tenth: Ahmed

He is considered an average student, as his average was not less than 80 during the previous years. His favorite color is black because he felt that it expresses his leadership personality, even though he is the youngest among his brothers. He lives in a psychologically supportive environment and has a good relationship with everyone. His goal in life is to become one of the football stars, especially a goalkeeper. It's hard for him to feel sad, but when he did, he turned on his computer and start talking to friends.

Schools Background

It is also necessary to know a brief about each school and its educational policy in which students study. The following is a brief description of each one:

About the First School

The school was established in 1977 in the town of Birzeit. It is a girl secondary school. It includes the scientific and literary branches. This school has taken its approach to keep pace with the human race, which is based in the fields of thought, production and creativity, and includes the scientific and literary specializations. A national, scientific, cultural, systematic thesis, and the majority hold a master's degree, and this helps to improve the students' achievement performance and provide them with valuable information that helps them improve their job performance in their future working lives and the lives of its students. Advanced and equipping classrooms and laboratories in proportion to high-quality education, the school also engages the local community in planning and engaging in the activities held by the school constantly, where one of the priorities is the extracurricular activities, which develop the student's perceptions, help them discover themselves, improve their approach, and develop their talents, as they help guide students' tendencies and help them choose the appropriate disciplines for them.

About the Second School

A school located in Beit Hanina. It is a mixed secondary preparatory school under the supervision of the Jerusalem municipality. It is worth noting that the school is able to select students who apply for it. It accepts grades above (85) and teaches the Bagrut curriculum.

It contains scientific disciplines such as physics, chemistry, biology, engineering disciplines, cartoons, Programming, Bio and Technology. Mathematics majors 3, 4 and 5 units. It is worth noting that the school encourages creative thinking through systematic activities by designing electronic graduation projects that contain patents, and making permanent laboratory experiments, in addition to encouraging students to technological education during educational lessons. The school also focuses on guiding students towards creative thinking in extracurricular activities. Such as the artificial intelligence project, adventures, photography, and psychological empowerment programs.

Results and Discussion

Table 1. Results of the first school

Name	First question			Second question					Third question			
	originality	details	fluency	originality	flexibility	details	title	fluency	originality	flexibility	details	title
Y.M	100%	100%	80%	66%	80%	80%	60%	78%	60%	100%	100%	81%
S.A	100%	100%	80%	74%	90%	100%	96%	100%	83%	100%	100%	88%
SH.P	100%	100%	100%	88%	80%	80%	90%	94%	75%	100%	100%	81%
A.O	100%	100%	90%	82%	90%	100%	80%	83%	75%	84%	84%	88%
M.P	100%	100%	80%	84%	80%	80%	100%	94%	59%	100%	100%	70%
Average	100%	100%	100%	79%	84%	88%	85%	90%	70%	97%	97%	82%

Table 2. Results of the second school

Name	First question			Second question					Third question			
	originality	details	fluency	originality	flexibility	details	title	Fluency	originality	flexibility	details	title
Yazan	80%	100%	100%	60%	60%	90%	63%	100%	52%	88%	88%	60%
Hamza	90%	100%	100%	47%	83%	77%	46%	100%	52%	40%	100%	63%
Rami	70%	100%	100%	32%	50%	80%	47%	100%	62%	94%	89%	44%
Mohammad	90%	100%	100%	64%	70%	90%	73%	100%	72%	83%	88%	70%
Ahmad	100%	100%	100%	62%	90%	70%	50%	100%	44%	77%	66%	43%
Average	86%	100%	100%	53%	70.6%	81.4%	55%	100%	56.4%	76.4%	86.2%	56%

The previous table shows that the percentage of authenticity for females ranges between 70%-100% for each question, while for males it ranges between 53%-86%, and this is due to the low percentage of male response among females.

As for the percentage of details for females, it ranged between 88% - 100% for each question, and for males, the percentage of details for them ranged between 81.4% - 100%, and this is due to the accuracy and distinction of details in the drawings presented by the females, and this is also due to the attention of females to details. As for the fluency among females, it ranged between 90%-100%, while for males it was not less than 100%, and this is due to the males' interest in quantity and not quality. As for flexibility, it ranged from 84% to 97% for females and from 70.6% to 76.4% for males, due to the diversity of drawing categories among females more than males.

Finally, with regard to the title, for females it ranged between 82%-85%, while for males it ranged between 55%-56%, due to the lack of use of abstract expression and feelings in the presentation of titles among males.
It was found from the previous that there are differences for females in originality, flexibility and details, and this result is attributed to the fact that female students are interested in everything new, and female students are characterized by passion and motivation more than males in performing tasks, as creative thinking requires that the student be active and involved and has diverse ideas for discussion and out of the ordinary , which leads to arousing motivation towards problem-based learning, and this is consistent with a study (Basilah, 2015).

We also note that the environment in which the students live has a great impact on their way of thinking and their outlook on life, and this was revealed by watching the details of the drawings submitted by the students. Females had a creative appearance due to the fact that the environment in which the students live is a supportive and stimulating environment, both at the school level, through the teacher's support for the student in his self-reliance and his help in participating in methodological and non-curricular activities that worked to develop their creative abilities, and the family by providing good care and communication Positive relationship between parents and their children and appreciation of their achievements and harmony with them. As for the societal level, by integrating them into cultural paths that support their ideas and make them implementable. This led to the crystallization of a creative personality for them, Here, the student feels like a small scientist discovering knowledge and has a sense of achievement and self-respect, which raises her level of ambition and earns her more knowledge and creativity.

The students were also selected from a community environment under occupation. This was noticed through their drawings of violence, due to the daily attacks by the occupation, demolitions, sieges and permanent confrontations. This led to a decline in the creative energy of males. Knowing that the school's policy is working hard to create a supportive and purposeful academic atmosphere and an attempt to permanently integrate students into extracurricular and curricular activities, but it seems that the students' lack of safety and freedom suppresses the creative abilities of males, which leads to a weakness in the student's confidence and fear of failure, so students tend to resist new ideas for fear that these ideas will reflect on their security and stability, so he considers these creative ideas to be nothing but a waste of time and destabilization of their gains. Consequently, the spirit of competition and cooperation among students is absent, which hinders his creativity.

Obstacles and Linking Them to the Palestinian Reality:

- There was a difficulty in submitting the test due to the lack of educational activities, art and drawing at the secondary level in schools, and the lack of massive promotion of extracurricular activities, as our Palestinian educational system suffers from some problems in the educational foundations on which the evaluation process depends. The greater reliance is on the quantity of what the student achieves and not on its quality, and there is another problem related to the Palestinian educational system's lack of focus on measuring non-cognitive aspects, especially since the focus in the philosophy of education and the philosophy of building curricula is on the learner's retention of information and not its activation or representation and compatibility with it. Which makes the teacher a transmitter of information and not a facilitator of it. Thus, the teacher seeks to measure the extent to which the student possesses or retains the information, and not the extent to which the information affects the various aspects of the student's personality.
- The impact of the living conditions on the students during the test presentation, which was evident from their drawings and the way they were presented.
- Schools lack educational activities that develop students' creative thinking during the educational lessons, so we see the separation of extracurricular activities from the educational content.
- Lack of teachers' enrollment in creative programs through which creative thinking is communicated to students, noting that the teacher is the guide and guide for students in their way of thinking.

The Obstacles that the Students Faced during the Application of the Test:

- When applying the test, not all students took the exam with a high level of seriousness
- The wording of the questions was not clear and smooth
- Students complained about the number of test items
- There was not enough time for some students
- Students were not used to such standards before.

Recommendations

- The results of the study indicated that the students' creative thinking skills were revealed. Accordingly, the two researchers see the importance of generalizing the experience to all schools.
- The results indicated that the percentages of creative thinking components are higher among females than males. Therefore, the researcher recommends researching the reasons that led to the decline in results among males. And work to intensify educational activities for males in schools.
- The two researchers recommend reconsidering the adopted curriculum and working on re-designing it in line with the progress of creative development of students. And highlight the critical analytical aspects of the curricula and the ability to keep pace with the developments of the twenty-first century.
- The two researchers recommend conducting training programs for teachers, and qualifying them by holding intensive creative thinking courses during the summer vacation.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

Acknowledgements or Notes

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