opción

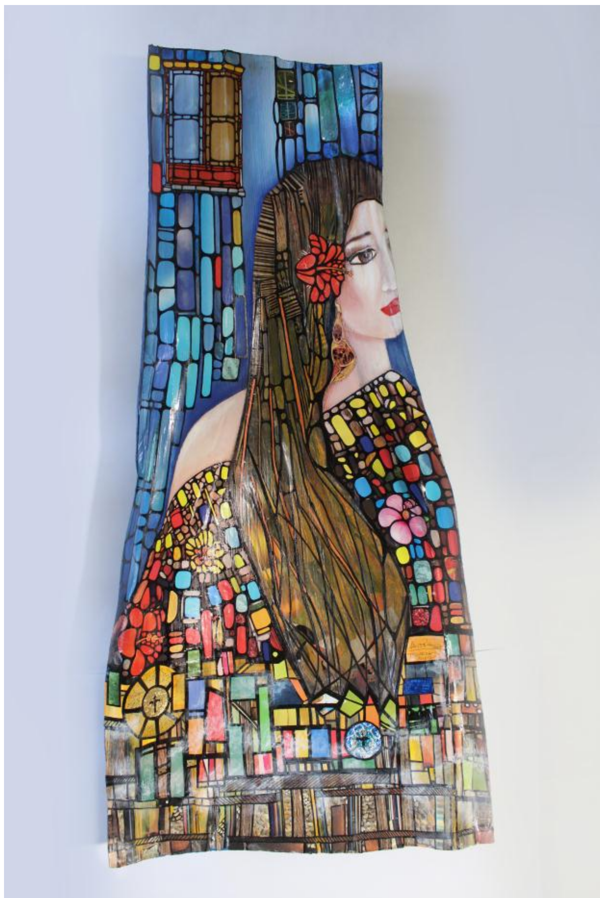
Revista de Antropología, Ciencias de la Comunicación y de la Información, Filosofía, Lingüística y Semiótica, Problemas del Desarrollo, la Ciencia y la Tecnología

Año 34, 2018, Especial N° 16

Revista de Ciencias Humanas y Sociales

ISSN 1012-1587/ ISSNe: 2477-9385

Depósito Legal pp 198402ZU45



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Maracaibo - Venezuela

Opción, Año 34, Especial No.16 (2018): 1273-1304
ISSN 1012-1587/ISSNe: 2477-9385

The mathematical proficiency of the students of the mathematics department

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Abstract

To achieve the objective of the research to identify the mathematical proficiency of the students of the Department of Mathematics in the faculties of education, a test was constructed measuring cognitive mathematical proficiency (conceptual understanding, procedural fluency, strategic efficiency, adaptive reasoning) of (37) paragraphs. The results showed the skill of the students of the research sample in some of its components which is the adaptive inference and the inclination produced and they are not proficient in conceptual understanding, procedural fluency and strategic efficiency. In conclusion, students of the Department of Mathematics in Education Colleges are proficient in mathematics.

Keywords: Mathematics, Department, Students, University, Proficiency.

Recibido: 04-12--2017 •Aceptado: 10-03-2018

La competencia matemática de los alumnos del departamento de matemáticas

Resumen

Para lograr el objetivo de la investigación para identificar la competencia matemática de los estudiantes del Departamento de Matemáticas en las facultades de educación, se construyó una prueba que mide la competencia cognitiva matemática (comprensión conceptual, fluidez de procedimientos, eficiencia estratégica, razonamiento adaptativo) de (37) párrafos. Los resultados mostraron la habilidad de los estudiantes de la muestra de investigación en algunos de sus componentes, que es la inferencia adaptativa y la inclinación producida y no son competentes en comprensión conceptual, fluidez en los procedimientos y eficiencia estratégica. En conclusión, los estudiantes del Departamento de Matemáticas en Colegios de Educación son competentes en matemáticas.

Palabras clave: Matemáticas, Departamento, Estudiantes, Universidad, Competencia.

1. INTRODUCTION

The fact that the students of the research sample are from the mathematics departments in the faculties of education, which aims to prepare the teachers with scientific and humanitarian specialties working in general education, is supposed to be characterized by these students' ability to recognize the interconnections between the parts of mathematical knowledge and fluency in the development of strategic solutions to problems with a desire and inclination towards production. They can deliver concepts to their students and equip them with the skills of formulating and solving mathematical problems, which is the ultimate goal of teaching mathematics and enabling them to achieve a positive tendency towards mathematics.

The results of some studies on the reality and level of performance of the students of the mathematics department in the faculties of education, such as the study of (Abdulkhaliq, 2001; Obaidah, 2017; Shukri, 2007; Kareem, 2017), as well as mathematical skills and computational processes, and their inability to choose appropriate methods of solving and recall basic information that rely on mathematical reasoning and logical sequence in the solution, which makes it difficult for them to analyze mathematical attitudes to the basic elements. And after defining the number of teaching mathematics department of the concept of mathematical ingenuity and what its components mean and how they are measured through focus groups, some of them accounted for 80% of the weakness of their students for some subfields of sportsmanship such as linking concepts with their applications and lack of knowledge of the appropriate strategy to reach the solution They also pointed to the absence of a tendency or desire towards their specialization. They suggested the need for criteria to verify these theoretical views through a research methodology. The most effective was to measure the mathematical proficiency of their students through cognitive tests and other sentimental, and the modernity of the subject and the absence of an Iraqi study to our knowledge identified this variable, so we saw a diagnostic study on the possession of students of the Department of Mathematics in the faculties of education of sportsmanship was the problem of research:

Are the students of the mathematics department in the faculties of education proficient in mathematics?

2. BACKGROUND

According to the definition of Hassan (2016), a group of processes, thinking skills, trends & tendencies that enhance the learning of mathematics, which includes understanding mathematical concepts & the implementation of procedures with flexibility, accuracy & form appropriate & the ability to formulate & represent & solve problems by adopting strategies of logical reasoning & reasoning & justification & interpretation of solutions, & the rationality of mathematics in practical life (Hassan, 2016). It consists of five components:

2.1. Conceptual Understanding

It is the precise treatment of mathematical concepts & the associated circulars & processes of building knowledge in a deep & clear, & can be inferred by a number of indicators are: understanding the meaning of the mathematical concept & it's symbols & characteristics & processes associated with it, & the conclusion of mathematics circulars associated with it, & how it can be applied in life situations (Qaied, 2003). Masarwa (2012) defined it as an understanding of the mathematical concept of concepts & generalizations & linking these ideas so that the learner has the ability to know & use the content of the mathematical idea (Masarwa, 2012). Through the study of educational literature & procedural definitions of a no. of research has been drawn characteristics & characteristics that must be characterized by the learner who has a conceptual understanding: Understanding basic mathematical concepts of terms, concepts and relationships, integrating mathematical ideas with understanding, linking concepts with their applications, retrieving rules from memory, representing mathematical situations in form or drawing or other mathematical representations, ability to evaluate their answers with some reasonableness and logic; Different situations reach common patterns.

2.2. Procedural Fluency

The intended procedural fluency is knowledge of procedures, knowledge of when and how to use appropriately, skill and performance flexibly and accurately. Burdy (2018) states that procedural fluency is all the ways a learner can use to solve mathematical problems, including written procedures, mental procedures, computer use, or manual modeling. It is important that the procedures are effective and used accurately and yield correct answers (Omari, 2017). Through the study of educational literature and procedural definitions of a number of research has been drawn characteristics and characteristics that must be characterized by the learner who possesses procedural fluency: skill in the implementation of procedures with flexibility and accuracy, understanding concepts and procedures in a predictable manner, the ability to use the algorithm suitable to perform calculations, Accomplishing routine tasks efficiently.

2.3. Strategic Competence.

The strategic competence is that the learner is able to formulate & re-present the problem mathematically and develop strategies to solve it using the appropriate concepts and procedures, problem solving is essential to learning mathematics and accepting the challenge to address a task that is routine and has no clear solution (Majied & Yasin, 2012). One of the learner's strategic competency indicators is: Formulates and represents mathematical issues, uses well-known formulas to solve problems, identifies necessary data and ignores excess information, checks access to a special case to help him solve the problem rather than the general situation.

2.4. Adaptive Reasoning.

Masarwa (2012) defined the learner's ability to think logically and rationally by using logical relations between positions and concepts to analyze, explain, justify, & perform mathematical tasks after training on supra-cognitive skills, justification is an essential element in adaptive reasoning To be supported by sufficient reasons, and the learner is able to infer when he has a sufficient knowledge base and the task is understandable, encouraging and familiar steps. Although the importance of the components of mathematical ingenuity and their mutual influence with each other, the adaptive inference is the glue that binds all branches together. It allows concepts and procedures to be interconnected in reasonable ways, and proposes special and possible solutions to solve the problem, the center of adaptive reasoning is the justification and interpretation of the claims. One of the indicators of adaptive reasoning that must be characterized by the learner is: seeks to think logically about the relations between knowledge and attitudes, the learner provides explanations and justifications, adjusts any change in hypotheses.

2.5. Productive inclination (Productive desire) Productive Disposition

It is the intention of the learner to see mathematics as a useful material worthy of interest and characterized by rationality and have a value and meaning and combined with the efficiency and diligence of the individual. If the learners developed their conceptual understanding and procedural equivalence and strategic competence with their ability to adaptive reasoning, they must realize that mathematics with the effort required can be understood, although the product inclination differs from the four dimensions of the mathematical skill, which emphasized the cognitive processes, these dimensions need to be built to the productive inclination. Also, the development of the four components contributes to the construction of the inclination.

Among the indicators of productive inclination that should be characterized by the learner are:

- Realize the value and nature of mathematics given that it is realistic and useful.

- Faith in individual competence and diligence.

From the above, it can be concluded that the mathematical ingenuity is important and necessary for learners and show this importance of the interdependence and interaction between its components as it makes the learners believe in their ability to understand mathematics and solve its problems through the effort and continuous work to learn it is not limited to the cognitive processes they have but their inclination and desire towards them.

It is also possible to conclude that conceptual understanding is the basic rule and the cornerstone of all components of mathematical excellence. Procedural fluency demonstrates the flexible and precise application of the procedures learned through its understanding of the concepts leading to the implementation of skills in sequential steps, as well as strategic competence through proper planning, to the issues that depend on the learners' knowledge of the mathematical concepts through which to make solving problems easier, and shows adaptive reasoning through the educated learners concepts and relationships between them and employ them Logical thinking and justification and interpretation, when the learner is aware of all the above reflected the tendency produced in the desire to increase the ideas and topics of sports, especially those related to the reality that is employed in solving problems(Lyakhova Natalia et al,2018).

3. PREVIOUS SEARCH PROCEDURES

First: The descriptive research methodology was adopted in line with the research objectives.

Second: the research community

The current research community consists of students from the Department of Mathematics for both sexes in the faculties of education for the third stage in Iraq. This stage was determined according to the opinions of a number of experts and arbitrators, as it is an intermediate stage among the other stages including University of Baghdad, Basra University, Tikrit University, University of Babel, Diyala University, Karbala University, Dhi Qar University, Muthanna University / Faculty of Education for Pure Sciences, Mustansiriya University, Qadisiyah University, Wasit University, What the researcher got from my lists Dad students, according to a book to facilitate the task of the Ministry of Higher Education and Scientific Research / Department of

Studies and Planning, and Table (2) shows the preparation of students for the third phase.

Table (2)-Preparing the students of the third stage in the mathematics department in Iraqi universities / faculties of education for pure sciences and colleges of education according to gender var.

University and College	M	F	T
Baghdad / Education for pure science - Ibn al-Haytham	44	57	101
Mustansiriya / Education	72	79	151
Basrah / Education for Pure Sciences	35	63	98
Tikrit / Education for Pure Sciences	39	25	64
Qadisiya / Education	32	23	55
Anbar / Education for Pure Sciences	39	31	70
Babylon / Education for pure science	41	55	96
Diyala / Education for Pure Sciences	0	51	51
Karbala / Education for Pure Sciences	33	47	80
Dhi Qar / Education for Pure Sciences	35	55	90
Wasit / Education	66	42	108
Maysan Education	13	43	56
Education / Pure Science Education	49	40	89
Hamdaniyah / Education	11	6	17
Total	509	617	1126

Where the number of males 509 and females 617, bringing the total number 1126

Third: Research Sample

The sources indicate that the number of eye members in descriptive research is attributed to (10% of the size of the original community if the community consists of a few thousand (Melhem, 2002). The current research rate was 21%, where the sample was 240 students from the community the total number of 1. Survey sample and sample of statistical analysis. After selecting the colleges covered by the research, the students of the Faculty of Education of Mustansiriya University were selected to answer the test paragraphs for the purpose of analyzing them. The sample of the survey sample was (20) students and the statistical analysis sample (100) students from the third stage. 2. Basic sample. The basic research sample consisted of students of the third stage in the mathematics department at the Faculty of Education for Pure Sciences / Ibn al-Haytham as a sample of the governorates of central Iraq and the College of Education for Pure Sciences, Tikrit University as a sample for the northern governorates except Kurdistan and the College of Education for pure sciences.

Table (3)- Preparation of students for the third stage Mathematics Department at the University of Baghdad and Tikrit and Dhi Qar by gender var

University / College	M	F	T	%
Baghdad / Education for pure science - Ibn al-Haytham	44	57	101	8.9%
Tikrit / Education for Pure Sciences	39	25	64	5.6%
Dhi Qar / Education for Pure Sciences	35	55	90	7.9%
Total	118	137	255	22.64%

The sample consisted of 22.64% of the total population. After excluding students who were absent from the total number of students, the sample size was (240).

Table (4)-Preparing basic sample students by sex variable

University / College	M	F	T	%
Baghdad / Education for pure science - Ibn al-Haytham	41	57	98	8.7%
Tikrit / Education for Pure Sciences	35	25	60	5.3%
Dhi Qar / Education for Pure Sciences	32	50	82	7.2%
Total	108	132	240	21.31%

Fourth: Research tools

The research tools included a test of the four components of the mathematical skill, namely conceptual understanding, procedural fluency, strategic efficiency, adaptive reasoning, and a measure of the fifth component, which is the tendency of the students of the mathematics department in the faculties of education. The test was constructed because it is not available at the university level to measure the proficiency of students of the mathematics department in faculties of education. Building the test of sports prowess:ϖ

1. The aim of the test was to measure the mathematical proficiency of the students of the third stage in the faculties of education.

2. The components of mathematical ingenuity were identified through the study of educational literature (conceptual understanding, procedural fluency, strategic efficiency and adaptive reasoning), which

will be measured by the test and presented to the specialists to express their opinion.

For the purpose of drafting the paragraphs, some previous studies on this subject have been reviewed. Based on the theoretical side of this research, 42 (2) paragraphs of conceptual understanding and (8) procedural and 10 (strategic) and (8) for adaptive reasoning.

4. Instructions for testing the mathematical skill were prepared with all four components.

5. The test paragraphs were presented to a number of experts and arbitrators to determine their suitability for the sample of the research and to verify the correctness of their formulation and to make appropriate adjustments and based on their opinions. The difference between the experts who approved the paragraph from the others was calculated by using a square of Kay at (0.05) (39) of the total number of test paragraphs; the number of approvals was statistically significant as the total score (86) was assumed to be an average of (43). A standard answer was given to the test paragraphs that were adopted in the correction. One score was given for the correct answer and zero for the wrong answer for the thematic paragraphs. The sentences were 0-2, 0-3 and 0-4. And (0).

6. Degrees, has been presented to a number of experts in order to increase their views.

7. The test was carried out on a survey sample of 20 students from the third stage in the mathematics department of Mustansiriya University on Tuesday 20/2/2018 to ensure the clarity of the paragraphs and the calculation of the appropriate time for the test. The average time was calculated for the first five students and the last five were the time. The fitting is (70) minutes.

8. After confirming the possibility of applying the test and the clarity of its instructions and calculating the appropriate time, it was applied to the sample of the statistical analysis which consisted of (100) students from the third stage in the mathematics department of Mustansiriya University on Wednesday 21/2/2018

9. Analyzing the test paragraphs statistically

After the correction of the test paragraphs, the grades were ranked descending and 27% of the upper group and 27% of the lower group were obtained to obtain two sets of maximum size and differentiation. The following statistical analyzes were carried out on the two groups. The difficulty of the test vertebrae: To verify the difficulty of the mathematical proficiency test paragraphs, the equation was applied to find the difficulty coefficient for the matrices and the objective paragraphs. He found that the coefficients ranged from 0.31-0.65, which can be said to be acceptable because they ranged between 0.20-0.80 Bloom (1983), with a coefficient of difficulty (0.15) and (0.18) respectively. Accordingly, these paragraphs were deleted. ϖ The coefficient of discrimination of the test paragraphs: In calculating the coefficient of discrimination for the thematic and the transitional paragraphs by adopting the equation of each of them, he found that it is between (0.67 - 0.32), which is acceptable except for paragraphs 3 and 36), since their coefficient of distinction is 0.06 and 0.14 respectively, Dulaimi and Adnan (2005) that the paragraph is good and acceptable if the coefficient of discrimination is 20% or more, and therefore the other paragraphs of the test are acceptable in distinguishing them. The effectiveness of the wrong alternatives: We created using the appropriate equations to determine the effectiveness of alternatives to the substantive Questions, it was found that it attracted the lower group students more than the upper group, and all alternatives are negative, so all alternatives were kept unchanged.

10. The reliability

Virtual reliability: The veracity of the virtual test was verified by presenting it to a number of specialists in the field of mathematics and methods of teaching to judge its validity and based on their views and suggestions deleted three Questions of the test and modified the formulation of some of them using the value of square Kai, Results delete two Questions Sincerity construction. And calculating the correlation of the degree of each Question in the overall degree of the test and the correlation of the degree of each Question in the component to which one of the indicators of homogeneity between the Question of the test has been verified as follows:

• Relationship of the item to the overall degree of the test The correlation coefficients were statistically significant, ranging between (390.0 - 0.310), except for Question (3 and 36), where the correlation was not statistically significant and thus dropped The total number of test subjects was (17), and the objective Question (17) were adopted. Point-by-correlation coefficient was adopted. All correlation coefficients were statistically significant and ranged from 0.304-0.396 Alkubaisi (2010) (37 Questions).

• Relationship of the Questions to the component to which it belongs: To find the relationship of the degree of the vertebrae to the total degree of the component to which it belongs (number 22), Pearson correlation coefficient was adopted. The correlation coefficients were statistically significant, ranging between (0.505-0.594), except Questions (3 and 36), the correlation was not statistically significant. Thus, these two Questions were subtracted from the test. The 17 Questions of the objective Questions were adopted by the Point By Serial correlation coefficient, which were statistically significant and ranged between ** (0.597 -0.502) Kubaisi (2010), This indicates the internal consistency between the Questions within the MCU construct Adtha, and it became the total number of Question of the test (37) Question. The stability of the test: To verify the stability of the test of mathematical ingenuity, 50 test sheets are randomly drawn and the Alpha-Cronbach equation is used to calculate the stability of the tests containing the objective and transitional sections. The stability coefficient is 0.80, the work of this equation is to calculate the correlations between the vertex scores as each paragraph represents a stand-alone test Kubaisi (2010) and the tests are described as good if the coefficient of stability is (0.67) and more (Nabhan, 2004).

12. Correct correction

After a period of time (14 days), the correction was repeated. Using the cooper equation, the results showed that the ratio between the two corrections was high (0.98), & then corrected The test is again validated by another corrector using the same equation as the agreement between the two corrections (0.97), where the coefficient of stability is acceptable if its coefficient is 75% or more. Thus, the test is ready as a final application, and the final grade of the test (86) is assumed to be an average of (43).

13. Final Application

To achieve the objectives of the current research, the test of the four components of the skill of cognitive sport on the basic sample and the number of its members (240 students and students of the Department of Mathematics in the faculties of education for the third phase and continued application from 27/3/2018 to 4/4/2018. Building a measure of mathematical ingenuity (product inclination).

1. The goal of the scale is to identify the inclination produced by the students of the third stage in the mathematics department in the faculties of education.

2. After looking at the educational literature and in light of previous studies such as Nabhan (2004), the dimensions of the inclination scale were determined to two dimensions.

• Realize the value and nature of mathematics as realistic, useful and meaningful.

• Belief in an individual's efficiency and diligence.

3. The dimensions were presented to a group of experts in the methods of teaching mathematics and psychology and taking their views on their suitability to the sample of the research and the results of the questionnaire are what was determined.

4. The preliminary image of the scale was prepared and presented to a group of experts. After making the recommended modifications, some paragraphs were reworded. To find out the difference between the experts who agree with others on the validity of the paragraphs, the value of the square was adopted at the level of significance (0.05).

5. The meter's instructions, which serve as the guideline to guide the respondent, are prepared so that the instructions of the scale are clear and understandable, as they include how to answer them and an example illustrating this.

6. The correction instructions were prepared and are intended to answer the students on each paragraph of the scale and to extract the total score. To verify this, the researcher identified four alternatives, according to the Likert quadrant scale (Strongly agree, Agree, Disagree, Strongly disagree) (1, 2, 3, 4, respectively). Thus, the total score of the scale is (88) and the lowest is (22) and the average is (55).

7. The scale was applied to a sample of the students of the third stage (20) students to know the clarity of the paragraphs with the extraction of the necessary time on Tuesday 20/2/2018 Metus was calculated (Salama, 2014).

Table (6) Internal Link Matrix

Faith in the efficiency of the individual and his diligence	realize the value and nature Math	Tilt Product	
0.657	**0.752**	**1**	Tilt Product
0.722	**1**	**0.752**	realize the value and nature Math
1	**0.722**	**0.657**	Faith in the efficiency of the individual and his diligence

Stability of the scale: The Vaccronbach method was used to extract the stability on the sample. The number of its members was (50) students randomly selected from the third stage. The stability factor (0.83) was a good stability factor.

12. Final Application

To achieve the objective of the current research applied the scale of inclination produced for sportsmanship on the basic sample and the number of its members (240 students and students of the Department of Mathematics in the colleges of education for the third trip and continued application from 27/3/2018 to 4/4/2018 View and interpret results. The objective of the research is to answer the following questions: Are the students of the mathematics department in the faculties of education proficient in mathematics and according to the components of the four mathematical skill of knowledge? Is the tendency of the students of the mathematics department in the faculties of education to be a productive tendency towards mathematics? Are the students of the mathematics department in the faculties of education proficient in mathematics in the components of the five sports ingenuity? I derived from these objectives the following hypotheses: First: There is a significant statistical difference at the level of significance (0.05) between the average real and satisfactory performance of students of the Department of Mathematics in the faculties of education in the test of the mathematical prowess of its four components (conceptual understanding, procedural fluency, strategic efficiency, adaptive inference). 1- Are the students of the mathematics department in the faculties of education proficient in conceptual understanding? To understand the significance of the difference between the average grade of the sample of students in the mathematics department of the faculties of education in the conceptual understanding and the mean average, the t-test was adopted for one sample. The result, as in Table (7) Table (7), the significance of the difference between the average real performance and the average performance of students in the research sample in the conceptual understanding.

Component	the sample	Real Average	Standard deviation	Satisfaction Average	t-test		indication
					Calculated	Table	
Conceptual understanding	240	10.5764	3.87251	11	-1.701	1.96	Non-ind.

It is clear from Table (7) that the mean of the real performance of the students is (10.5764) and a standard deviation of (3.87251). To find the difference between the mean and the real mean of the sample, the T value of one sample was calculated at

1. 701 (1.96), that is, there is no statistically significant difference at the level of significance (0.05) between the average real performance and satisfactory (11) among the students of the Department of Mathematics in the faculties of education in the conceptual understanding.

2. Are the students of the mathematics department in the faculties of education proficient in procedural fluency? To determine the significance of the difference between the average score of the

sample of students in the mathematics department in the faculties of education in procedural fluency and the mean average, the t-test was adopted for one sample. The result was as in Table (8).

Table (8). The difference between the average real performance and the average performance of the students in the research sample in procedural fluency

Component	the sample	Real Average	S.deviation	Satisfaction Average	t-test		indication
					Calculated	Table	
Fluency procedural	240	12.2417	4.25740	12.5	-0.940	1.96	Non-ind.

The mean of the real performance of the students is (12.2417) and a standard deviation of (4.25740). In order to determine the difference between the mean and the real mean of the sample, the T value of one sample was calculated at -0.940 (1.96), meaning that there is no statistical difference at the level of significance (0.05) between the average real performance and the satisfactory (12.5) among the students of the Department of Mathematics in the faculties of education in procedural fluency.

3. Are the students of the mathematics department in the faculties of education proficient in strategic competence? To determine the significance of the difference between the average score of the sample of students in the mathematics department in the colleges of education in the strategic efficiency and the mean average, the t-test

was adopted for one sample. The result was as in Table (9) Table (9), the difference between the average real performance and the average performance of the students in the research sample in the strategic efficiency

Component	the sample	Real Average	S.deviation	Satisfaction on Average	t-test		indication
					Calculated	Table	
Strategic competence	240	10.9000	3.86898	10.5	1.602	1.96	Non-ind.

Table (9) shows that the mean of the real performance of students is 10.9000 and a standard deviation of 3.86898. In order to determine the difference between the mean and the real mean of the sample, the T value of one sample was calculated at 1.602, (1.96), that is, there is no significant statistical difference at the level of significance (0.05) between the average real performance and satisfactory (10.5) among the students of the Department of Mathematics in the colleges of education in strategic efficiency.

4. Are the students of the mathematics department in the faculties of education proficient in adaptive reasoning? To determine the significance of the difference between the average grade of the sample of students in the mathematics department in the faculties of

education in the adaptive and average mean, the t-test was adopted for one sample. Table (10), the significance of the difference between the average real performance and the average performance of the students in the research sample in the adaptive inference

Component	the sample	Real Average	S.deviation	Satisfaction Average	t-test		indication
					Calculated	Table	
Adaptive inference	240	9.8847	3.59748	9	3.809	1.96	ind.

Adaptive inference 240 9.8847 3.59748 9 3.809 1.96 D. It is clear from Table (10) that the arithmetic mean of the real performance of the students is (9.8847) & a standard deviation of (3.59748). To find out the difference between the mean & the real mean of the sample, the T value of one sample was calculated at (3.809) (1.96). This leads us to reject the null hypothesis and accept the alternative hypothesis, that is, there is a statistically significant difference at the level of significance (0.05) between the average real and satisfactory performance of (9) among the students of the mathematics department in the colleges of education in adaptive inference. In response to the previous sub-questions, the first zero hyp. Of the four component tests (conceptual understanding, procedural fluency, strategic efficiency & adaptive reasoning) can be reached to find out the significance of the difference between the average grades of the student sample in the mathematics department of the faculties of education in the sports proficiency test.

Table (11). Mean the difference between the average real performance and the average performance of the students in the research sample in the test of sports ingenuity

Component	the sample	Real Average	S.deviation	Satisfaction Average	t-test		indication
					Calculated	Table	
Test cognitive proficiency as a whole	240	43.6028	15.59637	43	0.598	1.96	Non-ind.

It is clear from Table (11) that the arithmetic mean of the real performance of the students is (43, 6028) and a standard deviation of (15.59637). To find out the difference between the mean and the real mean of the sample, the T value of one sample was calculated at (0.598) ((1.96), that is, there is no significant statistical difference at the level of significance (0.05) between the average real performance and satisfaction (43) among the students of the Department of Mathematics in the faculties of education in the test of the mathematical prowess of the four components. As a result of not being trained they are conceptual and procedural fluency strategy, efficiency and proficiency in the inference of adaptive. Second: There is no statistically significant difference at the level of significance (0.05) between the average performance of the real and the satisfaction of the students of the Department of Mathematics in the measure of inclination produced towards mathematics. To find out the significance of the difference between the average grade of the sample of students in the mathematics department of the faculties of education in the product and the average mean, the t-test was adopted for one sample. The result was as in Table (12).

Table (12). The difference between the average real performance and the average performance of the sample in the sample

Component	the sample	Real Average	S.deviation	Satisfaction Average	t-test		indication
					Calculated	Table	
Product inclination	240	18.716	4.12702	12.5	23.332	1.96	ind.

The value of T is calculated for one sample and at the level of significance (0.05), it is equal to 332 (23). It is higher than the scale of 1.96. This leads us to reject the null hypothesis, that is, there is a statistically significant difference at the significance level 0.05). Between the mean and the mean of (12.5) on the inclination scale produced and this reinforces the conclusion reached in the table above. Thirdly, there is no statistically significant difference at the level of significance (0.05) between the average performance of the real and the satisfaction of the students of the Department of Mathematics in mathematical excellence with its five components. To find out the significance of the difference between the average grade of the sample of students in the mathematics department in the faculties of education in dexterity and the mean average, the t-test was adopted for one sample. The result was as in Table (13).

Table (13) Indication of the difference between the average real performance and the average performance of the students in the research sample in proficiency as a whole

Component	the sample	Real Average	S.deviation	Satisfaction Average	t-test		indication
					Calculated	Table	
Mathematical proficiency as a whole	240	62.319	17.57625	55.5	6.009	1.96	ind.

The value of T was calculated for one sample and at the level of significance (0.05), it was found to be equal to (6.009), which is higher than the scale of 1.96. This leads us to reject the null hypothesis, that is, there is a statistically significant difference at the significance level (0.05) (55.5) for athletic brilliance and this reinforces the conclusion reached in the table above.

4. RESULTS

We see that the weakness of students in cognitive skill may be due to the emphasis on procedural teaching, i.e., providing the procedure for solving the problem rather than clarifying the concept. In other words, the teaching of mathematics in mathematics departments emphasizes the acquisition and development of skills rather than the teaching of concepts in order to understand them. An explanation of the paragraphs that need to be clarified and have not shown a high ability to relate these concepts to their uses in life or other sciences. Since conceptual understanding requires instructional strategies that help students absorb the mathematical concepts inherent in terminology And concepts and relationships and linking them and knowledge of information in a coherent and not as a separate information, and focus on the procedures with the flattening of understanding leads to the preservation of the procedures without knowledge of the conceptual basis that arise. This led to that they have false and incomplete images of concepts that have been measured understanding of them and also that they have not seen. On the content of the test application and that the test is based on general information and not on the content of the third stage in particular, but in general, and may be due to the fact that the research sample tend to provide one specific answer and they tend to provide The procedures that are often incorrect to speed the students in the answer and inaccuracy in following the algorithm appropriate. We can explain the ingenuity of the students of the research sample in mathematics to the fact that mathematics is a thinking method and also may have the knowledge base enough to think logically about the relations between knowledge and attitudes, Persuasive explanations and justifications, and did not need a curriculum content, they used their abilities. The tendency towards mathematics is productive. It is justified. The research sample is the students of the mathematics department. It is natural that they tend to learn mathematics as a worthwhile activity because it helps to develop mental abilities and helps to understand the other subjects which are necessary in daily life. The skill of students in the research sample in mathematics (Sivan, 2016).

5. CONCLUSIONS

In light of the results of the research, the following can be inferred:

1. Students of the Department of Mathematics in Education Colleges are proficient in mathematics.

2. The weakness of the cognitive sportsmanship of the students of the research sample as a result of their lack of understanding in conceptual understanding, procedural fluency and strategic efficiency and in the field of adaptive reasoning.

3. The tendency of the students was a product of mathematics by its secondary dimensions, namely the realization of the value and nature of mathematics as it is realistic and useful, and the belief in individual competence and diligence.

6. RECOMMENDATIONS

In light of the current search results, we have recommended the following:

1. The need to include the curriculum of the mathematics departments in the faculties of education on many activities and techniques that work to develop the ingenuity of the scientific content and its interdependence for the learner and the skill of teaching in its ability to deal with this content and the development of the methods of evaluation in accordance with the methods of evaluating the components of mathematical ingenuity.

2. Preparing training programs for the teaching of mathematics departments in the faculties of education to train in modern teaching practices related to the development of mathematical excellence with its five components and each separately.

3. It is useful to emphasize the teaching of the mathematics departments in the faculties of education to diversify the means of evaluating their students through the use of work records, achievement tests and evaluation of the means of communication between them to measure sports proficiency in their five components.

4. Preparation of training programs for students of the third stage in the departments of mathematics in the faculties of education to train the components of the skill of sports.

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Lyakhova Natalia, I., Gordeeva Natalya, O., & Manaeva Ekaterina, N. (2018). **Dynamics of Development of Investment Processes in Belgorod Region**. The Journal of Social Sciences Research, 4, 198-202.

UNIVERSIDAD DEL ZULIA

opción

Revista de Ciencias Humanas y Sociales

Año 34, Especial N° 16, 2018

Esta revista fue editada en formato digital por el personal de la Oficina de Publicaciones Científicas de la Facultad Experimental de Ciencias, Universidad del Zulia.
Maracaibo - Venezuela

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