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The Use of the Brain-Based Learning Strategy and its Effect on Academic Achievement Among Students of the Technical Medical Institute in Physiology

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ABSTRACT

The educational process faces a number of challenges as a result of information and technological revolutions, revolution and communications which needs to speed up the development of mental minds capable of solving problems.

"God has harnessed to man various ways of science, knowledge and rapid discoveries, The best evidence of this is the discoveries of physiologists, medicine, anatomy, interpreters and education because it is important in the preface to identify the brain and its endocrine glands ". "The development of mental processes responsible for all state institutions, especially the educational institutions through the school curriculum". The educational process is closely related to the theories of learning, which are concerned with the study of educational attitudes with the interpretation of human behavior and beyond the processes of the family.

I have those interested in learning and learning have struggled to create new programs aimed at improving the conditions that affect how students learn. Brain research in the field of neuroscience has revealed many secrets about how the brain performs its functions. Based on these research, new theories and new concepts have emerged that have invaded the field of education.

Keywords: Learning Strategy, Academic Achievement, Physiology.

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Introduction

"The theory of learning and education is emphasized on the brain as every human being is capable of learning as an active learning environment stimulates learners where each person is born and has a brain of information processor and ideas "(Funderstunding, 2011,25)

"Based on these theories and trends many educational learning strategies are compatible and brain work. One of these strategies was brain-based learning, a useful thinking tool that provides students with the opportunity to organize information and develop their thinking, giving students the knowledge and understanding they need to help them deal with and organize information. (Gregory & Chapman, 2002), Also helps them absorb, summarize, and synthesize complex ideas. It also helps them when they need to pick out important ideas and details, explore missing information and discover unclear relationships " (Stevens & Goldberg, 2001) .

" The intelligence comes back to the cells responsible for eight areas, which is linguistic intelligence, logical and athletic, Spatial , Visual " (Jaber Abdel Hamid, 2010, 12)

Studies confirm that the mechanism of brain work makes it easier for learners to learn and reduce anxiety, so the teacher should study the mechanism of brain work to raise the level of student performance and stimulate their thinking and stimulate them towards the material (Afana and the army, 2009, 65).

Summary:

"The scientific progress and development that took place during the 20th century have had a great impact on the scientific process. The members of the educated community are supposed to increase the skills of scientific thinking so that they can live in the present age and participate in it intelligently and effectively so that they achieve better self-sufficiency with changes and developments. The teaching methods have become an urgent need no less important than the teacher and the subject of study where all conferences and seminars confirmed the adoption of modern teaching methods and raise the educational adequacy of the learner was the method of exploration among these methods revealed by him The student asks things himself.

The aim of the research was to investigate the zero hypothesis that there is no statistically significant difference between the average of thinking levels, the use of the brain-based learning strategy and its effect on the achievement of the students of the medical institute in the field of physiology. The experimental group was studied by brain-based learning, studied by traditional education, and the use of post - test experimental design where determines current research students of the technical Institute of Medicine for the academic year 2018- 2019 , where selected two divisions (a) b randomly, as the number of the sample reached (5 0) students and by 25 students to The experimental group either control group Fddha 2 (5) students loco two categories in variables (age, IQ) was achieved difficult, and the ease and strength discriminatory and calculate the reliability coefficient using Kodrrichardson equation coefficient where the number of stability (87.0) paragraphs placed

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in the test, where The results showed the superiority of the experimental group on the control group as the use of brain-based learning leads to the development of scientific thinking skills and suggests the researcher to conduct studies at the Institute "

Enshrined first:

1- Research problem:

"The traditional education still exists in teaching in technical institutes and colleges where they are only listening to the professor instead of thinking and comprehension of the material results showed that the number of studies in the field of science that teaching methods are traditional methods and these methods are not effective in Achieving the goals of teaching physiology" (Ahmad, 1993, 141). Where the educational process determines the types of events and this calls for developments in the field of this study, which adopted brain-based learning (Jurani, 2008, 3). This is why the researcher is concerned about the use of this modern method of teaching as it develops their mental processes and encourages them to teach the scientific material to know the achievement of students in the field of physiology.

2 - The importance of research

"Good teaching is characterized by several advantages where the teacher must be able to achieve an educational and educational goal, and be appropriate with the abilities and minds of students, using appropriate teaching methods for the lesson" (Muhammad, 1989, 56). The aim of teaching the subject is to teach students how to think and do not memorize syllabuses and curricula (Zeitoun, 1999, 7)

"A new theory of learning has emerged in recent decades and technology has been threatened by the emergence of this theory. Leslie Hart). From early books about the brain. Brain research does not claim that outdated models, methods, and educational methods were wrong but appeared to be incompatible with the brain (Frank, 2010, 48)

"In the nineties of the last century it emerged a new result in learning , a learning theory based on the brain , which confirms its characteristics as a system in itself it is not a design prepared in advance but is the direction of multi - systems have been derived from chemistry, psychology, genetic engineering and computer science" (Jensen.2000,107). And The importance of this research is that this strategy is based on the latest results of brain research, where this strategy is consistent, as Jensen pointed out (Jensen, 1998) With what has been known so far about how the brain performs its functions, and the alignment of this strategy with several principles of the theory of learning based on the brain (Salti, 2004):

- Search for meaning innate.
- The search for meaning is done through profiling.
- Recognizes each brain (mind), and creates parts and all simultaneously.
- Learning involves both focused attention and peripheral perception.
- We have at least two ways to organize memory.

"Due to the lack of research conducted on this strategy, if not rare, especially Arab ones in addition to results contrary to the researcher saw the necessity of conducting this research, especially in the Medical Technical Institute/ Baghdad.

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Search Goal:
"The current research aims to identify the use of brain-based learning and its impact on the achievement of students in the Medical Institute.

Search Hypothesis:
"There are no statistically significant differences at (0.05) among students who are learning to learn about the brain and students who study in the usual way of learning achievement.

Terminology:
1. Strategy
(Suleiman, 1988): "It is a set of rules and principles that are related to a particular field" (Suleiman, 1988, 40)
2 - Learning knew
(Muhammad, 2004), "It is an internal mental process that is indicative of its occurrence by its effects and is in the form of a modification or a change in human behavior, whether it is emotional, such as the acquisition of values, attitudes and emotions " (Muhammad, 2004, 42)
(Salty, 2004): The process by which the individual receives and processes the sensory data and symbolizes it within the brain structures of the brain and retains them until they are later used (Salti, 2004, 139)
Procedural definition: "It is a change in the behavior of students as a result of the educational information they acquire during the study. "
3 - Definition of the brain
Arafa (Afaneh Army, 2008): "the mind that distinguishes man from the rest of the living creatures in particular, where the weight of the brain will swallow up 2% of the adult human body weight center" (Afath Army, 2008.35)
2. Brain-based education
1 - Know it (Jensen, 2000): This learning emphasizes the presence of mind with the presence of high arousal and motivation and suspense, fun and cooperation and the absence of threat and the multiplicity and overlap of systems in the educational process and other characteristics of learning in harmony with the brain (Jensen, 2000, 32)
2. Arafa (Salti, 2004): "represents a method or approach to learning and education based on the assumptions of modern nerves that explain how the brain works naturally andare based on what is known as free installation anatomic" (Salti, 2004.108)
Procedural definition: "The learning that the researcher has adopted in teaching the experimental group regarding the learning characteristics that are compatible with the brain to achieve the best learning process.
3. Collection
(Rabah, 1992): Acquiring the learner experiences in one of the fields of study through the educational attitudes inside and outside the classroom to achieve the behavioral goals (Rabah, 1992, 203)

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2. (Harvey, 2000): A set of knowledge, experience and skills acquired through learning the subjects and expressed in the grades obtained by the students at the end of the semester (Harvey, 2000, 17)

Procedural definition: It is all that the students learned from the medical institute in the field of physiology and measured by answering the sections of the test achievement.

4 - Physiology: "is the study of the body organs, including the digestive system and the nervous system and the reproductive system" ....

The second topic: theoretical background and previous studies

The Brain-based learning was in the 20th decade and this decade was a neuroscience revolution that did not exist in common with psychology**.**

"Neuroscientists have announced the acquisition of techniques that have enabled them to acquire many brain apnea and exchange them in neuroscience, medical, biological and physiological sciences. "

Brain-based learning in the development of the process has benefited learning and teaching processes, as well as prominent scientists in the field Ken, Ken, Ginsen, Susa, and Silo Stroelev (Rihawi, 2006, 119).

Brain work mechanism

" (Al-Jurani, 2008), where the last decade has seen research on the brain and focused on the links of the brain and emotions and the social environment, " such as:

1. The association between the brain and the body: Gingival functions depend on the input from the body and that the concept of the brain refers to the physical member, while the term of mind refers to the functions of the coordinated by the brain.

" Either (Pert, 1977, 81) "The immune system has the memory and ability to learn like the nervous system, so it can be said that intelligence does not occur in the brain, but in cells distributed throughout the body . "

2 - " Affinity relationship with brain functions : Emotions consist of biological components such as genetic, neurological, hormonal and psychological components include cognitive aspects such as language and verbal and nonverbal frames such as body, perception, memory and non-cognitive aspects " (Benny Younis, 2007, 234)

There are four emotions (fear, sadness, anger, fun). The rest of the emotions are the integration of the four species (Reev, 1997, 25)

" The center of agitation is the brain, which is a mediocre part of the visceral system, but it has recently been shown that the brain's brain is the main center of emotion that matures like the cerebral cortex ") Taj AlSar, 2006 , 271)

3 - Relationship of the social environment with brain functions: Human can develop its connections and connections nerve in all ages and this means increasing intelligence without the use of environmental enrichment appropriate and therefore the brain adjusts its composition depending on the quality of use and quantity and type of environment Jensen, 2000, 284))

"Neuroscientists have been able to detect the re-generation of nerve cells as a result of environmental enrichment" (Diamond, 1999, 42)

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Principles of brain-based learning theory

The brain is a complex dynamic system

2. The brain is of a social nature

3 - Find the meaning instinctively in the brain

4. Emotions are crucial for coding

5. The learning process involves both genders from focused attention and peripheral perception

6. Learning includes awareness processes and awareness (Ledoux, 1996,40)

I am learning based on the brain

1. " Learning in harmony with the brain: its characteristics"

- Learning topics through the multiplicity and overlap of systems
- "Objective (objective) learning"
- Employing multiple intelligence types
- "A high excitation and in a manner appropriate to the emotions be rich in talk, facilitation, activity and movement"
- There is feedback
- Internal motivation (Salti, 2004, 133)

2. Learning the m Z LED Maag

- Use lectures extensively
- Emphasizes learning in a quiet environment and sitting on fixed seats
- Teacher threatens students to use reward and punishment
- It has a low emotional effect
- "Negative feedback"
- External motivation as learning is placed in degrees
- End learning when the time is up

3. Brain-based learning stages

"Phase One: Preparing"

Gives a general idea of the subject and conceptual perception of the subjects

"Phase II: Acquisition"

Gives the importance of neural correlations due to the original and interrelated experiences. The more the inputs are interrelated, the neural correlations are stronger

"Phase III: Extensive"

They are related to topics, impede understanding and need to integrate students into classroom activities

"Phase IV: Memory Configuration"

Strengthen learning and retrieval of information better through adequate rest, novelty, emotional and feedback

"Phase V: Functional Integration"

The use of new learning is intended to be further enhanced and expanded (Jurani, 2008: 39)

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Brain Components

1- The back of the brain: Consists of the cerebellum and the root of the brain and control over the administrative devices.

2-center of the brain: a small area above the root of the brain and Alsaol for h and hip Enen by Aba.

Brain Introduction: It is the most important part of learning and memory.

"The document on the brain and learning theory to what is mentioned Kitami and Almhaalh 2007, which added to the theories of learning because of their properties and possibilities of interactive and physiological."

2. Previous studies:

Arabic Studies

1. Mohammed Study, 2004): "This study was conducted at the Faculty of Educational Sciences study aimed to trace knowledge of an educational program document to the brain realism to the development of the university students with Damaaah left control, the sample was selected after a test application control halves Alkroyen of the brain's (90) students, and after finding the mathematical averages and standard deviations, the following results emerged:

There is a significant difference at a significant level (0.05) between the average performance of the experimental group students who have been exposed to the educational program based on the hard creative medium theory among those who were not exposed to the program (control group). "

2."(Salti study, 2002): The study was conducted in Amman Arab University for Graduate Studies in Jordan and study targeted brain - based learning in academic achievement, and the transition effect of learning and stylistic analytical and holistic thinking, and included the experimental group to the control group, where he formed the sample of (72) students and students. The results showed that:

No educational program -altalma significant differences in both academic achievement and transition effect of learning Zssalib analytical and holistic thinking. "

2- Foreign studies

(a study Barbara, 2002): This study was conducted at McKinsey School in the United States. The study focused on brain-based learning theory. The experimental group was superior to the control group, the results showed an increase in the rate of superiority among the group members who learned in this way the control group Barbara, 2002)

2. " Study " Aderjare, 2001): The study aimed to trace - based education strategy on the brain in the collection of students in secondary schools in Nigeria, and the sample consisted of 522 students, and the results showed superiority in the academic achievement of students who have studied the learning strategy based on the brain. "

Comment on previous studies

In the light of previous studies, most of the studies focused on brain-based learning. The results confirmed the success of the strategy in teaching students and stimulating their thinking and achievement.

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The third topic: methodology of research

"Aims experimental design to identify research groups and the selection of appropriate statistical methods (forgetten 2000.234) and this, prompting Balbagesh to adopt and experimental design for a total of dragging Libya is studying a way that brain - based learning The second way is the control group taught in the usual way"

Table (1)

Experimental Design for Research

the group	Independent variable	The dependent variable	the tool
The experimental group	The method of learning based on the brain	Collection	Post-test achievement
Control group	The usual method	Collection	Post-test achievement

1. The research sample

"Researcher of the Technical Institute of Medicine has chosen to be deliberately, because the researcher works at the same institute, and for the application of the experiment at the institute where the section contains two divisions (a) and (b) represent (a) the experimental group taught by brain - based learning and (b) Control group Which was taught by the usual method, the students were randomly selected from the two divisions. The sample consisted of (50) student's divided into (A) and (29) students and the experimental group and (B) (28) students control group and then became the experimental group (25) of the wa officer (25) after excluding students who failed. "

Table (2) Number of students for the two research groups before and after students' exclusion

Division	the group	Number of students before exclusion	Number of students excluded	Number of students after exclusion
(a)	The experimental group	29	4	25
(B)	Control group	28	3	25

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Total		57	7	50

2. Parity of the two research groups

1- Over time Ala: - Ast x D EX sample study researcher from the school card information and after making comparisons between the two groups Mtostan students using the second test (Test) For two independent samples showed no statistically significant differences at (0, 0).

Table (3)

Results of the second test of the variable of age (months) for the sample members

the group	Number of sample members	SMA	variance S^2	Fixed value		The degree of freedom	Statistical significance	
				Calculated	Table			
Practice	25	68,238	267, 12	179.1	2000	60	Not a function	
Officer	25	4 , 210	220.14				=	

IQ test

" The test was applied Ravn intelligence matrices follow - up because it is codified in the Iraqi sample (Dabbagh 1983.60) and it is non-verbal and can be applied to age groups and in large numbers and in a time where the average score of the experimental group (92.38) and the average degree of control group (16.37) using Altaia test where the value calculated by the T (0.796) which is less than the tabular value (2%) and the degree of freedom (48) "The table shows that:

Table (3) the result of the T-test in the IQ test for the two research groups

the group	Sample size	Arithmetic mean	variance	The degree of freedom	T value		Significance at level (5%)	
					Calculated	Table		
The	25	92.38	326,	48				Not

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experimental group			62				statistically significant
Control group	25	37	89.59	48	0.769	2%	Not statistically significant

3. Search requirements

1- Determination of scientific material

Prior to the beginning of the experiment, the researcher identified the scientific material and included biology.

2- Preparation of teaching plans

"It is the daily plan that the teacher sets up, which is an urgent necessity for teaching. It improves his performance and distinguishes him from teaching"

3- The numbers of the achievement test

The test was prepared by the researcher after completion of the research period and according to Bloom's classification

4- Believe the test

"Certification of the tests is an important feature and the conditions to be observed"

5- Difficulty level

The researcher calculated the difficulty factor for each of the test paragraphs as it is between
(42%) and (76%)

6- The power of discrimination

The researcher conducted a discriminating force each period of drops to test if it ranged between (0, 36) 72, 0)

7- Calculation of the stability coefficient of the test

"We have been using the Pearson coefficient of consistency between the first test and second grades calculation reached stability coefficient (.87)"

Statistical means

The researcher used the following statistical methods:

Difficulty coefficient

R = m\

Equation of paragraph distinction

Number of respondents who answered the correct answer + the number of those who answered the correct answer
For the paragraph in the upper group for the paragraph in the lower set
Number of female students in one group

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The power of paragraph discrimination

3. Pearson correlation coefficient

To determine the stability of the test

Axis 4: Display results

We have reached an average degree of student achievement in the experimental group (92.2 5) and the average student achievement in the group control (29, 03) When using Altaia test to conduct statistical process between the Group b experimental Ah and the control group and the balance between them appeared that the calculated value amounted to (17.95) at the level of significance (5%) and the degree of freedom (48) value amounted to either Tabulated (2000)"

Table (4) Result of the final test of the final test of the experimental group and the control group

the group	Sample size	Arithmetic mean	variance	The degree of freedom	T value	Significance at level (5%)	
Experimental	25	29, 25	1 0 , 076	48	Calculated	Table	Statistical function
Control group	25	29 , 03	2 0 , 705	48	17.95	2,000	

The results obtained from the study showed that the experimental group studying brain-based learning was superior to the control group studied by the lecture method. In summary, research based on the brain has an effective effect on increasing academic achievement.

Conclusions

1) Brain-based learning helps to increase student achievement.

2) The learning document of the brain of modern methods of teaching s of the lesson and contribute to the consolidation of the scientific material in the mind of the student.

Proposals: The researcher proposes the following studies:

1) The researcher suggests a similar study for the current study, which includes other stages of study such as the second grade.

2) The researcher suggests that learning Almstn d brain include other materials such as physiology.

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Annex (1)
The scores of the two groups in the IQ test

T	The experimental group	T	Control group
1)	45	1)	37
2)	52	2)	52
3)	42	3)	32
4)	45	4)	36
5)	33	5)	30
6)	31	6)	45
7)	45	7)	27
8)	53	8)	43
9)	39	9)	33
10)	41	10)	44

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11)	45	11)	43
12)	42	12)	35
13)	39	13)	38
14)	47	14)	39
15th)	37	15th)	42
16)	42	16)	37
17)	28	17)	16
18)	31	18)	30
19)	29	19)	24
20)	36	20)	32
21)	25	21)	37
22)	45	22)	25
23)	52	23)	37
24)	48	24)	53
25)	46	25)	37

Annex (2)

Teaching Plan for the Experimental Group, which studies brain-based learning theory

Article:
A 's row: the first
Subject: urinary system
Lesson Objectives: To help students acquire the skills of physiology

First: facts and concepts

- The importance of the urinary system
- The importance of the Anvron
- The stages of urine formation

Second: Scientific directions

- Developing the students' tendency to make judgments
- Develop curiosity among students

Third:

1- Development of students' tendencies toward the subject of faslja
2 - Interest in scientific activities corresponding to the lesson
3 - Interest in the acquisition of students the main information of the material

Fourth: the degree of appreciation

1 - Appreciation of the greatness of God Almighty
2- Assessment of the degree of science and its applications
3 - Estimating the efforts of scientists

Fifth: Skills

1. Observation and data collection
2- Scientific interpretation of natural phenomena

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3 - Development of manual skills such as the use of some types of laboratory equipment
4- Ability to solve questions related to the subject

Behavioral purposes
I expect the end of the lesson to be able to:
1- Know urinary system
2 - Know the ureters
3 - Mention the stages of urine formation
4- Build the function of the urinary system
5 - Draw how to control the re-absorption of water in the kidneys
Means of education
Chalkboard, chalk, illustrative forms on the urinary system
Introduction (5 minutes)
We talked in the previous lecture on the digestive system digestive system of the gastrointestinal tract and glands attached to it
School: Consists of endocrine glands
Student: Consists of parotid glands, endothelial glands, sublingual glands
School: What the function of the digestive system
Student: 1. Chew food
2 - Stir and mix the food, from pushing it forward towards the bowel and anus
3 - Digestion of food and the effects of gastrointestinal juices containing many enzymes and variety
School: Between gastrointestinal movement
Student: 1- Fresh motion
2 - Driving movement
Preparation stage: preparing the students to sit in the lesson and then explain and then questions
Acquired stage: The urinary system consists of kidneys, ureters, bladder and urethra
The kidneys are located on both sides of the spine. The shape of the kidney is similar to that of the beans. It is 12 cm in size and weighs about 140 gm at the man and 125 at the woman and its color is dark gray.
The ureters are a non-random mucus muscle channel 25 cm long and 3-5 mm in diameter
The bladder is a muscular sac that touches the rubber as a urine tank
Mercy: The custom of urethra
Student: It is a smooth muscular channel which is in women especially for urine
School: What is the Nefron
The student is the structural functional unit of the college and the college contains about 1.25 million Nefron
School Number of Installations
Student: 1 - Malbigy particle
2 - renal tube
School The number of components of a malignant particle

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Student: 1 - Bowman portfolio is the beginning of Tfron, which is wide and connected
2 - Kubba: is a collection of capillaries surrounding it
Either the renal tube
1- The nearby tube which is located in the cortex
2 - Henley loop
3 - twisted twists
4- The University Channel
Homework: endocrine
Sources
Book of physiology: physiology of the human body, written by Dr. Essam Safadi, Dar Yazuri, Jordan

Annex (3)

Names of experts

T	Names	Specialization		Workplace
1)	Prof. Dr. Yehia Qassem Hussein	Doctor of Life Sciences	Assistant Professor	Medical Institute
2)	D. Laila Haj Youssef	Ph.D. Psychological Sciences	Assistant Professor	College of Education for Girls
3)	D. Heydar Messier	PhD Methods of Life Science Teaching	Assistant Professor	College of Education for Girls

Annex (4)
The final test

Q 1 What are the components of natural urine?
Q 2 Indicate two of the abnormal components of urine
Q 3 Number of urine steps composition
Q4 Number of Nephrons
Q5 what are the functions of the urinary system
Q 6 knew all that comes:
1 - Urethral 2 - Bladder 3 - Artery
Q 7 which consists of a malignant particle

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Q8 Describe the relationship of the polymer apparatus to the circulatory system
Q 9 Describe the stages of urine formation
Q 10 What are the factors of urination

Annex (5)

T	Total score	A group	Dr	Paragraph discrimination ratio	Ease of paragraph ratio	Paragraph difficulty ratio
1	40	26	14	33, 0	56, 0	44, 0
2	33	22	11	31, 0	46, 0	54, 0
3	33	23	10	36, 0	46, 0	54, 0
4	36	25	11	39, 0	50, 0	50. 0
5	41	28	13	42, 0	57, 0	43, 0
6	27	19	8	31, 0	36, 0	64, 0
7	43	28	15th	39, 0	60, 0	40, 0
8	33	22	11	31, 0	46, 0	54, 0
9	32	23	9	39, 0	44, 0	56, 0
10	37	25	12	36, 0	51.0	49, 0
11	32	22	10	33, 0	44, 0	56, 0
12	32	25	7	50, 0	44, 0	56, 0
13	32	22	10	33, 0	44, 0	56, 0
14	24	18	6	33, 0	33, 0	67, 0
15th	31	22	9	36, 0	43, 0	57, 0
16	45	29	16	36, 0	63, 0	37, 0
17	37	25	12	39, 0	51, 0	49, 0
18	32	23	9	39, 0	44, 0	56, 0
19	37	25	12	36, 0	51, 0	49, 0
20	34	24	10	39, 0	47, 0	53, 0
21	33	22	11	31, 0	46, 0	54, 0
22	34	23	11	33, 0	47, 0	53, 0
23	33	23	10	36, 0	46, 0	54, 0
24	34	24	10	39, 0	47, 0	53, 0
25	35	23	12	31, 0	37, 0	53, 0

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Annex (6)

Discriminatory power and coefficient of ease and difficulty of test results

The table shows arithmetic mean, standard deviation and variance

variance	Deviation pain p Lyari	SMA	the group
10.076	2.516	25.92	The experimental group
20.706	3.770	29.04	Control group

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