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Building a Cognitive Achievement Scale for Motor Learning for Colleges of Physical Education and Sports Sciences' Students

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Abstract

In general, the measurement of scientific knowledge is considered one of the most important components that researchers and specialists go into to study and delve into to reach the foundations that clarify the vision in the field of specialization. It builds a base of information that contributes in the development of obtaining methods of cognitive achievement for students or learners. The students 'cognitive achievement related to the information and knowledge for understanding the university education philosophy. This will identify the extent of the goals achieving in educational process in the faculties of physical education and sports sciences for the motor learning. The test material of (50) paragraphs prepared in a scientific format and the scientific foundations of the paragraphs were found. This process proved that the test is suitable for the main research sample in which the test was applied, numbering (204) students. The researchers recommend relying on this test when evaluating students of Basic Education faculties in the subject of motor learning.

Keywords: test building–cognitive achievement – motor learning–students

1.1 Introduction

The importance of these tests in the educational and sports field makes them an effective element. As cognitive achievement, acquiring information and how to perform it, forming concepts in mental and performance formations in the theoretical subjects in

the field of physical education sciences is a cognitive achievement to benefit in practical performance. Accordingly, it is necessary to keep information in a scientific and cognitive form for students directing their behavior to verify the educational and teaching goals in the learning process. The students are an important segment in academic institutions that is responsible for studying serious knowledge of theoretical and practical subjects in individual and group sports. They are keen to teach their students when they enter practical life after graduating to become teachers in educational institutions. Since the development of the academic education process requires updating cognitive tests to keep pace with educational systems and modern measurement methods that have become compatible with the level of university students.

The modern trend is distinguished in measuring cognitive achievement. It is the means of objective evaluation that should be used alongside tests that measure physical and skill abilities with great importance in improving the level of cognitive achievement of students. The measuring cognitive achievement in the sports field especially in theoretical subjects, has become one of the modern measurement methods characterized by scientific foundations. As it indicates the extent of students' achievement of the content of the programs' subjects and curricula. Also, the extent of evaluating their effectiveness in advancing the educational process which leads to raising the level of students' mastery of applying the cognitive aspect in physical education sciences and creativity in their specialization.

Measuring scientific knowledge is considered one of the most important matters and components that researchers and specialists in measurement and testing. It aims to reach foundations that clarify the vision in the field of specialization and build a base of information. It contributes in developing methods to obtain cognitive achievement from

knowledge related to understanding the philosophy in the faculties of physical education and sports sciences for the subject of motor learning. "Achievement tests are the most commonly used tools in educational and teaching institutions in the educational evaluation process. In our country, they are the only means used to guide and select students throughout the academic year for various purposes such as diagnosis, classification, guidance, evaluation. It also determines a specific level or to move from one stage to the next" (Al-Imam et al., 2016: 78).

Since standards and tests are one of the objective means that those in charge of education rely on in the process of evaluating student performance. We can compare, interpret and justify the grades we obtain through the tests application and standards, which is a necessary means for the continuation of scientific progress in various theoretical subjects. The importance of the research lies in building a scale to identify the cognitive achievement of the motor learning material related the the faculties of physical education and sports sciences students. It works to focus on the cognitive achievement of college students with sports specializations, which helps to acquire cognitive experiences and raise the physical level of students. It requires full awareness from the learner in improving his cognitive achievement, which is clearly reflected during his application to perform his duties as a teacher after his graduation.

Research problem

The interest in cognitive tests and measures, including the colleges of physical education and sports sciences in Iraqi universities, makes this interest raise the cognitive level of its students. As well as the context followed in the cognitive achievement of these institutions' students in theoretical subjects, which obtains by the students to move to the next stage. Achieving the best scientific and cognitive levels can be done by using the best types of tests and measures. Thus people will be

able to raise the cognitive abilities of students and determine the cognitive level of each student. To verify the outcomes and achieve the education's goals must resort to using tests that have scientific foundations that make it effective. According to the researchers' belief, after reviewing some sources and references, they reached the conclusion that there is no cognitive achievement test for the subject of motor learning for students of colleges of physical education and sports sciences. Based on the above, the need has become urgent to build and standardize cognitive tests which prompted conducting such a study to be consistent with those contexts followed. So, the researchers decided to build a cognitive test for the subject of motor learning.

Research objective: To build a cognitive test in motor learning for second-year students in the faculties of physical education and sports sciences

1.4 Research areas

1.4.1 Human field: Students of the College of Physical Education and Sports Sciences / University of Diyala.

1.4.2 Time field: From 7/1/2024 to 1/6/2024.

1.4.3 Spatial field: Classrooms / College of Physical Education and Sports Sciences / University of Diyala.

2. Research methodology and field procedures

2.1 Research method: The researchers used the descriptive method using the survey method due to its suitability to the research problem and its study. The descriptive method is "a method or organization that depends on a set of rules and foundations that are used to achieve the objectives of research and scientific work." (Awis, 2003: 151)

2.2 Research community and sample: The research community was determined by the students of College of Physical Education and Sports Sciences / University of

Diyala / academic year 2023-2024, numbering (986) male and female students, where (228) male and female students were selected as a sample for the research. Thus, the research sample constitutes a percentage (12.23%) of the original community.

2.3 Research tools and methods: Sources and references - Questionnaire. - Cognitive achievement test, see Appendix (1).

2.4 Field research procedures:

2.4.1 Steps to build a cognitive achievement test for the motor learning

2.4.1.1 Determining the areas of the cognitive achievement test: To begin the process of determining the areas of the cognitive achievement test.The researchers found that the scientific material is determined the content of the motor learning subject. It is taught the motor learning subject for second-stage students according to the decisions of Iraqi Ministry of Higher Education and Scientific Research. The researchers presented a questionnaire that includes several areas in motor learning to a group of experts, numbering (17) Appendix (2). It determines the relative importance of the areas in the content of the motor learning subject. After collecting the data and analyzing it statistically, the researchers reached the number of paragraphs for each area out of a total of (50) paragraphs.

see the table (1):

Table (1) shows the cognitive achievement test domains

Number of paragraphs	Relative importance	Cognitive domain	Ser.
7	%14	Mental abilities	1
8	%16	Mental processes	2

10	%20	Intelligence and mental abilities	3
2	%4	Food and learning	4
7	%14	Exercises and skills	5
2	%4	Biological cycles of the body	6
3	%6	Visual perception and brain signals	7
4	%8	Mind maps	8
4	%8	Biorhythm and mental training	9
3	%6	Scientific research	10
50 items	%100	Total	

2.4.1.2 Determining the method of formulating scientific knowledge test paragraphs:

"The multiple-choice method is one of the most popular methods used in constructing objective test statements in general. The multiple-choice paragraph consists of two main parts; the first part is called the root or the stem which is in the form of a question or in the form of an incomplete statement. While the second part is called the alternatives which are possible solutions to the issue." (Al-Tahir et al., 1999: 101). The researchers chose the type of test paragraphs which is multiple choice, in formulating the scale paragraphs. As multiple-choice paragraphs are objective

questions characterized by flexibility and affected by a little guessing of the answer from true or false questions.

2.4.1.3 Preparing the test paragraphs: The researchers formulated and arranged the scale paragraphs in a manner that they saw as achieving the goal of their research. They relied on the motor learning material taught to the research sample, numbered (50) paragraphs.

2.4.1.4 Determining the validity of the test items: The researchers presented the test items after preparing them in their initial form, which were (50) items, to (17) experts and specialists in the field of measurement, testing and motor learning. Appendix (2), and to verify them if they needed modification or addition after processing the results statistically, to distinguish and accept the statements where the results appeared with the acceptance of all the statements because the value of (Ka2) tabular reached (3.78) with a degree of freedom (1) and a significance level of (0.05), where no item was deleted, so their final number was (50) remaining items as Table (2) shows.

Table (2) shows the percentage values of the achievement test items

percentage	Disagree	agree	Item number	percentage	disagree	Agree	item
%76,47	4	13	26	%88,32	2	15	1
%94,11	1	16	27	%94,11	1	16	2
%100	0	17	28	%94,11	1	16	3
%100	0	17	29	%88,32	2	15	4
%82,35	3	14	30	%82,35	3	14	5
%94,11	1	16	31	%88,32	2	15	6
%88,32	2	15	32	%76,47	4	13	7
%76,47	4	13	33	%76,47	4	13	8
%100	0	17	34	%94,11	1	16	9
%82,35	3	14	35	%100	0	17	10
%88,32	2	15	36	%100	0	17	11

%76,47	4	13	37	%82,35	3	14	12
%94,11	1	16	38	%94,11	1	16	13
%100	0	17	39	%88,32	2	15	14
%100	0	17	40	%76,47	4	13	15
%82,35	3	14	41	%100	0	17	16
%94,11	1	16	42	%82,35	3	14	17
%88,32	2	15	43	%88,32	2	15	18
%76,47	4	13	44	%94,11	1	16	19
%100	0	17	45	%76,47	4	13	20
%82,35	3	14	46	%88,32	2	15	21
%88,32	2	15	47	%82,35	3	14	22
%76,47	4	13	48	%88,32	2	15	23
%94,11	1	16	49	%94,11	1	16	24
%100	0	17	50	%76,47	4	13	25

2.4.1.5 Test Instructions: Dear students, you are required to follow the following:

1- Write your name in the designated place on the answer form.

2- Read each paragraph carefully and choose the correct alternative, by marking the letter of the correct answer.

3- Your answer will be on the same test paper for all paragraphs, any paragraph that is neglected will be considered incorrect.

4- (Two marks) will be given for the correct answer and (zero) for any paragraph that is neglected and any wrong or left out answer or one that has two answers.

2.5 Conducting the cognitive achievement test experiment: After completing the initial formula of the test. it is time to conduct the exploratory experiment of the test, which consisted of:

2.5.1The exploratory experiment: The researchers conducted the exploratory experiment on Monday 2/5/2024 / nine o'clock in the morning on the exploratory sample (24) male and female students randomly selected from the research

sample. In this experiment, the time taken to perform the test was determined. It was calculated by recording the time of the first tester who finished answering, which was (38) minutes, the time of the last tester was (53) minutes. By calculating the average experimental time, the test time was reached is (45.5) minutes. The researchers completed the exploratory experiment of the cognitive achievement test in the best possible way. Also they accepted the students' opinions regarding the test and answered their inquiries about the content of the test. To avoid them when conducting the main experiment so that the test would be successful.

2-5-2 Main experiment: The researchers applied the cognitive achievement test for the motor learning subject consisting of (50) paragraphs. Appendix (1) to the research sample members numbering (204) male and female students, on Wednesday and Thursday 17-18/4/2024, in the classrooms / the College of Physical Education and Sports Sciences / University of Diyala. After completing the main experiment, the researchers collected the exam papers to prepare them for the next stage.

2-5-3 Correcting the cognitive achievement test: After completing the test and collecting the exam papers. The researchers corrected the paragraphs of the achievement test according to the correction keys Appendix (1). Then, the researchers tabulated the data according to the answers of the building community to be analyzed.

2-6 Statistical analysis of the achievement test items:

2-6-1 Extracting the difficulty and ease coefficient of the test items: After statistically analyzing the scores of the sample members. item was not excluded from the total (50) items because they are characterized by their ease and difficulty, Table (3) shows it.

Table (3)

shows the difficulty and ease coefficient of the test items

Evaluation	Difficulty factor	Ease factor	item	Evaluation	Difficulty factor	Ease factor	item
Valid	0.67	0.33	26	Valid	0.57	0.43	1
Valid	0.60	0.40	27	Valid	0.67	0.33	2
Valid	0.39	0.61	28	Valid	0.78	0.22	3
Valid	0.57	0.43	29	Valid	0.75	0.25	4
Valid	0.75	0.25	30	Valid	0.78	0.22	5
Valid	0.64	0.36	31	Valid	0.46	0.54	6
Valid	0.78	0.22	32	Valid	0.74	0.26	7
Valid	0.32	0.68	33	Valid	0.75	0.25	8
Valid	0.71	0.29	34	Valid	0.57	0.43	9
Valid	0.46	0.54	35	Valid	0.67	0.33	10
Valid	0.60	0.40	36	Valid	0.71	0.29	11
Valid	0.75	0.25	37	Valid	0.67	0.33	12
Valid	0.65	0.35	38	Valid	0.68	0.32	13
Valid	0.79	0.21	39	Valid	0.54	0.46	14

Valid	0.60	0.40	40	Valid	0,71	0.29	15
Valid	0.75	0.25	41	Valid	0.57	0.43	16
Valid	0.65	0.35	42	Valid	0.67	0.33	17
Valid	0.73	0.27	43	Valid	0.72	0.28	18
Valid	0.71	0.29	44	Valid	0.75	0.25	19
Valid	0.78	0.22	45	Valid	0.78	0.22	20
Valid	0.46	0.54	46	Valid	0.46	0.54	21
Valid	0.68	0.32	47	Valid	0.74	0.26	22
Valid	0.54	0.46	48	Valid	0.75	0.25	23
Valid	0,63	0.37	49	Valid	0.57	0.43	24
Valid	0.68	0.32	50	Valid	0.67	0.33	25

2.6.2 Extracting the discrimination coefficient for the test items: "The discrimination coefficient of the scale item means the ability of the item to distinguish between individuals with high scores and individuals with low scores." (Amin and Omar, 2006: 274), the scores of the upper and lower groups were arranged at a rate of (27%) for each group and then the discrimination ability equation was applied. The researchers adopted the items that distinguished them with a value of (0.20 or more), so no item was excluded according to Abel's criteria, for all the test items consisting of (50), as in Table (4) which shows the values of the discrimination coefficient for the items.

Table (4)

Explains the discrimination coefficient of the cognitive achievement test items

Evaluation	Discrimination values	Paragraph number	Evaluation	Discrimination values	Ser.
Distinctive	0.46	26	Distinctive	0.57	1
Distinctive	0.31	27	Distinctive	0.35	2
Distinctive	0.28	28	Distinctive	0.38	3
Distinctive	0.45	29	Distinctive	0.32	4
Distinctive	0.36	30	Distinctive	0.28	5
Distinctive	0.42	31	Distinctive	0.44	6
Distinctive	0.37	32	Distinctive	0.34	7
Distinctive	0.32	33	Distinctive	0.21	8
Distinctive	0.26	34	Distinctive	0.25	9
Distinctive	0.44	35	Distinctive	0.38	10

Distinctive	0.39	36	Distinctive	0.42	11
Distinctive	0.36	37	Distinctive	0.35	12
Distinctive	0.27	38	Distinctive	0.42	13
Distinctive	0.48	39	Distinctive	0.29	14
Distinctive	0.29	40	Distinctive	0.33	15
Distinctive	0.26	41	Distinctive	0.27	16
Distinctive	0.44	42	Distinctive	0.42	17
Distinctive	0.39	43	Distinctive	0.36	18
Distinctive	0.34	44	Distinctive	0.35	19
Distinctive	0.25	45	Distinctive	0.23	20
Distinctive	0.41	46	Distinctive	0.47	21
Distinctive	0.26	47	Distinctive	0.24	22
Distinctive	0.42	48	Distinctive	0.34	23
Distinctive	0.36	49	Distinctive	0.31	24
Distinctive	0.32	50	Distinctive	0.37	25

2.7 Finding the scientific basis of the test items:

2.7.1 Validity:

2.7.1.1 Apparent validity: The test validity is "the ability of the test to measure the characteristic. It was designed to measure, as no test may be applied for any scientific purpose unless there is sufficient evidence of its validity. Otherwise the results of scientific research will be in doubt. Therefore, the validity of the test is one of the most important conditions for its use." (Khraibat and Salman, 1992: 68). Therefore, the researchers verified the apparent validity of the test items by

presenting them to (17) experts, Appendix (2), in order to determine the validity of their vocabulary, which is part of the content of the motor learning material, and the extent of their suitability to achieve the research objective. It was found that the experts agreed on all the items at a rate of more than (75%), thus achieving apparent validity. "Apparent validity is one of the indicators of content validity and indicates the extent of the relevance of the test items to the variable to be measured" (Al-Aqili and Al-Shaib, 1988: 282)

2.7.1.2 Hypothetical construction validity: This type of validity is considered the most important type of validity, as the researchers verified the hypothetical validity of the test in the following ways:

2.7.1.3 Internal consistency:

A- Correlation coefficient between the paragraph score and the total score of the scale:

This type of stability is called internal homogeneity or internal consistency. This is what (Ahmed Suleiman Awda) 1987 referred to: "Internal homogeneity refers to the strength of the correlation between the paragraphs in the test" (Awda and Malkawi, 1987: 161) to find the validity of the internal consistency of the test paragraphs and total score, using Pearson's correlation coefficient for the construction sample which numbered (204) male and female students. To identify the type of significance, the researchers used Pearson's correlation coefficient, it was confirmed that all paragraphs were significant because the correlation values were greater than or equal to the tabular value, as in Table (5).

Table (5)
Pearson's correlation coefficient and type of significance for the cognitive achievement test

Significance of the correlation	Calculated value (tr)	Calculated value (r)	Paragraph No..	Significance of the correlation	Calculated value (tr)	Calculated value (r)	Paragraph No.
moral	4,647	0.53	26	moral	2,254	0.31	1
moral	3,752	0.40	27	moral	6,341	0.76	2
moral	5,823	0.55	28	moral	3,629	0.44	3
moral	6,328	0.63	29	moral	5,728	0.68	4
moral	4,715	0.65	30	moral	4,647	0.46	5
moral	3,724	0.58	31	moral	3,752	0.38	6
moral	3,762	0.37	32	moral	5,823	0.64	7
moral	4,174	0.39	33	moral	6,328	0.51	8
moral	6,728	0.64	34	moral	4,715	0.33	9
moral	4,647	0.35	35	moral	3,724	0.27	10
moral	5,623	0.57	36	moral	3,762	0.42	11
moral	6,426	0.49	37	moral	4,174	0.36	12
moral	4,381	0.61	38	moral	6,728	0.35	13
moral	5,345	0.65	39	moral	6,829	0.23	14
moral	4,273	0.60	40	moral	4,932	0.47	15

moral	3,724	0.27	41	moral	4,715	0.65	16
moral	3,762	0.42	42	moral	3,724	0.58	17
moral	4,174	0.36	43	moral	3,762	0.37	18
moral	6,728	0.35	44	moral	4,174	0.39	19
moral	6,829	0.23	45	moral	6,728	0.64	20
moral	4,932	0.47	46	moral	6,341	0.76	21
moral	3,762	0.42	47	moral	3,629	0.44	22
moral	4,174	0.36	48	moral	5,728	0.68	23
moral	6,728	0.35	49	moral	4,647	0.46	24
moral	6,829	0.23	50	moral	3,752	0.38	25

3. Presentation, analysis and discussion of the results:

3.1 Statistical estimates for the cognitive achievement test: After the final application of the test on the research sample, the researchers obtained its final results and found that it was necessary to describe the cognitive test statistically, Table (6) shows that.

Table (6)

Shows the statistical estimates for the scientific knowledge test / the measurement and evaluation subject

Kurtosis	Skewness coefficient	Median	Standard error	Standard deviation	Arithmetic mean	Variable

0.74	0.873	73	1،09	8,436	74,623	Achievement test

Through the table that contains the data of the research sample results for the cognitive achievement test for motor learning. The arithmetic mean reached a value (74,623) and a standard deviation of (8,436). The cognitive achievement level of the research sample members was shown to be at average, good and very good levels. It is indicating that the students have a cognitive level in the subject of motor learning. "Cognitive achievement is a general term that expresses the processes of perception, discovery, recognition, imagination, appreciation, memory, learning and thinking through which the individual obtains knowledge and cognitive understanding or interpretation, distinguishing them from emotional processes. Knowledge, according to Piaget, is the overall formula for behavior represented by the mutual interaction between the individual and his environment, the structure that determines the various possible links between the self and external subjects." (Al-Khawli and Anan, 2001: 46)

The researchers believe that the achievement test the researchers built is a measuring tool for the achievement of all that students have learned in the subject of motor learning. That is, "the measuring tool through which we can reach this determination or quantity. The test usually consists of a set of questions or situations that the student (or any person) is required to respond to. Here, the questions or situations are called paragraphs or items of the test. Therefore, the educational test is a small sample, but it is representative of the trait or characteristic that is to be measured." (Al-Ajili et al., 2001: 58).

4.Conclusions and Recommendations:

4.1 Conclusions:

Through the research results, the researchers were able to do the following:

1.The process of statistically analyzing the results of the test construction steps resulted in constructing a cognitive achievement test in the motor learning subject. It is taught within the ministerial curricula for second-stage students in the faculties of physical education and sports sciences, includes (50) paragraphs prepared to achieve the research objective.

2. The emergence of good cognitive levels in all areas of cognitive achievement for the motor learning subject among the individuals in the research sample.It indicates that they had knowledge of the motor learning subject, which indicates that they acquired this knowledge through theoretical lessons.

4.2 Recommendations: Through the research results, the researchers recommend the following:

1. It is necessary to conduct various assessment tests continuously and permanently for each subject due to their impact on student achievement, instead of being quarterly or annual.

2.The necessity of preparing physical education and sports science teachers in a way that enables them to use any type of educational assessment, through conducting training and qualification courses for teachers to prepare and qualify them scientifically on how to use various types of assessment.

3. Urging those responsible for teaching the motor learning subject to use the achievement test when assessing the level of cognitive achievement for second-stage students.

4. The necessity of focusing on the students' level in increasing their scientific knowledge because it works to improve their performance after graduation and

make them efficient teachers by adding information about the motor learning subject.

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Appendix (1)

The Final FormCognitive Achievement Test in Motor Learning

Q: Choose the correct answer for each of the following:

1- ..... is one of the external factors affecting attention.

A- External pressures. B- Organic needs. C- Individual differences. D- All of the above.

2- ..... the mental process by which past experience is recorded, saved and retrieved

A- Perception. B- Memory. C- Recollection. D- Concentration.

3- Human functions, including perception and awareness, are disturbed because they require

A- Present and past. B- Experience. C- Recollection. D- Perception.

4- ..... It occurs after the second stage of storing information in memory.

A- Storage. B- Retrieval. C- Concentration. C- Brain.

5- Scientists have identified the types of attention as: A- One type. B- Two types. C- Three types. D- Four types.

6- Attention intensity is divided into: A- Total attention. B- Deep. C- Superficial. D- Deep and superficial.

7- Factors affecting attention include: A- Environmental factors. B- Genetic factors.

C- Internal and external. D- All of the above.

8- Mental processes are sometimes called.....

A- Neural Processes B- Interactive processes. C- Information programming. D- All of the above

9- Perception means.... A- The true and accurate interpretation of the situation B- A mental process that precedes behavior

C- An action that precedes the requirements of the situation D- All of the above

10- It is a quick perception to understand the duty and the order to implement it.

A- Motor Action B- Latent Action C- Mental Processes D- The nervous system

11- Attention is divided in terms of its stimuli into.... A- Voluntary and involuntary attention

B- Forced and automatic attention. C- Voluntary, forced and automatic attention D- All of the above

12- The individual who pays attention to something he desires and is inclined towards without making any effort is called attention.....

A- Voluntary B- Forced C- Automatic D- All are correct

13- The individual who pays attention to a specific thing that requires a specific effort is called attention....

A- Voluntary B- Forced C- Automatic D- All are correct

14- The individual whose attention is directed to the stimulus despite his will is called attention……

A- Voluntary B- Forced C- Automatic D- All are correct

15- The internal factors of attention are …. A- Organic Needs B- Mental Readiness C- Important Motives D- All of the above

16- Learning based on understanding the role of the brain provides us with principles that form a basis for employing

A- Knowledge B- Skill C- Decision-making D- All of the above

17- The association of intelligence with school achievement helps the teacher to

A- Educational tasks B- Success factors C- A+ B D- Decision-making

18- The ability to think abstractly is one of the definitions of intelligence and refers to the learner's ability to …….

A- Numbers B- Symbols C- Ideas D- All of the above

19- Spearman's theory of intelligence indicates the existence of

A- General work B- Special factor C- Decision making D- Joint work

20- The oral measure of intelligence consists of …….

A- Information B- Vocabulary C- A+B D- Arithmetic

21- The scientist Guilford is one of the most prominent scientists who built the theory of multiple factors in the formation of intelligence and classified it into: A- Processes B- Content C- Outcomes D- All of the above

22- What regulates the shape of neurons and forms what we call intelligence is

A- Aspects of learning B- Environmental factors C- Social factors D- There is a correct answer

23- Intelligence tests are considered one of the best and most accurate tools …….

A- Evaluation B- Diagnosis C- Treatment D- A+B

24- The scientist Kattel divided intelligence into …….

A- Flexible intelligence B- Social intelligence C- Specific intelligence D- Th- A+T

25- One of Thorndike's divisions of intelligence is ……

A- Physical intelligence B- Abstract intelligence C- Social intelligence D- All of the above

26- Vitamin C plays an important role in the biochemical process in the brain as it is the most. A- Strong free bonds B- Liquid materials C- Anti-oxidation D- There is no correct answer

27- One of the important vitamins for the body enhances brain function and helps maintain human mental health. A- B2 B- B9 C- Vitamin C D- B6

28- ..... is an important basic component of the educational unit.

A- Exercises B- Learner C- Trainer D- Previous options.

29- The importance of exercise lies in the physical preparation ..... for all types of motor activities.

A- General and specific B- Specific C- Group and individual D- Previous options.

30- Exercises have several goals .....

A- Reaching a mechanism. B- Maintaining a healthy body C- Raising the level of physical fitness D- All of the above.

31- The most influential factors on exercises are .....

A- Stability of the movement form B- Organizing the rhythm collectively C- Motivations and encouragement D- The previous options.

32- There are certain principles that must be followed when setting exercises .....

A- General preparation exercises C- Special preparation exercises C- Competition exercises D- None of the above.

33- Opinions differed about dividing the exercises according to points of view .....

A- According to the age group. B- According to the subject. C- According to the purpose of the exercise. D- All of the above.

34- ..... The learner performs it for the purpose of facilitating blood circulation and improving muscle response.

A- Stretching Exercises B- Relaxation exercises. C- Flexibility exercises D- All of the previous options.

35- The first period in the first cycle of the biological cycles is considered the most productive period of the day at work for about .....

B- A-30% B-40% C-20% D-10%

36- - The duration of biological cycles is …… a day.

A-22 days B-21 days C-25 days D-23 days

37- Types of visual acuity. . ….

A- Fixed and moving. B- Fixed. C- Moving. D- There is no correct answer.

38- The basis of the motor program is …. . ..

A- Organizing information. B- Previous learning. C- Motor guidance. D- Neuromuscular coordination.

39- The duty of the cerebral cortex is …….

A- Dividing the motor program. B- Distributing the motor program. C- Organizing the motor program. D- All of the above.

40- …… is that wonderful tool in organizing thinking, and it is very simple?

A- Mental abilities B- Mind map C- Attention D- Motor control

41- Because mind maps are easy and inspired by nature, their components are very few, including ……

A- Your mind B- Learning C- Your imagination D- A + C

42- One of the important features of mind maps is ……

A- Organizing and clarifying ideas B- Saving time C- Generating new ideas D- All of the above

43- One of the important exercises that helps you strengthen mind maps for thinking in the sports field is ……

A- Gymnastics B- Swimming C- Walking D- B + C

44- Biorhythm is the process ---- directly related to internal and external factors.

A- Psychological B. Evaluative C. Evaluative D. Physiological

45- The physical cycle is one of the biorhythm cycles and its duration is ----------.

A- 38 days B. 33 days C. 28 days D. 23 days

46- One of the biorhythm cycles is the emotional cycle and its duration is ---------.

A- 38 days B. 33 days C. 28 days D. 23 days

47- One of the applications of biorhythm according to time ----------.

A- Daily B. Weekly C. Monthly D. All of the above

48- Most of the research in the field of motor learning is of what type?

A- Historical research. B- Descriptive research. C- Follow-up research. D. Experimental research

49- When conducting an experiment in motor learning, it is best to choose a sample?

A- Beginner. B- Advanced. C- Youth. D- All answers are correct.

50- One of the most prominent tests in the field of motor learning is:

A- Measuring speed and time. B- Measuring accuracy. C- Measuring skill level. D- All answers are correct.

Correction keys

Answer	Ser.	Answer	Ser.	Answer	Ser.	Answer	Ser.
B	40	B	27	d	14	A	1
D	41	A	28	d	15	B	2
D	42	A	29	d	16	A	3
D	43	A	30	c	17	A	4
D	44	C	31	d	18	C	5
D	45	D	32	c	19	D	6
C	46	D	33	d	20	C	7
D	47	A	34	c	21	C	8
D	48	C	35	d	22	D	9

A	49	D	36	a	23	A	10
D	50	A	37	d	24	C	11
		A	38	d	25	C	12
		C	39	d	26	A	13

Appendix (2)

Names of the experts who were presented with the achievement test

Place of work	and Academic title	ت
Presidency of Diyala University	Prof. Dr. Haider Shaker Mazhart	1
University of Diyala/College of Physical Education and Sports Sciences	Prof. Dr. Bashar Ghaleb Shahab	2
University of Diyala/College of Physical Education and Sports Sciences	Prof. Dr. Muhammad Walid Shahab	3
University of Diyala/College of Basic Education	Prof. Dr. Furat Jabbar Saad Allah	4
University of Diyala/College of Physical Education and Sports Sciences	Prof. Dr. Hussam Muhammad Haydan	5
University of Diyala/College of Basic Education	Prof. Dr. Adel Abbas Diab	6
University of Diyala/College of Basic Education	Prof. Dr. Rana Abdul Sattar Jassim	7
University of Diyala/College of Physical Education and Sports Sciences	Prof. Dr. Nibras Ali Latif	8
University of Diyala/College of Physical Education and Sports Sciences	Prof. Dr. Diaa Hamoud Mawloud	9
Al-Mustansiriya University/College of Physical Education and Sports Sciences	Prof. Dr. Hardan Aziz Salman	10

Al-Mustansiriya University/College of Physical Education and Sports Sciences	Prof. Dr. Ali Samoum Al-Fartousi	11
Diyala University/College of Physical Education and Sports Sciences	Prof. Dr. Ammar Jabbar Abbas	12
University of Diyala /College of Physical Education and Sports Sciences	Prof. Dr. Nibras Kamil Hidayat	13
Diyala University/College of Physical Education and Sports Sciences	Prof. Dr. Hanan Adnan Aboub	14
Diyala University/College of Physical Education and Sports Sciences	Prof. Dr. Basem Ibrahim Hamid	15
Diyala University/College of Physical Education and Sports Sciences	Prof. Dr. Huda Naji Zidane	16
Diyala University/College of Physical Education and Sports Sciences	M. Dr. Omar Rashid Hussein	17