Turkish Online Journal of Qualitative Inquiry (TOJQI)
Volume 12, Issue 3, July 2021:3717 - 3726

Impact of intelligent education model in cognitive development among graduate students / physics teaching methods

Assis Prof. Sahira Abbas Qanber AL Sa' aeedy
50016@uotechnology.edu.iq

Prof.Dr.Haider Hatem Falih Al. ijrish.
basic.haider.hatem@uobabylon.edu.iq

1. Technology University L Department of Electromechanical Engineering.
2. College of Basic Education Babylon University.

Abstract :
The research aims to find out the impact of the intelligent education model in the cognitive development of graduate students / methods of teaching physics, where the research community is from four universities (Baghdad, Mustsiriyah, Iraqi, Diyala), where its students reached (110) graduate students, and the sample was selected by (83%) From the community to be a research sample (91) distributors (46) experimental, and (45)controlled and the research tool was the test of cognitive development that was consisting of (30) paragraphs of the type of multiple choice, and after ascertaining its sincerity and stability, It was applied to the sample research and data processing statistically showed the results the out performance of the experimental group over the controlled group was shown, this indicates the effectiveness of the model of intelligent education in cognitive development in the research sample.

Keywords: (impact, model, intelligent education, cognitive development).

1. Introduction:

Education has general and private objectives that it works to achieve through its institutions and elements, and the first of these elements is the professor adopted by education to trade other elements, and the order to provide the contemporary professor with everything related to technological innovations became a fundamental requirement to dismantle its captivity from the traditional framework to a more effective and vital role, emulate the minds of his students, and revealing their potential and preparations. (Abdeslam, 2006:74) Education in general faces many challenges as a result of the tremendous advances in education technology and the means to deal with it in this age of informatics, and the emergence of the International Information Network (Internet), which requires the provision of researchers and students. The skills needed to meet these challenges, and then the integration between the concept of the technological education and the concept of communication technology, which led to the emergence of new learning patterns called educational technological innovations. This has forced graduate students to acquire coping skills to accumulate with it and the need to change the pattern of information provided and acquire new life skills that make them use information, and help their students employ it and use it in education. (Abdeslam, 2006: 551).

Through the researcher's experience and knowledge of many experiences of countries and their teaching work and trained in one hand and being informed about the impact of the use of intelligent education technology and its various programs in many countries and its benefits in developing the quality of teaching and education, especially teaching physics and alleviating the difficulties faced by Graduate students, which may lead to an increase in students' tendencies and motivation to learn, and from what had been seen from a wide debate between the trends of teaching and administrators working at these universities about the adoption of the developments in ICT in achieving professional updates and keeping pace with these developments.

On the other hand, the problem is that there is a gap between scientific societies (researchers' audience - knowledge societies). And one of the methods that has proven its efficiency in identifying the problem of research is to put the problem in the form of a question that requires answering it through research, and the problem of research lies in the following question: - What is the impact of the intelligent education model in cognitive development among graduate students / methods of teaching physics?

Research goal: Aims to know the impact of the intelligent education model in cognitive development among graduate students of the methods of teaching physics.

Search limits:

Human field: graduate students for the degrees (Master's, Ph.D.).

Spatial field: Four universities have been selected to represent the research community through which the sample is extracted from which are (Baghdad University, Al-Mustansiriyah University, Iraqi University, and Diyala University).

Temporal field: School year 2020-2021.

Identifying terms:

Impact/It's custom: (Al-Saqqaf, 2007): "It is what he sees as features, fingerprints or effects in the thing that affects him, so there is an effecter and an effected in the sense of an independent variable and a continuous variable."

(Al-Saqqaf, 2007:19)

Theoretical definition: "It is the result that is expected to appear on students' thinking and behaviors, as a learning and thinking outcome after subjecting them to educational programs or studies."

Procedural definition: "The difference in the cognitive development of graduate students of methods of teaching physics is, the experimental and controlling groups."

Model/It's custom: (Abu Jadu 2008): "As a set of assumptions derived from theoretical knowledge of the nature of knowledge and the psychological characteristics of the learner, the principles and laws governing the learning process, as well as opinions, reflections and experimental experiences" (Abu Jadu, 2008:75)

Theoretical definition: "A set of sequential educational steps used in a particular educational position to guide the learning process to help reach to learning results and be suggested on a particular learning theory."

Procedural definition: "A set of teaching steps followed by the researcher with the research sample, to enable them to develop cognitively."

Smart Education/ It's custom: - (Alzagby and others. 2005): "A set of tools that help us receive, process, store, retrieve, print and transmit information electronically in the form of text, sound, image or video using the computer." (Alzagby and others., 2005: 76)

Theoretical definition: "The tools that have recently been provided as a result of the development that is taking place, which provide a better presentation of educational materials which is more exciting."

Procedural definition: "The group of educational innovations according to scientific development that graduate students of methods of teaching physics can learn"

Cognitive Development/It's custom: (Al-Dulaimi, 2008): (The positive change in researchers' information over a certain period of time as a result of exposure to intelligent education or is the rate of change in quantity and type of information over a specified period of time by exposure to the methods of education learning from specialized satellite channels and the Internet..... Etc.). (Al-Dulaimi, 2008: 61)

Theoretical definition: "It Is the evolution of cognitive construction by gaining some information from different sources of education."

Procedural definition: "It is to raise the level of researchers by using the intelligent education model."

2. Theoretical Framework - Previous Studies

Smart Education Model: The teaching model is a proposed guidance plan based on a specific learning theory, and the plan is a set of previous products and procedures that make it easier for the teacher to plan his teaching activities at the level of goals, implementation and evaluation. Specific, such as consulting the learner's attention, drawing his attention, and providing him with feedback based on the learning theory, behavioral, human, social.... And the like, because models rely in their origins on educational observation and theories (Psychological). (Qatami and others., 2008:155) And this means that the adoption of teaching models in teaching came from the premise that teaching is no longer only art as it was thought until recently, but has become a science, in the sense that it requires structured knowledge of its origins, methods and strategies and how to plan to achieve specific goals, with a high degree of mastery, how to maintain active interaction with the learner and how to measure its progress towards achieving its goals, determine the effectiveness of the educational process in order to improve its future practice, and achieve individual learning. (Druzeh, 1995:6) These models form an advanced movement in applying the principles of learning theories to facilitate the learning process within the classroom, and they help develop theories of education that will increase the adequacy of the teaching process. (Al-Khawalada, 1993: 34)

Smart Education: Today, attention has shifted to research on how to optimize the use of modern technologies and ways to make the most of them in the education and learning process, improve

the quality of education, modernize its curricula and methods, and develop personal skills and abilities. (Okasha, 1995: 174)

The advantages and benefits of using intelligent education: the use of intelligent education in modernizing and renewing education will achieve the following benefits:

1- Learning pleasure: Smart education technology attracts students towards learning.

2- Individualism: in self-education or individual l;earning because of the different abilities and backgrounds of students, which necessitates giving them individual freedom of self-learning.

3-Interactive learning: Through interactive computers, this interactive learning represents communication and educational dialogue with the educational software used.

4- Reducing learning time: Many studies have shown that computer learning reduces learning time. (American,2010,p 12)

The possibility of teaching some subjects that were previously uneducated through the mechanism's ability to simulate and model, which contributed to breaking the frustration they felt and reflected on the quality of the educational process they provided, which negatively affects students' achievement and the skills needed, the solution of these problems related to teachers lies in the employment of intelligent education and advanced communications, making the professor a directio, mentor and a planner of the educational position, i.e. the role of the professor must change instead of being just a recipient of information, He must design the educational position and scenario associated with learning, thus becoming similar to that of an information engineer or contemporary knowledge engineer. (AI-Hadi,2007:36) The concept of intelligent education has recently become the best nominance design for the use of information technology in education (Awashi, 2010:73).

Characteristics of intelligent education: From a literary review, a number of characteristics can be found, including:

1. It is a well-designed and planned system with inputs, processes and outputs.

2. It is a flexible education that occurs at any time, anywhere where its tools are available and at the speed that suits the student.

3. It's not just about viewing content, it's about all the elements of the curriculum.

4. Content is provided on a multimedia basis.

5. It is not required to be education with distance, but it may occur within the classroom. (Al-Musa, 2007: 89)

Cognitive development: Cognitive development occurs according to a number of psychological and behavioral effects surrounding individuals, the real effort that leads to the roots of knowledge occurs in the transmission of the semantic properties of things and knowledge, components, analysis and interpretation, and psychologists believe that the growth of science or its examination is not achieved but by lies, science grows by refuting theory and trying to find alternatives or modify or replace them, and thus the growth of science and knowledge occurs. The experts divided the categories of information that cause cognitive development into three types: (Lyn RclARK, 2009,P 37)

Development information: that is, those that help development or development.

Pedagogical or educational information: i.e. those that help to learn.

Achievement information: i.e. those that help to accomplish.

For when an individual uses a book to improve his general cultural level, this information is called development, and when he studies a scheduled book, his information is called pedagogical, and when the scientist returns to his extracts and discoveries that has to do with his field of research, as the information in this case is information that is accomplished and regardless of how much growth becomes quantitative or qualitative, the researcher should deduce the reasons for growth. (Abu Jadu, 2007:59) And the process of cognitive development is linked to a number of mental processes that depend on the individual's intellectual potential and mental abilities in knowledge perception and this perception dep`ends on certain skills in remembering that grow and mature knowledge according to the following hypothetical equation developed by Piaget: growth = physical maturity + physical environmental experience + social experience + balance. (Wolman,1993,p:42), to understand these important stages of knowledge growth, it is necessary to review the processes that have been briefly mentioned such as mental skills, what are the most important methods of mental impact and whether the skills of creativity and knowledge perception vary among individuals, and then clarify the concept of remembering The meaning of memory, its types, forms and levels, the relationship of remembering with perception and thinking and the concept of thinking and its patterns and the most important elements of thinking and its tools and stages and types and the relationship of thinking to the growth of knowledge and information and how it contributes to the revitalization of these processes through mental or informative images to clarify information and consolidate in Mind. (Bakhit, 2004: 82) It affects the formation of trends, tendencies and awareness, It also interferes with the formation of beliefs, philosophies and principles and is of great importance in the process of persuasion, It also contributes to the refinement and growth of the individual's personality in society and affects the characteristics, motives and ideas of individuals, as thinking is a hidden, implicit or internal behavior.

Previous studies: The study of the evolutionary dimension of the problem or what is called previous studies and research related to the problem of research is considered as a general process, because the researcher does not start from a vacuum but begins from where others ended and Ferman expresses this step (by surveying the intellectual heritage of the problem and examining it).

- Study (Anin, 2010): (Smart Education in the Arab World): Seeks to address the topic of intelligent education in the Arab world and its interventions as well as touched on the aspects related to this subject in terms of treatments and editing and its nature in intelligent education and its specificity and the researcher took a group of intelligent education sample for analysis. The problem of researching was identified in the confusin, which concerns the concept of intelligent education from traditional education and the Arab experience in the field of intelligent education in terms of form and content, and trying to delve deeper into the reality of what distinguishes information transmitted over the Internet, but the most important findings are the adoption of most intelligent education on global networks. In obtaining different topics and up to (33.37%) and smart education is also interested in publishing facts that deal with scientific affairs in the first place and by (51.6%) and intelligent education provides its services to readers from the engines of scientific services.

- The study (Mughani, 2012) :(the limits and applications of communication technology in intelligent education with a study for multimedia use), and this study did not present new about its predecessors but talked about the concept of multimedia and its tools, but the practical field defined it with a sample of intelligent education, indicating the importance of multimedia and the necissity to benefit from it in intelligent education. However, this study was unable to give a clear definition of the concept of multimedia, nor was it able to demonstrate the extent, use, and nature of the of these media in intelligent education and to determine the levels of such use.

3. Methodology: Choosing the appropriate experimental design, identifying the research community, selecting the sample, preparing stages and applying the intelligent education model, as well as including a presentation of the research tool, the method of its construction, the procedures for implementing the experiment and the statistical means adopted in the analysis of the results.

First: Choosing the experimental design: The researchers used the experimental design as follows: the researchers chose the semi-tight experimental design of the two groups (experimental and controlled) with the remote test. Because it's best suited for current search procedures.

The group	autonomous	dependent	The test
Experimental	the intelligent education model	Cognitive development	The test of Cognitive development
controlled			

diagram (1) Experimental Design

Second: The research community and its sample: since the goal of the research is to study the level or extent of cognitive development achieved by the model of intelligent education for the sample of graduate study students, and through the four universities identified as a spatial area of research (Baghdad, Al-Mustansiriyah, Iraqi, Diyala) for when the research community is taken

from these four universities, it had reached (110) for graduate students who are in the research and writing stage distributed as follows :

Table (1) shows a statistic in the numbers of graduate students in the four Iraqi universities in the faculties of education and basic education (physics teaching methods)

N	Collage name	Master	PHD	Total
	Baghdad	16	14	30
	Al-Mustansiriyah	14	13	27
	Iraqi	15	13	28
	Diyala	13	12	25
Total		58	52	110

Research sample: The sample size is selected from the parent community of (110) and by (83%) and in a random way show us the sample size is (91) for the four universities.
The researcher distributed the (91) sample to two groups (experimental and controlled) as described in table 2.

The group	Collage name	Master	PHD	Total
Experimental	Baghdad	14	12	26
	Al-Mustansiriyah	13	9	22
controlled	Iraqi	14	11	25
	Diyala	10	8	18
Total		51	40	91

Preparation of the research tool: Cognitive Development Test Counter: Since one of the objectives of the research is to know the impact of the model of intelligent education in cognitive development in graduate students / methods of teaching physics, the researcher prepared a test consisting of (30) paragraphs, of the type of choice of multiple, and for the purpose of verifying the validity of the paragraphs and their logical association with cognitive development, these paragraphs were presented to arbitrators specialized in education and psychology and teaching methods-supplement (1), in light of their observations and the percentage of agreement (80%) on it, amended they some paragraphs where and did not delete any paragraph, and gave one degree to the correct answer and 0 for the wrong answer, and thus the grades (from 0 to 30), the researcher promised the approval of the competent arbitrators and their agreement on what is more than (80%) as the apparent honesty of the tool.

- Structural honesty of the test: The sincerity of construction was calculated through the use of data obtained from the first application of the scale on a number of graduate students from the research community and not those who appointed it were randomly selected by the researcher. After correcting the papers, drawing conclusions and excluding non-answering papers, and using spss statistical software, pearson correlation factor was calculated between the paragraph score and the overall score of the scale, which is statistically functional at the level (0.05) and has been found to range from (0.26) to (0.64) which are fairly acceptable values. (Oda, 2005: 457)

- Test stability: The stability of the scale was extracted by calculating the stability factor using the alpha-korn Bach equation, as the data of the survey application relied on (40) graduate students from the research community and not from its sample, and after the exclusion procedure and the use of the statistical program spss, it was found that the amount of stability is approximately (0.86), which is a good high value that is reassuring for the stability of the tool, where some literature indicated that the stability of less than (70%) is weak. (Oda, 2005:450), so the scale is ready for use.

The effectiveness of the wrong alternatives: after the researcher conducted the necessary statistical processes, it emerged that the wrong alternatives to the paragraphs of the remote test had attracted a larger number of the lower group than the upper group, so it was decided to keep them all without deletion or modification.

Application of the experiment: The experiment was carried out after taking the necessary official approvals and determining the location and time of implementation, and informing the students covered by the experiment in agreement with their universities. It was carried out on Wednesday, January 6, 2021, which was an opening meeting of the experiment, where after welcoming the students they were introduced to the researcher and the purpose of the model of intelligent education, methods of implementation, as well as methods of evaluation and the experiment ended with the application of the cognitive development test on Monday 9/2/2021.

Sixth: Statistical means: The researchers used the statistical program of educational sciences spss.

4. Presentation and interpretation of the results: first, the presentation of the results: after the cognitive development test data were counted, the of the experimental group and the controlled were included in special tables showing that the average experimental group is (25.00), with a standard deviation of (2,781), average control of (18.67) and a standard deviation of (2.13) 2), and to ascertain the significance of the differences, the researcher used the T-test equation for two separate samples, the calculated T value (12,173) was at the indicative level (0.05) and the degree of freedom (89), which is greater than the table T value (1,980). as in table 3

Table (3) Test results data for search groups (experimental and controlled)

The group	The sample	Arithmetic mean	Standard deviation	Degree of freedom	Calculated T-value	Tabular T-value	Indication level (0.05)

Experimental	46	25000	2,781	89	12,173	1,980	Functional in favor of experimental
Controlled	45	1867	2,132				

Form (1) shows the differences between the two research groups (experimental and controlled)

This indicates that there are statistically significant differences in cognitive development among graduate students in the research sample and for the benefit of the experimental group.

Explanation of the results: In light of the results of the research shows that the cognitive development of graduate students research sample research has changed positively, this is a clear evidence of the impact of the model of intelligent education, which led to a positive change in cognitive development, and made them excited to use the model of intelligent education, technology skills that they were unaware of, as well as the lack of time for graduate students and their preoccupation with the routine burdens of education, fear and awe to employ modern educational technologies, and their knowledge of the model of intelligent education, had an impact in removing their fear of the use of this technology in education which had shown a positive trend for them. In this way, the results of the research are consistent with the results of the study (Anin, 2003) and the study (Singer, 2006).

5. Conclusions: In light of the results of the research, the researcher concludes:

1. The positive impact of the intelligent education model was demonstrated by the change in cognitive development of the research sample towards the use of education technology.

2. The ability of of the graduate study students to produce various educational programs.

3. The graduate students within the research sample were very excited about employing intelligent education technology as an educational model.

References

1. Abu Jadu, Saleh Mohammed, Mohammed Bakr Nofal (2008), Teaching Theoretical Thinking and Application, Amman, Al-Marcha Printing and Publishing House.
2. Dewi, A. K. ., & Saputra, N. (2021). Problems Faced By Students in Writing English Academic Summary. Middle Eastern Journal of Research in Education and Social Sciences, 2(2), 126-135. https://doi.org/10.47631/mejress.v2i2.257
3. Bakhit, Mr., (2004), Internet is a new means of communication media, journalistic and educational aspects, UAE, University Book House.
4. Al-Khawda, Mohammed Mahmoud, (1993), General Teaching Methods, I1, Textbook Presses, Ministry of Education, Sana'a, Yemen.
5. Darwazah, Afnan, (1995), "The impact of training on education design skills in achieving teacher and student performance", Journal of Evaluation and Psychological and Educational Measurement, Issue 3, Gaza, Palestine.
6. Al-Dulaimi, Hamid Ja'ad Mohsen, (2008), Basics of Scientific Research, Baghdad, Al-Hada'a Printing and Publishing Company.

7. Zoghbi, Mohammed Bilal et al., (2005), Teaching Skills (Computer and Ready-Made Software), I4, Wael Publishing and Distribution House, Amman.
8. Salem, Ahmed, (2004), Education and E-Learning Technology, I1, Al-RashdAh Library, Cairo.
9. Al-Saqqaf, Mona Alawi Hassan, (2007), The impact of training methods on achievement in mathematics and their high school trends, (unpublished master's letter), Faculty of Education, University of Aden, Yemen.
10. Abdeslam, Abdul Salam Mustafa, (2006), Teaching and The Requirements of the Era, I1, Arab Thought House, Cairo.
11. Okasha, Mahmoud Fathi, (1995), Industrial Psychology, Al-Jumhuriya Press, Alexandria.
12. Anin, Abdullah bin Ahmed, (2010), Intelligent Education in the Arab World (Multimedia), Unpublished Doctoral Thesis, Faculty of Education, King Saud University.
13. Odeh, Ahmed, (2005), Measurement and Evaluation in the Teaching Process, I3, Al Amal Publishing and Distribution House, Amman.
14. Qatami, Youssef Mahmoud, et al. (2008), Teaching Thinking Skills "Theory and Application", Farmer's Library, Publishing and Distribution.
15. Singer, Hassan Obeid, (2012), Limits and Applications of Communication Technology in Intelligent Education, Unpublished Doctoral Thesis, University of Baghdad, Faculty of Education Ibn al-Haitham.
16. Al-Musa, Abdullah bin Abdulaziz, (2007), "Distance Education. Understandable.. Properties.. Benefits.. His obstacles," a working paper presented to the Future School Seminar, Riyadh.
17. Al-Nawashi, Abdeslam, (2010), Use of ICT in Education, I1, Wael Publishing House, Amman.
18. Al Hadi, Mohammed Mohammed, (2008), Online Distance Education, I2, Egyptian Lebanese House, Cairo.
19. American Heritagec , (2010), Dictionary of the English Language , 4th edition Copyright by Houghton Mifflin Harcourt Publishing Company. Published by Houghton Mifflin Harcourt.
20. Lyn R clARK (2009) ED D Business English and common citation leangles Network Columbus onion Woodall and till California Peoria Illinois.