



The Necessary teaching practices and their effectiveness in improving the teaching of physics

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الممارسات التدريسية وفعاليتها في تحسين تدريس الفيزياء

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المخلص

هدفت الدراسة الحالية الى الكشف عن الممارسات التدريسية ودورها في تحسين تدريس الفيزياء في كلية التربية للعلوم الصرفة- جامعة بغداد واختارت الباحثة مجتمع البحث من الأساتذة مدرسين مادة الفيزياء . وبلغ عينة البحث(٦٨) تدريسي جامعي منتظم بمختلف الألقاب العلمية ، وتم اعداد أداة البحث الاستبانة وتكونت من(٢٧)فقرة .وفي المعالجات الإحصائية تم استخدام الوسط المرجح و الوزن المئوي، و قد أظهرت النتائج ان الفقرة الأولى من الاستبانة (تجنب السخرية من إجابات الطلبة الخاطئة و العمل على تقويمها) حصلت على قبول بين عينة البحث ووزن مئوي(٩٥٪). اما الفقرة التي لم يتفق عليها اغلب المدرسين الجامعيين هي الفقرة الأخير (يجري اختبارات قبلية لمعرفة مستوى الطلبة)والتي حصلت على وزن مئوي (٣٥٪) ومن نتائج الدراسة وضعت الباحثة استنتاجات و مقترحات و توصيات .الكلمات المفتاحية: الممارسات التدريسية، مادة الفيزياء ، الأستاذ الجامعي مدرس الفيزياء

Abstract

The current study aimed to reveal teaching practices and their role in improving the teaching of physics at the College of Education for Pure Sciences - University of Baghdad, and the researcher chose the research community of professors and teachers of physics. The research sample reached (68) regular university teaching with various scientific titles, and the questionnaire research tool was prepared and consisted of (27) paragraph. Which got a percentage weight (35%) and from the results of the study the researcher developed conclusions, proposals and recommendations. **Keywords: Teaching practices, Physics, University Professor Physics Teacher.**

Introduction

The recent period has witnessed a rapid development in teaching and learning, as they are considered a basic base for human development, and through them the individual is prepared for life, and through them the individual faces the challenges of the future, and can solve the problems facing him. The process of teaching and learning requires distinctive creative work, sound thinking and a planned goal that deals with the human soul, in order to develop the learner's thought, build his knowledge, concepts and meanings, and refine and organize his behavior and conscience (Ayesh, 2007). Teachers' teaching practices are influenced by their beliefs about their ability to make desirable changes in the behavior of their students, their confidence in the procedures that lead to the achievement of learning outcomes, and their effectiveness and projects related to their students'

achievement, which is known as the beliefs of the effectiveness of teaching, as this variable is one of the most important determinants of teachers' practices, and has become one of the target areas in educational psychology research (Shiom & huang, 2007).The creative university professor can compensate for any lack of teaching activities and other material capabilities, and the teaching practices of the university professor require his creativity in the process of teaching physics and classroom management so that his role turns from a teleprompter to a wave and guide for the educational process, that the university professor who has a desirable leadership personality from his students is more able to bring about a change in their behavior, and is also more able to arouse their interests and guide them correctly and encourage them to Hard work, which leads to the production of a distinguished and creative generation.From this standpoint, the current study will try to find out the impact of teaching practices in improving the teaching of physics.

Search problem:-

The current era has witnessed remarkable developments in science and technology in various disciplines. This period is commonly referred to as the "Age of Scientific Progress".The process of remarkable development in societies is characterized by rapid growth and a desire to embrace world cultures. At the heart of this process is the teacher, who plays a crucial role in facilitating development.The principle of education is hidden in its foundation. As a result, teachers must undergo academic and behavioral training in order to carry out their duties effectively. This training equips them with the skills to excel in the classroom.Higher education is considered the epicenter of scientific and social progress. University professors and students are considered one of the most important elements of the educational process Universities transfer knowledge relevant to the subject matter of their courses and even perform other roles such as: the guiding role, the social role, the role in promoting fair competition. Today, we need more than before teaching and learning strategies that provide us with broad, diverse and advanced educational horizons that help our students enrich their knowledge and develop their skills, so the current study decided to measure the importance of teaching practices of the university professor and their role in improving the teaching of physics.Through the work of researchers as educational supervisors, and through inferences from the literature and research, the researcher concluded that some teaching practices are taught by professors and do not provide opportunities for innovation in teaching methods to bring about change and development for students. This directly affects the achievement motivation of students in the College of Education, so it is expected that the successful teacher will stimulate the students' learning motivation, and the success of the educational situation depends on the degree of this motivation. If teaching practice is fundamentally unable to develop students' teaching and learning motivation, how can students be ensured to receive a better education, because motivation is closely linkedTherefore, we asked ourselves as teachers in colleges of education, whose strategic and methodological objectives are to teach students how to acquire motivational skills, what educational practices can stimulate the level of motivation of our students in colleges of education? Therefore, following the new development in the issue of low motivation, the researcher decided to use the current study to identify educational practices that stimulate motivation levels from the point of view of the professors themselves. After the problem of low motivation has recently taken a turn, it has become a phenomenon that must be identified and appropriate solutions must be found to improve the educational environment and raise the level of students. Hence, the researcher crystallized the problem of the current study to identify the best teaching practices exciting and stimulating motives from the point of view of professors of colleges of education / University of Baghdad in the hope that the results contribute to improving the educational process, and provide best practices, means and teaching methods for our students.

The importance of research:-

The use of creativity in university teaching is one of the most important activities in the pursuit of innovation, so universities seek to achieve this goal to promote the development of the teaching process.One of the effective teaching practices is the use of the teacher to promote and encourage students and respect their ideas because of its positive impact on the formation of positive attitudes among students towards their teachers and school materials and activities in general and to enhance a major role in facilitating the process of teaching and classroom learning and achieving its goals and the use of educational means such as pictures, films, paintings and recordings of effective teaching practices because of its importance in provoking motivation for education among students. In summary, the importance of the study can be explained in the following points:1- The current study deals with an important part of the educational process, which is teaching practices that help blind stimulate students' motivations towards education from the point of view of the professors themselves.2-

The study may be characterized in identifying the positive and negative aspects in the performance of the university professor and developing the teaching performance of university professors in the College of Education - Ibn Al-Haytham for Pure Sciences at the University of Baghdad.

Research Objectives: -

The current research aims to shed light on the reality of the teaching practices of faculty members, and the limits of their effectiveness at the university from the point of view of professors.

Search limits: -

Human field Professors of the University of Baghdad / College of Education Ibn Al-Haytham for Pure Sciences
Spatial area in Baghdad Governorate, Adhamiya area Time Domain First Semester and Second Semester
2023/2024

Study terminology Teaching practices: It is all educational and educational works through which the university professor deals with students directly and positively affects their scientific and social formation (Bahaa El-Din and Ahmed, 2005: 15) University professor: Anyone who works and occupies the position of teacher, assistant professor, professor or professor in one of the recognized universities or the equivalent of these names in universities that use different names (zaeton, 1995:68).

Theoretical Framework:

The concept of teaching practices: -

Most teaching practices lie in teaching methods, where teaching methods differ between teachers, although they may use the same method. This difference is mainly due to the personal characteristics of each teacher. For example, we can see how teacher X uses the lecture method and that teacher Y also uses the lecture method, but he is distinguished by the way he communicates information with his voice and tone of speech, which makes him significantly different from his classmates. This means that pupil outcomes may vary, mainly due to the teacher's teaching style, not just the method itself. The teaching style fully reflects the teacher's personal traits, as there are no strict rules that must be followed during the educational process. Rather, the nature of the style remains flexible and based on the teacher's personality, expressions and qualifications. Gestures, facial expressions, tone of voice, and even body movements play a big role in shaping the learning experience. In addition, how the teacher embodies values and principles in front of his students affects the nature of the relationship between them, which makes interaction in the classroom a study that goes beyond the transfer of information. The differences between teachers are really self-expression, and this makes each learning experience unique, emphasizing the beauty of diversity in teaching methods. The concept of motivation: Motivation represents the point of interest of all researchers in the field of education, as it is seen as the main engine for students and the concept of motivation is summarized as the desires, needs and trends that direct action towards the goal to be provided for motivation Three important functions:

First: It sets in front of the learner goals that he seeks to achieve Second, it energizes behavior and raises effectiveness. Third: It helps in determining the activity required in order to complete the lesson, the motives make the individual interact to part of the situations and leave the other section. Factors of low motivation among students:

1- Some teachers are sometimes negative in their style, on the contrary, the active teacher

He must be an active, organized, pedagogical leader and motivator of students.

2-One of the negative practices that lead to low motivation in some teachers is the daily routine and lack of Discover students' needs and talents.

3- Unable to set the goal, meaning that the teacher does not know exactly what he wants to convey from Student Experience

4-Ignore reinforcement tactics to motivate and encourage students.

5- Ignoring student activities, interactions and vitality. Such as mapping, solving exercises, answering questions, and others

6- Using grades as a means of punishing students

7 - Stagnation and dryness of the physical environment (classrooms), general atmosphere and management(Farouk:2007:43).

Motivational teaching practices:

A- Controlling the learner by providing options for students to accomplish their academic tasks

B- Rewards for the student when the student does not have a desire to teach a particular subject, and this is done using simple and effective rewards at the same time

C- The student's interest in the subject and bringing the explanation of the subject by the teacher closer to his academic interests.

D- The structure of the classroom and the teacher's use of various methods of teaching.(Al-Hayla,2007)

Research Methodology and Procedures: -

The researcher presents her methodological procedures followed, explaining the method used to obtain data and information to achieve the research goal, the research sample, the method of building and applying the research tool, the statistical means used in its analysis, and the following procedural description of the current research methodology.

First: Research Methodology: The researcher followed the descriptive research methodology, which is concerned with determining the nature of Prevailing conditions, practices and activities.

Second: Determining the population and sample of the study:

The researcher chose the research community and the research sample from the professors of the College of Education for Pure Sciences Ibn Al-Haytham / Department of Physics and the number of sample members (68).

Third: Research tool: Research procedures require the preparation of a tool to determine, from the point of view of professors. This required the following steps:

1-Review of literature and in-depth studies on the subject of research

2-An open-type questionnaire containing a number of questions was prepared for the research sample and the questionnaire It is an appropriate means to obtain the required dat a because it gives freedom of expression to the individual.

3-After collecting and classifying the professors' answers, the number of paragraphs became (30) paragraphs.

Honesty: The researcher relied on virtual honesty, as the tool was presented in its initial form on a set of Experts and specialists agreed with 85%.

Stability: The researcher extracted the stability of the test by the method of testing and re-testing, and the time period between the first test and the second re-test was (14 days), which is an appropriate period.

Fourth: The final application of the tool: After the completion of the previous procedures, the questionnaire in its final form consists of (27) paragraphs, and three alternatives have been placed in front of each paragraph: (highly agree, medium agree, weakly agree)

Fifth: Statistical Methods:

Pearson's correlation coefficient has been used to leave stability by re-test method and with the following equation

$$r = \frac{N\sum xy - \sum x \sum y}{\sqrt{[N\sum x^2 - (\sum x)^2] [N\sum y^2 - (\sum y)^2]}}$$

Where,

N = Number of pairs of scores

$\sum x$ = Sum of x Scores

$\sum y$ = Sum of y scores

$\sum xy$ = sum of the products of paired scores

$\sum x^2$ = sum of the squared x scores

$\sum y^2$ = sum of the squared y scores

The weighted mean equation to measure the certainty of the paragraphs of the questionnaire

$$\bar{x}_w = \frac{\sum wx}{\sum w}$$

weighted $\bar{x}_w$ = weighted mean

$\sum wx$ = the Frequency of individuals who responded to alternatives

-Celsius weight= weighted mean $\times 100$

-Maximum degree: means the highest score in the scale in the current research, the third scale, the maximum score (3)

-Hypheticl mean = $\frac{\text{Total weights for substitutes}}{\text{Number of alternatives}} = \frac{3+2+1}{3} = 2$

Presentation and interpretation of results:

The researcher presents the results reached with their interpretation and discussion to achieve the goal of the current research, which is (revealing teaching practices and their role in improving the teaching of physics from the point of view of the professors themselves), as the researcher calculated the frequencies of professors' answers for each paragraph of the questionnaire according to the three alternatives, and the paragraphs were arranged in descending order and according to their percentage weights, and she interpreted and discussed those results in light of the results of the questionnaire and as shown in the following table

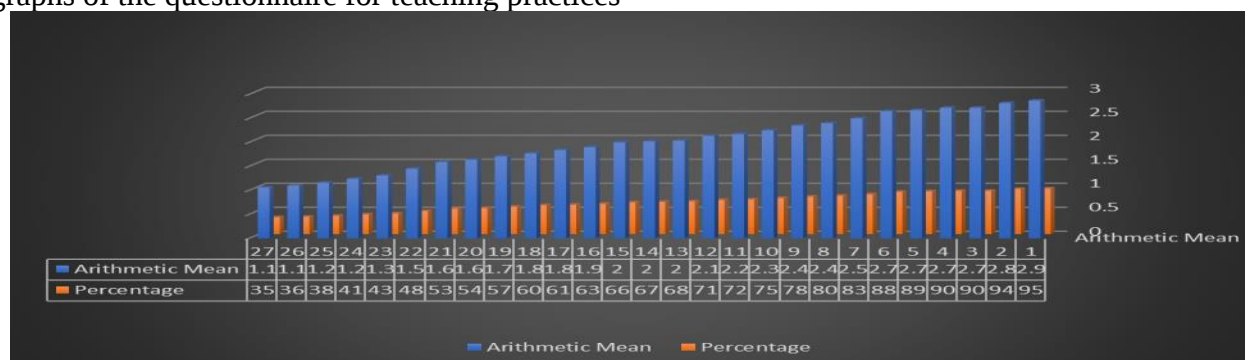
Table (1) Weighted mean and percentage weight of teaching practices in physics in descending order from the point of view of the research sample

	Paragraphs	Duplicates by alternatives			Weighted mean	Celsius weight
		3	2	1		
1	Avoid ridiculing students' wrong answers and work to correct them	355	30	15	2.87	95%
2	Announces exam results in a timely manner	360	25	15	2.82	94%
3	Defines the main topics of the lecture by writing it on the board	325	45	30	2.72	90%
4	Distributes orientation positions according to students' preferences and desires	330	35	25	2.72	90%
5	He shows his respect for his students away from their academic level	310	50	40	2.67	89%
6	Uses real-life examples from the surrounding environment when explaining the lesson	300	55	45	2.65	88%
7	Distributes the educational material according to the preferences and desires of the students	255	80	65	2.5	83%
8	Uses the whiteboard and available teaching aids to illustrate key ideas	230	95	75	2.4	80%
9	Accepts students' points of view and encourages them to think creatively	205	130	65	2.35	78%
10	Follows the reinforcement behavior of his students' successes and corrects mistakes and does not focus on them	185	125	90	2.25	75%
11	Students are given the freedom to choose research topics and reports	180	115	105	2.175	72%
12	Tracks accuracy and fairness in correcting exam papers	175	115	110	2.137	71%
13	Encourages students to conduct research on community problems	160	100	140	2.037	68%
14	Change the volume to attract students' attention during lesson explanation	158	92	150	2.02	67%
15	A section of the lecture time is allowed to discuss the exam results	155	90	155	2.00	66%
16	The test questions are varied and comprehensive	140	90	170	1.90	63%
17	The exam is repeated to provide an opportunity to improve students' grades	125	80	195	1.84	61%

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18	Focuses on test scores and neglects other activities	115	75	210	1.77	60%
19	Prepares the necessary teaching aids for each lesson	100	70	230	1.71	57%
20	Uses modern and various techniques during the explanation of the lesson	99	60	241	1.64	54%
21	Distributes educational material regularly throughout the semester	90	55	255	1.59	53%
22	Moves within the classroom wisely and actively to communicate information to students	64	50	286	1.45	48%
23	Uses the student's surroundings as a legend	45	38	317	1.31	43%
24	Exam questions are balanced in terms of difficulty and ease	35	30	335	1.24	41%
25	Uses modern and diverse teaching strategies Diagnoses students' wrong answers and works to improve and treat them	25	25	350	1.16	38%
26	Diagnoses students' wrong answers and works to improve and treat them	15	15	370	1.1	36%
27	Conducts pre-tests to track the level of students	15	5	380	1.06	35%
					54.089	66.4%

A three-dimensional diagram showing the values of the weighted weight and the percentage of each of the paragraphs of the questionnaire for teaching practices



It is clear from Table (1) that paragraphs (1-12) They represent teaching practices of a very good level and were influential in stimulating students' motivation while teaching physics in the faculties of education and pure sciences. The two paragraphs that have medium and acceptable practices from the point of view of teachers are (13-14), and the paragraphs that represented teaching practices with a weak impact on the level of motivation are (15-27). The researcher will focus on practices that did not achieve the required level to reach the causes and develop appropriate solutions. Paragraph (1) of the questionnaire came in first place and won a percentage of (95%) (avoid ridiculing students' wrong answers and work to correct them) Here the university professor uses the method of mutual respect between students and the professor to encourage discussion and respect for various opinions and ideas and evaluate them, which is one of the real indicators of the educational role of the successful university professor. As for the paragraphs from the second paragraph to the tenth paragraph, the paragraphs got consecutive ranks and at a very good level, where their percentage weights ranged from (94%-71%), the paragraphs dealt with the importance of some practices in terms of announcing the results of tests that enable students to know their academic level and work to improve their level as well as allow the professor to know the students' abilities. As well as to increase students' attention to the lesson, writing the objectives of the lesson on the board in points, stimulating students' academic achievement by respecting them and establishing human relations regardless of the scientific level, and using appropriate educational

means that facilitate the process of reaching information in a healthy manner while meeting the tendencies and desires of all students in terms of diversity and distribution of scientific material and other methods that increase the level of motivation. As for the two paragraphs (13-14) these two paragraphs won an average level of the point of view of the research sample, and it needs to be reviewed to develop and improve it to reach the level of motivation stimulation with complete paralysis among students, the university teacher was able to encourage students to do research on the problems of society, and to change the volume level to attract the attention of students during the lesson. Paragraphs (15-27) are teaching practices with a low degree to stimulate students' motivation from the point of view of the university professor. Paragraph (15) received a percentage weight (66%) (a section of the lecture time is allowed to discuss the exam results), so presenting the test results and discussing them with students leads to students' knowledge of how to put the test, choose questions and how to correct them, which relieves them of the desire for the test. Paragraph (16) got a percentage weight (63%) (the test questions are diverse and comprehensive) and that most professors do not use modern teaching practices, including comprehensiveness and diversity in the test questions to help achieve educational goals and cover the scientific material in the test. And paragraph (17) got a percentage weight (63%) (the exam is repeated to provide an opportunity to improve students' grades) Many university professors overlook the importance of re-testing for the purpose of improving and evaluating the student according to his achievement abilities to achieve educational goals, not the function of the test classifying the student into pass or fail. Paragraph (18) obtained a percentage weight (60%) (focuses on test scores and neglects other activities) by making the subject the main axis in the educational process and not the student, due to the influence of most professors in the old traditional curriculum by evaluating the student and focusing on the exam paper and neglecting other activities. Paragraph (19) got a percentage weight of (57%) (prepares the necessary teaching aids for each lesson) The lack of illustration and laboratory equipment necessary to teach physics on the one hand and the lack of training of the university professor on the use of these means and devices. Paragraph (20) got a percentage weight (54%) (uses modern and various techniques during the explanation of the lesson) The lack of modern technologies, display screens and various modern technologies as a source of learning makes the university professor deliver the scientific lecture in the form of a narrative Paragraph (21) got a percentage weight of (53%) (distributes the educational material and activities regularly throughout the semester) twice this role in terms of attention to the distribution of activities and duties regularly and consistently throughout the academic year, and this affects the level of evaluation. Paragraph (22) received a percentage weight (48%) (moves within the classroom wisely and actively to communicate information to students), which means that professors are influenced by the traditional system of lecturing away from flexibility and the student is only listening. As for paragraph (23), it obtained a percentage weight of (43%) (uses the environment surrounding the student as a means of illustration) due to the weakness of the possibilities available to the university professor in linking the external environment surrounding the educational environment and the prescribed curriculum through scientific trips and field trips Paragraph (24) got a percentage weight (41%) (exam questions are balanced in terms of difficulty and ease) Most university professors confirm that exams do not proceed at the same pace in terms of diversity of questions and the number of questions, and this negatively affects the level of academic achievement of students. Paragraph (25) received a percentage weight (38%) (uses modern and diverse teaching strategies) and this is due to the weak knowledge of the university professor with modern teaching strategies and training on them and the lack of continuous training courses to advance the scientific level of the professor and the student. Paragraph (26) got a percentage weight (36%) (diagnoses the wrong answers of students and works to improve and treat them) and this paragraph was emphasized by the majority of teachers that the diagnosis of errors in order to set grades and distinguish between students and not diagnosis in order to correct their course and teach them the right, and this negatively affected the motivation of students. Paragraph (27) got a percentage weight (35% centigrade) (conducts pre-tests for the level of students) The sample of this research confirmed that most of them did not conduct a pre-test to know the level of students and evaluated, and the reason is that the vast majority have no idea about the importance and educational benefits of this test. Conclusions: Through the answers obtained from the sample members, the researcher found the following: The percentage weight of teaching practices and their role in improving the teaching of physics from the point of view of university professors in the College of Education and Pure Sciences ranged from (95%) to (35%), which means that there is a significant difference in the methods of using teaching practices. The questionnaire consisting of (27) items obtained an average hypothesis of (1.90) and a percentage weight (63%), and this shows that teaching practices came at an average level in improving

teaching and stimulating students. Through the results of the questionnaire (17-27), it was found that the university professor failed to use basic teaching practices. The effects of the immediate study reveal the expansion of the teaching practices of the university professor to investigate to the level that enables him to fully benefit from the motivations of students towards learning physics. Recommendations: Through the results and conclusions of the study and the researcher's extrapolation of literature and previous studies on teaching practices and their role in improving the teaching of physics, the researcher noted that there are many practices that the professor can follow to improve teaching are as follows: Using various teaching methods and managing dialogue in the classroom and encouraging students to participate actively Allocate part of the lecture time to discuss the test questions and students' grades during the test and how to correct them, perhaps this will relieve them of the fear of the test. Dividing the course grades by counting the factors of written tests, actively participating in discussions in the classroom, presenting a worksheet, writing an essay, and presenting a research on one of the topics of the lesson. Testing students in the subjects studied in the classroom with simple grades from the general references set by the professor for students.

Providing modern tools such as display screens, speakers and necessary devices that facilitate the lesson process.

Discuss recent and important research and topics with students as they are additional and new information. Provide feedback, evaluation and continuous to increase motivation towards education and learning new tasks. Holding training courses for university teachers on modern student reform systems and how to prepare achievement exams.

propositions

To complement the current research topic, the researcher proposes to conduct the following studies:

- 1- A study that reveals the reality of teaching practices and their role in improving the teaching of physics in other universities
- 2- A study that reveals the reality of teaching practices and their role in other sciences.

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