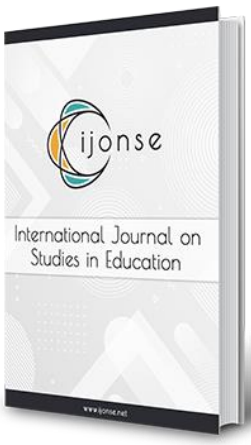

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The Reality of Using Modern Teaching Strategies in Architectural Design Course

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Abstract

This research aims to explore the reality of using the teaching strategies of the Architectural Design course from an architectural specialized faculty member's view. The study sample consisted of eighteen faculty members randomly selected from the research community. The descriptive and analytical approach based on the questionnaire, verified for its validity and reliability, is used to achieve the goals. The results indicated that the overall score towards the reality of using modern teaching strategies was medium. The results also showed no statistically significant differences in employing modern teaching strategies due to a variable (gender, workplace, specialization). The presence of statistically significant differences in teaching due to the experience years' variable number and the variable of academic qualification in favor of scientific qualification (Ph.D.). From the instructors' view of the instructors, the most used teaching strategies in the architectural design in the Faculties of Engineering in Palestinian Universities are Discussion strategy, critical thinking, Brainstorming strategy, and direct teaching strategy. Programmed instruction and Intensive course strategies are considered the least used.

Introduction

The education system faced significant challenges in light of scientific and technological progress and the knowledge explosion, which reflected on the educational process in general and the university professor's role in particular. The educational process as a system, like other systems within society, always needs to grow and undertake this growth in the right and desired direction. Considering the university professor's role in the current era, it does not lie in teaching students as much as it helps them to learn because they do not need to gather and accumulate knowledge as much as they need to be proficient in the optimal use of their capabilities in a way that enables them to interact with current and future changes. It helps them employ the mental skills they possess to face these changes. The conception of education has cognitive and affective strategies which are affected by many social aspects (Akpur, 2021). Since architecture is a social mirror that reflects its culture in all its meanings, and as contemporary architectural education revolves around a fundamental axis, the design process, training is conducted through the architectural design courses accompanying the student through his education years. Therefore, design courses receive special attention. However, these courses experience many problems in universities related to their teaching strategies. Indoctrination strategies are no longer an appropriate method;

instead, they made the educational process in universities incredibly dull, routine, and inertia, and when modern strategies appeared, the educational process perception changed, and the professor and the student's role changed too (Haqqi, 2014). To achieve learning outcomes in different learning areas, we must use various teaching strategies so that each type is appropriate for the intended learning type (Abu Shady, 2015; Ozturk, 2023).

The word strategy origins comes from the Greek word strategia, which means military ingenuity or the art of war or a military leader style in making plans and conducting war operations (Abu Shady, 2015; Cairo University, 2016). Some definitions and opinions deal with this concept; some people view the strategy as a set of teaching procedures that the professor chooses in advance and plans to use during the teaching implementation optimally to effectively achieve the desired teaching goals in light of the available capabilities (Abu Shady, 2015; & Begum, 2019). As for teaching, it is defined as a professional activity that is accomplished through significant processes: planning, implementation, and evaluation, to help students to teach and learn, and it is characterized by being subject to analysis, observation, its quality judgment, and then its improvement (Alwahabi, 2018). Instructor development takes place in the work environment in the classroom and can be defined as a personal and communal process that happens in the long term as various kinds of opportunities and experiences are combined (Arrigo et al., 2022).

In light of this, the teaching strategy is defined as a set of teaching procedures planned by the instructor in advance, as it helps him implement the teaching in light of the available capabilities to achieve teaching goals. It often includes more than one teaching method because there is no single ideal teaching method; instead, there are many methods, one of which is chosen according to specific circumstances (Abu Shady, 2015; Cairo Universiyu, 2016; AL-Maqati, S, 2018; Zaitoun, 2000). Many strategies of teacher-centered education aim to teach all students in a specific place at the same time, in contrast to students centered education strategies that take into consideration the student's differences and needs (An et al., 2020). Many instructors are not qualified to employ learning strategies to help students comprehend the different courses (Kim & Anderson, 2023). It has been shown that these strategies have multiple classifications according to the type of scientific material through which they are presented or according to the school stage, so each of them has its use. In university teaching, various modern strategies are appropriate for this stage, and the most common are presented in Table 1 (Al-Talawati, 2018; Al- Sahrawi, 2015; Goodhem, 2010; Mishra, & Puri, 2013; & Nehakolhe, 2017)

Table 1. Various Modern Strategies Are Used in the Field of University Teaching

No.	New strategies	Use in university education
1	Lecturer Strategy (declamation)	It is the most common strategy in university teaching for small groups, and it includes one-way interaction and communication from one direction, from the instructor to the students.
2	Direct teaching strategy	It is used in structured lectures that are prepared and managed by the instructor, and it is a method that controls attention, especially when there are time constraints, as the educational material is presented by asking questions and phrases that allow obtaining feedback from students.

No.	New strategies	Use in university education
3	Discussion strategy	The discussion represents the gathering of several minds about a problem. It usually has a pioneer presenting the topic and directing the group to the thought line in which it paces until it reaches the required solution. Among its types are produced discussion, productive discussion, symposium, free collective, and bilateral.
4	Problem-solving strategy	That is an educational activity in which the student faces a problem or question and seeks to find a solution. Therefore, he must take steps arranged in a pattern similar to the actions of the scientific method in research and thinking, through which he solves this problem, which is in the form of a principle or generalization.
5	Using Critical Thinking	This strategy is used in the accurate analysis of information, evidence, and arguments and their judging to choose the best available alternatives.
6	The exploratory method (inductive and deductive)	This is one of the latest strategies in teaching and is highly effective in developing students' thinking, as his role remains to provide incentives to students. This method aims not to assist students discover the proper answers to their questions but to evoke them to use their information in thought processes that lead to conclusions.
7	Learning through Activities	It encourages students to learn by doing and provides them with real-life opportunities to contribute to self-directed learning. This strategy can be used to examine an unfamiliar situation.
8	Small groups teaching strategy	It is a strategy that puts the student in a group position in which he plays the role of teaching and learning simultaneously, and this requires working in a group to achieve common goals that include both aspects of knowledge and social skills. The main goal is to teach students to think in addition to several sub-goals like the informal group and used in: brainstorming, short reports, and guided discussion. The core groups are used for: leadership and participation. The interrelated groups are used for data formation, analysis, and notices. The reformed groups are used for discussion. Finally, the representative groups are used for: presentation, coordination, problem-solving, and teaching peers.
9	Group work strategy	Learning involves a small group of students together to implement work, an educational activity, or solve a proposed problem, and each of them contributes to the activity and exchanges ideas and roles.
10	Laboratory Experiments	Each student has the opportunity to conduct the experiment by himself and to deal with the tools inside the laboratory.
11	Practical presentations	It is the process of conducting experiments in front of students with the mediation of the instructor, and this method is used when the tools are insufficient or the danger of the investigation.
12	Method of scientific trips	It is an organized and planned educational learning activity that takes place outside the classroom, carried out by students under the instructor's supervision

No.	New strategies	Use in university education
	and visits	for specific scientific purposes.
13	E-learning	It is used as an additional strategy for presenting material that takes a longer time than other strategies.
14	Simulated social skill training	A simulated technique to induce a specific behavior in an artificial situation.
15	Micro-teaching strategy	It provides an opportunity for teaching with practice in the exact nature of learning with some determinants, such as students' number and skills, as it provides reaction observation and feedback.
16	Programmed Instruction	This is one of the individualized education strategies in which students are active and move forward at their own pace.

Architectural Design Course Teaching Strategies

Since education differs according to subjects and contexts and students, not everyone learns in the same way and equally, so the issues are not understood with the same strategy (Bidabadi et al., 2016). Architectural education in Palestine is considered newly established, which has paved the way for the future. The Architecture Departments were established under challenging circumstances, so there was difficulty in linking specialties to the needs of the Palestinian community, in addition to a lack of educational facilities and competencies, which led to the absence of a clear vision, strategy, and a limited-concept philosophy of architectural education at the national level and in universities that have established architectural education programs (Afifi, 2012).

In architectural design, the matter does not differ much, as each group of professors has an education direction, approach, and a different thought from the other. Provided that the trends do not conflict with the existing capabilities (for both students and faculty members alike) and among these trends:

1. The direction of discussion and discourse (debate): they consider architecture to be an artistic science, and they must follow the scientific method to teach design, even if this leads to the lack of access to innovative works by all students at all times.
2. Education trend by indoctrination: they tend to deal with architecture as a scientific art, in which the demand for a student's creativity prevails, regardless of his level, ability, skills, or method of dealing with architectural design. Architectural work is based on utilizing culture and talent, and that education is only limited to guidance.

The situation indicates that the balance between the direction of discussion and discourse and the direction of education by indoctrination is required, as both should serve the student, and he has his time during the university education stage. Each approach has its distinct role in building the student's awareness and capabilities (Saghafi et al. 2015). Through these trends, the proposal was developed for the steps of design teaching from the first year to the fifth year, explaining the appropriate teaching strategies that can be clarified according to the academic year into three stages as follows:

1. The first and second year (the preliminary stage): aims to form a knowledge base in the field, and the

appropriate teaching strategies at this stage are presentation and indoctrination.

2. The second, third and fourth year (primary stage): aims to learn the structured curriculum. At this stage, discussion, thinking, and initial discovery strategies can be used.
3. Years from the half of the third year (final stage): It aims to discover talents and develop skills; the discovery strategy can be used at this stage.

In general, the importance of knowing the reality of using modern teaching strategies seems clear. Indoctrination strategies are no longer an appropriate method, but they have made the educational process in universities boring, routine, and rigorous. Modern strategies came, the perception of the educational process has changed altogether, and Arab and foreign studies which dealt with the reality of using modern teaching strategies have indicated their extent impact on the student, and among these studies the following:

Some studies reviewed several of the most common inductive teaching methods to improve student learning. It was concluded that inductive teaching methods are more effective than traditional deductive methods in achieving a wide range of learning outcomes and work to provide students with critical thinking and self-learning skills that distinguish Expert Engineers (Prince & Felder, 2013). It is essential to focus on practical aspects and field training in the educational process with more on developing teaching methods, where the most significant proportion of graduates see that the methods used in the modern concept of the educational process are the methods that need to be focused on, and on top of those methods is the preparation of reports and research, and after that discussion and dialogue (Al Mansi, 2010).

Recent studies have argued a new strategy of teaching architecture design related to tolerating ambiguity by having 'negative capability' engenders the architecture design process and brings negative feelings during experiencing states of not knowing (Mahmoud et al., 2020). It is essential to incorporate a design-build program for architecture design studios and engage students with the community through the participatory approach; this integrating technology will raise awareness for students in professional practice (Amer, 2015).

The use of the modern method is weak in education, as well as dealing with developments in the era regarding innovation in educational methods. In addition to the importance of the intensifying field and scientific visits, it is an essential aspect of the educational process, which works to consolidate information and gain experiences. Focusing on the methods used in the modern concept of the educational process, discussion, and dialogue between the faculty members and students, and then preparing reports and research (Afifu, 2012). Another study emphasized the need to keep pace with the development and diversity of teaching methods in architecture departments according to the course requirements and content. Focusing on scientific trips and field visits during the teaching of specialized courses and linking them with the vocabulary of the courses, and work on finding new architectural programs that simulate technology, especially with this technological generation through technological games spread in this era in an exciting way for these students to interact with architectural ideas and modern technical thought (Mahmoud et al., 2020; Öztürk et al., 2021).

One of the best methods of teaching the fundamentals of architectural design is the practical representation of

exercises, visiting natural scenery, discovery method, project-based approach, studio design, and educational media technology (Mahmoud et al., 2020). There are different methods used in teaching compositions to architecture students, including practical training on computer-based activities and methods and educational platforms on the Internet, and the strategy of practical training activities is the most effective as it works to help students use trial, error, and intuitive understanding (Mishra & Puri, 2013).

Based on the above and through reviews of previous studies, it can be stated that the usage of teaching strategies as one of the modern methods in the educational process leads to positive results and contributes to solving many problems despite the limitations of studies that use modern teaching strategies in engineering teaching and architectural design with its various axes. This led many researchers to research and analyzed it and search for the best strategies that are commensurate with its specificity and help the professor to use it in a proper method, and this research shed light on the reality of using modern teaching strategies in teaching architectural design.

Intellection of the Research Problem

The sense of research problem stemmed from several matters, namely:

1. The researcher worked as an instructor in the Faculty of Engineering, Architectural Department, and taught an architectural design course.
2. An extrapolation of some studies stated that the difference in teachers' methods is reflected in their teaching strategies which may confuse students.
3. The results and recommendations of previous studies confirmed the positive impact of modern teaching strategies on the educational process in general and university education in particular. So it was necessary to go towards the application of this research.

Research Problem

The current research problem is determined by answering the following questions:

1. The first question states the following: What is the reality of using modern teaching strategies in teaching architecture design courses in colleges of engineering in Palestinian universities?
2. The second question states the following: Are there differences in the degree of using modern teaching strategies in teaching the architectural design course in faculties of engineering in Palestinian universities from the viewpoint of the faculty members due to (gender, workplace, academic qualification, number of experience years, and specialization)? . This question will be answered through the following assumptions: There are no statistically significant differences at the level of significance ($\alpha = 0.05$) in the degree of using modern teaching strategies in teaching the architectural design course.

Research Objective

The current research aims to know the reality of using modern strategies to teach the architectural design course

in engineering colleges in Palestinian universities and to uncover differences in the use of modern teaching strategies among faculty members due to variables (gender, workplace, academic qualification, and the number of experience years and specialty).

Research Importance

The importance of the current research lies in the following:

1. It is an objective response to what educators advocate at present regarding the necessity to reconsider teaching strategies to be compatible with contemporary global developments.
2. The importance of the topic covered by the architectural design research among the engineering subjects in the Department of Architecture.
3. Shedding light on modern strategies for teaching the Architectural Design course
4. Giving professors an incentive to adopt modern strategies in teaching.
5. Spread awareness among faculty members in the faculty of engineering about modern teaching strategies and their benefits to the learning process.
6. Enriching scientific research in the field of modern teaching strategies

Study Limits and Terms

Research results are associated with the Architectural Design course only. Teaching strategy: the method chosen by the faculty member, which he plans to use during teaching to achieve the desired teaching objectives with the utmost effectiveness and in light of the available capabilities. Architectural Design: One of the courses taught in the Architecture College, it is considered the main pillar and backbone of architectural education and is taught from the second year.

Method

Research Methodology

To reach the study goals, the researcher used the descriptive and analytical approach in research implementation, as it is the most appropriate approach type suitable for this research. Because it depends on the description of the reality or phenomenon as it exists, its analysis, and the statement of the relationship between its parts and the views raised about it, it is concerned with an accurate description and expresses it qualitatively or quantitatively.

Research Group

The research community consisted of all 25 faculty members of the Faculty of Architecture Department who teach the Architectural Design course in some West Bank universities. The following Table 2 shows the distribution of the research sample according to the research variables:

Table 2. Characteristics of the Demographic Sample

Variables	Alternatives	Number	Percentage
Gender	Male	13	% 72.2
	Female	5	27.8%
	Total	18	%100.0
Work place	Polytechnic University	7	%38.9
	Birzeit University	11	%61.1
	Total	18	%100.0
Qualification	Master	9	%50.0
	PHD	9	%50.0
	Total	18	%100.0
Experience years	Less than 10 years	5	%27.8
	From 10-15 years	5	%27.8
	More than 15 years	8	%44.4
	Total	18	%100.0
Specialization	Architecture	13	%72.2
	City planning	5	%27.8
	Total	18	%100.0

The research sample consisted of (18) faculty members of the Engineering Faculty Architecture Department who teach the Architectural Design course in some universities in the West Bank. They were chosen by a simple random method from the research community, where the research tool (the questionnaire) was distributed among 25 of the faculty members chosen randomly, and 18 questionnaires were retrieved. Thus, the retrieval rate is 72%, which is an acceptable percentage to complete the research

Preparation of the Research Tool (Questionnaire)

In light of the review of the educational morals and previous studies related to modern teaching strategies and teaching strategies for an architectural design course, the research tool (the questionnaire) was constructed, which consisted of (25) phrases, and the answer to the paragraphs gradation from the response (absolutely) to the solution (sometimes) to the answer (always) on the triple scale (Abu Shady, 2015; Begum, 2019).

The Questionnaire Validity

The validity of the research tool was verified by presenting it to a group of specialized referees, who made some observations and opinions about the validity of the scale in studying modern architectural design course

teaching strategies and their effectiveness in developing students' skills from the point of view of the faculty member, they indicated the validity and suitability of his statements for this purpose.

The Questionnaire Stability

The researchers calculated the stability by using the stability of the internal consistency of the respondents' answers to the instrument areas using the stability coefficient of Cronbach alpha on the research community, and the results were as follows in Table 3.

Table 3. Stability Coefficients

Field	Paragraphs' number	Stability coefficient alpha Cronbach
Reality of using modern teaching strategies.	25	.72

As is evident from the previous Table, the value of the stability coefficient for the reality field of using modern teaching strategies was (0.72), which indicates that the current research tool can reproduce the recent results if re-measuring, researching, and using it again under the same conditions, and these values were considered appropriate and acceptable for research purposes and the objectives for which these fields and their expressions have been set appendix (Abu Shady, 2015).

Search Variables

Demographic variables: (gender, workplace, educational qualification, specialization, and the number of years of experience). Dependent variables: the total score for the two reality fields of using modern teaching strategies.

Questionnaire Application

After the questionnaire statements were prepared in their final form, they were distributed to the research sample, and then the questionnaires were retrieved from the sample members, entered into the computer, processed statistically, and came out with the results and recommendations.

The Correction Key

After giving the sample members' attitudes numbers that represent significance for their directions from (1 - 3), the difference of the lowest value was calculated, which is 1 of the highest importance, which is 3 = 2, which is called the range. The range value was divided by the number of required fields in judging the results, which is 3, so that the result = 3/2 = 0.66, and therefore we continue to increase this value starting from the lowest value to give the periods for determining the level and intensity of response depending on the arithmetic mean, and the following Table 4 shows that:

Table 4. Triple Correction Key

The arithmetic mean	Level
Less than 1.67	Low
From 1.67 to less than 2.33	Average
From 2.33 and more	High

Statistical Processing

After collecting the research data, the researcher reviewed it in preparation for entering it into the computer. It was entered into the computer by giving her specific numbers, which means converting the verbal answers into digital ones. The answer was given an agreement or always three degrees, the answer to some extent or sometimes two degrees, and the answer did not agree or was given one degree. The higher value means, the more significant the extent of the sample subjected to research responding to the teaching strategies of a modern architectural design course and its effectiveness in developing students' skills from the viewpoint of the faculty member. The necessary data statistical processing was done by extracting numbers, percentages, arithmetic means, and standard deviations. The research hypotheses were examined at the level ($\alpha = 0.05$) by means of a t-test for independent samples and a single-variance analysis test. The Cronbach alpha stability equation was used to examine the stability of the search tool and the coefficients Pearson correlation to check the validity of the search tool, using a computer using the SPSS statistical packages program.

Results

After completing the preparation and application of the research tools, data were collected, analyzed, and appropriate descriptive statistics were extracted. The following is the answer to the research questions and hypotheses. To answer the first main question, which states the following: What is the reality of using modern teaching strategies in teaching architectural design courses in colleges of engineering in Palestinian universities? The standard deviations and the arithmetic averages of the questionnaire statements related to this question were calculated and arranged in descending order according to the scores of the arithmetic mean, and the following Table 5 explains that.

Table 5. Testing Results of the Reality of Using Modern Teaching Strategies in Teaching the Architectural Design

No.	Reality of using modern architectural design teaching strategies	The arithmetic mean	Standard deviation	Level
1	Discussion strategy	2.83	.38	High
2	Using critical thinking	2.78	.43	High
3	Brain storming strategy	2.72	.46	High
4	Direct teaching strategy	2.67	.59	High
5	Problem solving strategy	2.61	.50	High
6	Group work Strategy	2.61	.50	High

No.	Reality of using modern architectural design teaching strategies	The arithmetic mean	Standard deviation	Level
7	Project-based learning	2.56	.62	High
8	Lecturer's strategy (developed)	2.50	.51	High
9	Practical presentations	2.50	.51	High
10	Inquiry-based learning strategy	2.50	.51	High
11	Tutorial method	2.39	.61	High
12	Exploratory method (inductive and deductive)	2.33	.59	High
13	Active learning strategy	2.28	.57	Average
14	Method of scientific trips and visits	2.22	.43	Average
15	Seminars	2.22	.43	Average
16	Small Group Teaching Strategy	2.17	.62	Average
17	Simulated social skill training	2.17	.71	Average
18	Keeler's Self-Learning Strategy or Learning for Mastery	2.11	.58	Average
19	Experts' interview	2.00	.49	Average
20	E-learning	2.00	.59	Average
21	Role-playing strategy	1.94	.42	Average
22	Laboratory experiments	1.89	.58	Average
23	Micro-teaching	1.72	.57	Average
24	Programmed instruction	1.67	.69	Low
25	Intensive courses	1.67	.59	Low
	Total degree	2.28	.20	Average

It is evident from the previous table that the total score of the respondents' attitudes towards the reality of using modern teaching strategies in teaching the architectural design course in the Faculties of Engineering in Palestinian universities was average, as the arithmetic means of the overall score was (2.28) and the general standard deviation was (0.2).

To answer the second main question, which states the following: Are there differences in the degree of using modern teaching strategies in teaching the architectural design course due to (gender, workplace, academic qualification, number of experience years, and specialization).

This question will be answered through the following research hypothesis: There are no statistically significant differences at the level of significance ($\alpha = 0.05$) in the degree of using modern teaching strategies due to the variables. To examine this hypothesis, the arithmetic means, standard deviations, and t-test results were extracted for independent samples, as evident in Table 6.

From the previous, it is obvious to us that there are, at the level of $\alpha = 0.05$, no significant differences in the extent of utilizing modern teaching strategies in instructing the design course in the Faculties of Engineering from the view of the professors due to the gender. Thus the previous null hypothesis is accepted.

Table 6. The Testing Results to Examine the Differences in the Degree of Using Modern Teaching Strategies in Teaching the Architectural Design

The variables		count	The arithmetic mean	Standard deviation	Calculated t value	Freedom degree	level of statistical significance
Gender	Male	13	2.24	.18	-1.659	16	0.117
	Female	5	2.40	.20			
workplace	Polytechnic Uni.	7	2.23	.06	-0.819	16	0.425
	Birzeit Uni.	11	2.31	.25			
Qualification	Master	9	2.18	0.17	-2.464	16	0.025
	Ph.D	9	2.38	0.18			
Specialization	Architecture	13	2.26	0.19	-0.711	16	0.488
	City planning	5	2.34	0.22			

From Table 6, it is clear that there are no there at the level of $\alpha = 0.05$; no significant differences in the extent of using modern teaching strategies in the architectural design course due to the specialization variable. It thus concludes the acceptance of the previous null hypothesis from the viewpoint of the faculty members due to the variable of experience years' number. To investigate this hypothesis, standard deviations, the arithmetic means, and the conclusion of the mono-variance calculation test were extracted, as is evident from the following Table 7:

Table 7. The Results of Mono-variance Analysis

Variance source	Squares' total	Freedom degree	Squares' average	Calculated F value	Level of statistical significance
Among groups	0.329	2	0.165	7.603	0.005
Inside groups	0.325	15	0.022		
Total	0.654	17			

From the previous Table, it is clear that there are statistically significant differences at the significance level ($\alpha = 0.05$) in the degree of using modern teaching strategies due to the variable of experience years (the significance level is less than 0.05). Thus it is concluded that the previous null hypothesis is rejected, and to study the differences, the Tukey test was used for two-dimensional comparisons, and the following Table 8 shows the results of this test:

Table 8. Results of the Tukey Test according to the Number of Years of Experience

Experience years number	Less than 10	From 10 to 15	More than 15 years
Less than 10 years	----------	*-0.336	-0.065
From 10 to 15 years	*0.336	----------	0.271
More than 15 years	0.065	-0271	---------

From the results of the previous Table, it is clear that the differences were in favor of faculty members with years of experience (from 10-15 years) compared to years of experience (less than ten years), and there weren't any apparent differences in other bilateral comparisons. The following Table shows the numbers, arithmetic means, and standard deviations of the degree of using modern teaching strategies in teaching the architectural design course in the Faculties of Engineering in Palestinian Universities according to the variable of the experience years' number.

Table 9. The Numbers, Arithmetic Means and Standard Deviations according to the Variable of the Experience Years' Number

Experience years number	Number	The arithmetic mean	Standard deviation
Less than 10 years	5	2.16	0.23
From 10 to 15 years	5	2.50	0.14
More than 15 years	8	2.23	0.06
Total	18	2.28	0.20

Conclusions

The modern teaching strategies in teaching architectural design courses in colleges of engineering in Palestinian universities are: The discussion strategy came to the forefront of it with an arithmetic mean of (2.83) and a standard deviation of (0.38), followed by the process of using critical thinking with an arithmetic mean of (2.78) and a standard deviation of (0.43), then followed by both the brainstorming strategy and the direct teaching strategy. At the same time, the lowest strategy was the strategy of the intensive course, with an arithmetic mean of (1.67) and a standard deviation of (0.59), followed by the method of programmed instruction with an arithmetic mean of (1.67) and a standard deviation of (0.69), then the strategy of micro-teaching, and experiments .

It is obvious to us that there are no there are at the level of $\alpha = 0.05$; no significant differences in the extent of employing modern teaching methods due to the workplace. This indicates the interest of Palestinian universities and their teaching staff in the influential role of teaching strategies in the educational process and its development. So the previous null hypothesis is accepted. It becomes clear that there are at the level of $\alpha = 0.05$; no significant differences in the extent of employing modern teaching methods due to the scientific qualification (the significance level is less than 0.05). The study attributes this to the valuable background in the domain of pedagogy. It terminates the previous null hypothesis, as it becomes evident that the contrasts were in the qualification (Ph.D.) with arithmetic mean (2.38) versus scientific staff (Master) with arithmetic mean.(2.18)

The most used modern teaching strategies in teaching the architectural design course in the Faculties of Engineering in Palestinian Universities from the viewpoint of the faculty members are:

1. Discussion strategy
2. Using critical thinking
3. Brainstorming strategy

4. Direct teaching strategy
5. Problem-solving strategy
6. Group work Strategy
7. Project-based learning

The researcher attributes this result to the nature of the architectural design subject as it relies on a dialogue between the teaching member and the student, as well as because these strategies help students to guide ideas, carefully analyze information and arbitrate it to choose the best available alternatives, and this is confirmed by previous studies that dealt with modern teaching strategies in teaching the architectural design course. The results indicate the interest and awareness of both males and females in using current teaching strategies and the educational process and its development. There were no statistically significant differences in the degree of using modern teaching strategies due to a variable (gender, workplace, specialization). The presence of statistically significant differences in teaching due to the experience years' variable number and the variable of academic qualification in favor of scientific qualification (Ph.D).

Based on the previous conclusions, a set of recommendations was made, which can be summarized as follows:

1. The continuous pursuit to develop the competencies of faculty members in the faculty of engineering.
2. Awareness of the importance of modern teaching strategies in bringing a qualitative leap in the teaching process and thus developing the educational process.
3. Work to expand the application of modern teaching strategies in engineering education and architecture.
4. The necessity of directing scientific research to conduct studies towards selecting and recruiting new technologies following the conditions, capabilities, and requirements of universities and society.

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References

Abu Shady, M. (2015). *Effective teaching methods and strategies. A workshop sponsored by the Development Quality and Labor Service Unit*. College of Education, Salman Abdulaziz University, Saudi Arabia.

Afifi, A. (2012). *Architectural Education in Palestine*. Master Thesis, Faculty of Architecture, An-Najah University, Nablus, Palestine.

Akpur, U. (2021). The predictive level of cognitive and meta-cognitive strategies on academic achievement. *International Journal of Research in Education and Science (IJRES), 7*(3), 593-607. https://doi.org/10.46328/ijres.1444

Amer, N. A. (2015). Appropriate Technology and Design-Build Program in Architectural Education. *Journal of Engineering and Applied Science, 62*(6), 507-528.

Al Mansi, Y. (2010). External competence for architectural education in the Faculty of Engineering at the

Islamic University of Gaza, Palestine. *Journal of the Islamic University (Natural and Engineering Studies Series), 18*(1), 99-114.

Al-Maqati, S. (2018). Obstacles to Applying Modern Teaching Strategies in Teaching Legal Courses at the Secondary Stage of the Curriculum System From the Teachers' Point of View. *Journal of Administrative and Human Sciences, 13*, 17-46.

An, Y. & Mindrila, D. (2020). Strategies and tools used for learner-centered instruction. *International Journal of Technology in Education and Science (IJTES), 4*(2), 133- 143.

Arrigo, V., Lorencini Junior, A. L., & Broietti, F. C. D. (2022). The pedagogical content knowledge (PCK) of a chemistry student teacher: An experience in pre-service education. *International Journal of Research in Education and Science (IJRES), 8*(1), 167-186. https://doi.org/10.46328/ijres.2560.

Al-Sahrawi, M. (2015). *Effective Teaching Strategies Lecturer-Application, Training Forum for the Development of Pedagogical Performance*. Ministry of Education, Higher Education and Scientific Research, University of Dr. Mohamed Lamine Dabbaghine, Quality Assurance Cell, Setif, Algeria.

Al-Talawati, R. (2018). *One of the most important modern teaching strategies.* Library of Inspection and Educational Guidance, Sebha, Libya.

Al wahabi, E. (2018). *Modern Teaching Strategies.* Ministry of Education, General Technical Guidance for Sociology, Kuwait.

Begum, A. (2019). Innovative and Effective Teaching Methods for Engineering Students. *SSRG International Journal of Humanities and Social Science, 6(*1).

Bidabadi, N. S., Isfahani, A. N., Rouhollahi A, & Khalili R. (2016). Effective Teaching Methods in Higher Education: Requirements and Barriers. *Adv Med Educ Prof., 4*(4), 170-178.

Cairo University (2016). *Teaching and learning strategies.* Faculty of Specific Education, Quality Assurance Unit, Cairo.

Emmi, N., & Buelow, P. V. (2016). *Teaching Structures to Architecture Students through Hands- on Activities.* Jaubman College of Architectural and Urban Planning, University of Michigan, USA.

Goodhem, P. J. (2010). *Teaching Engineering All You Need to Know About Engineering Education But Were Afraid to Ask*. The Higher Education Academy School of Engineering University of Liverpool, UK Center for Materials Education.

Haqqi, R. (2014). A general structure of design courses is an experiment in the way of integrating the architectural curriculum. *Damascus University Journal of Engineering Sciences, 30*(1), 163-178.

Kim, J. Y. & Anderson, T. N. (2023). The efficacy of metacognitive reading strategies in the college classroom: Student perception towards the learning experience. *International Journal on Studies in Education (IJonSE), 5*(1), 1-14. https://doi.org/10.46328/ijonse.80

Mahmoud N. E., Kamel, S. M., & Hamza. T. S.(2020). Introducing Negative Capability to Design Thinking Ambiguity Tolerance in the Design Studio. *Journal of Engineering and Applied Science, 67*(6), 1515-1534.

Mishra, V., & Puri, M. (2013). *Suggestive Strategies for Achieving Teacher Effectiveness*. Department of Education, Lingaga's University, Faridabad, India.

Nehakolhe, P. (2017). Innovative Tools and Techniques to Teach Architecture. *International Journal of Engineering Research and Technology, 10*(1), 67-71.

Ozturk, O.T. (2023). Examination of 21st Century Skills and Technological Competences of Students of Fine Arts Faculty. *International Journal of Education in Mathematics, Science, and Technology (IJEMST), 11*(1), 115-132. https://doi.org/10.46328/ijemst.2931

Öztürk, Ö. T., Türe, A., & Yağlıcı, S. C. (2021). The Relationship of Futurism Dynamism and Today's Technology. In S. Jackowicz & O. T. Ozturk (Eds.), *Proceedings of ICSES 2021-- International Conference on Studies in Education and Social Sciences* (pp. 160-170), Antalya, TURKEY. ISTES Organization.

Prince, M., J., & Felder, R., M. (2013). Inductive Teaching and Learning Methods Definitions, Comparisons, and Research Bases. *Journal of Engineering Education, 95*(2), 123-138.

Saghafi, M., R., Mozaffar, F., Moosavi, S. M., & Fathi, N. (2015). Teaching Methods in Architectural Design Basics. *Science and Nature, 37*(1), 379-387.

Zaitoun, K. (2000). *Teaching models and skills.* Scientific Bureau for Publishing and Distribution, Alexandria.

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