جامعة المنصورة

كلية التربية

The level of Implementation of the Physics Teacher Preparation Program in Colleges of Education in Iraq and Egypt in light of Recent Global Trends

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Journal of The Faculty of Education- Mansoura University
No. 127 – July . 2024

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Abstract

The aim of this research was to assess the implementation of physics teacher preparation programs at teacher colleges in Iraq and Egypt, according to proposed standards as evaluated by faculty members. To achieve this aim, a detailed list of proposed standards was developed, reflecting **recent** educational trends. This list was organized into a questionnaire comprising eight dimensions and 73 items.

The research personnel included faculty members from teacher colleges in Iraq and Egypt: 27 participants from Iraq and 32 participants from Egypt. The questionnaire was administered to these faculty members, and the data collected were subjected to thorough analysis.

The analysis revealed statistically significant differences in the degree to which the proposed standards were met between the physics teacher preparation programs in Iraq and Egypt, as reported by the faculty members. In response to these findings, a series of recommendations and proposals were formulated to enhance the quality of physics teacher preparation programs in teacher colleges in both countries. These recommendations are intended to align the programs more closely with current educational standards and to improve their overall effectiveness.

Keywords: Comparative Study- Physics Teacher Preparation Programs - College of Education in Iraq- College of Education in Egypt

ملخص البحث

هدف البحث إلى تعرف واقع تنفيذ برنامجي إعداد معلمي الفيزياء بكليات التربية في العراق ومصر في ضوء المعايير المقترحة من وجهة نظر أعضاء هيئة التدريس . ولتعرف ذلك تم إعداد قائمة بالمعايير المقترحة لإعداد برنامجي إعداد معلمي الفيزياء بكليات التربية في العراق ومصر في ضوء الاتجاهات الحديثة . وإعداد قائمة المعايير المقترحة في صورة استبانة عبارة عن (٨) محاور تشمل (٧٣) عبارة وتم اختيار أفراد البحث من أعضاء هيئة التدريس في كلية التربية في العراق وبلغ عددهم (٢٧) عضواً ، وكذلك تم اختيار أفراد البحث من أعضاء هيئة التدريس في كلية التربية في مصر وبلغ عددهم (٣٢) عضوا . وتم تطبيق الاستبانة على أفراد البحث بكليتي التربية في العراق ومصر ، وتجميع البيانات ورصدها ومناقشتها . وتوصلت النتائج إلى وجود فروق دالة إحصائياً بين مدى توفر بعض المعايير المقترحة في تنفيذ برنامجي إعداد مدرسي الفيزياء بكليات التربية في العراق ومصر من وجهة نظر أعضاء هيئة التدريس. وتم تقديم مجموعة من التوصيات والمقترحات في ضوء نتائج البحث لتحسين مستوى تنفيذ برنامجي إعداد معلمي الفيزياء بكليات التربية في العراق ومصر.

الكلمات المفتاحية : دراسة مقارنة- برامج إعداد معلم الفيزياء - كليات التربية في العراق- كليات التربية في مصر.

Introduction:

The rapid developments in science, technology, and society necessitate a review of physics teacher preparation programs to align with global trends in teacher preparation and to address educational challenges and issues.

Consequently, both Iraq and Egypt prioritize the development of education and the preparation of teachers, with a strong emphasis on improving quality. Colleges of Education in Iraq and Egypt are considered the primary institutions responsible for preparing and equipping teachers to face educational challenges.

The development of teacher preparation systems and programs within Colleges of Education has become essential due to the nature of global scientific, educational, technological, and social changes. It is crucial to review the physics teacher preparation program in light of modern global trends to enhance teachers' competencies by equipping them with the necessary knowledge, skills, and values to achieve excellence (Abd El-Salam, 2023, 90 : in Arabic).

Abd El-Salam (2019, 2) highlighted that scientific, educational, and technological developments, along with globalization, sustainable development, and social and economic changes, have imposed a set of challenges that impact education in general, and teacher preparation in particular. Several contemporary global trends and societal and economic changes have become evident, such as the emergence of nanotechnology concepts, Information and Communication Technology (ICT), digitization, robotics, artificial intelligence, the knowledge economy, globalization, sustainable development, the American National Science Education Standards (NSES, 1995), the Next Generation Science Standards (NGSS, 2013), the use of Learning Outcomes approaches to develop and design teacher preparation programs, international trends in science and mathematics (TIMSS), 21st-century skills, comprehensive quality, global science teacher competencies in light of the PISA project, and Project-Based Learning Protocols. These developments present future challenges and impose new roles on science teachers, necessitating the development of teacher preparation (academically, professionally, culturally, and socially) to equip them with 21st-century skills to meet future challenges, graduate capable of fulfilling their new roles, implementing curricula at various

levels of education, and achieving their objectives. The development of education in the 21st century primarily relies on teacher preparation programs, professional development, and the preparation of teachers who are knowledgeable about societal and economic changes, scientific, technological, and educational developments in their field, and who possess communication skills, decision-making ability, and problem-solving capacity.

Graduates of Colleges of Education are increasingly being viewed as products, subject—albeit with certain adjustments—to the same evaluative standards as any other product, with the same quality criteria expected to be met.

As Colleges of Education are among the educational institutions responsible for preparing future teachers, they must strive diligently to enhance the efficiency of their various teacher preparation programs, including the physics teacher preparation program. This should be done by improving the quality of these programs and achieving specific quality standards that serve as effective tools for continuously elevating the program's level, reflecting on its graduates in terms of achieving quality according to the highest global standards for graduates of Colleges of Education.

Furthermore, teacher preparation programs in Iraq, in particular, must keep pace with the significant developments experienced by global educational institutions specializing in this field. The future success of the educational system in Iraq is dependent on improving the quality of teachers and the teaching profession. The teacher is a fundamental element in any educational setting, as they represent the most critical educational input, second only to the students. The teacher's status within the educational system determines their importance, as they define the quality and direction of education, and subsequently, the future of the nation. Moreover, the teacher plays a pioneering role, contributing to societal development and progress (Al-Dulaimi & Mashaan, 2009, 19).

A study by Maher & Singer (2007) indicated that the performance of pre-service science teachers was lacking in the use of educational technologies, which is one of the national standards for teacher preparation. The study emphasized the importance of teacher preparation programs focusing on training students in the use of educational technology to ensure the quality of teacher performance.

Program evaluation studies in the United States have focused on recent guidelines, including those by Meyer et al. (2014), which emphasize

improving graduate performance to enhance the effectiveness of teacher preparation programs. These studies also stress the importance of identifying and developing data collection tools to facilitate the use of evaluations at the state level.

A review and examination of studies related to the evaluation of teacher preparation programs reveal several key areas of focus, including the evaluation of program quality, with particular emphasis on program design and implementation, such as selection processes, program resources and curricula, and practical experiences. Additionally, these evaluations consider program outcomes, encompassing the knowledge and skills of teachers, teachers' perceptions, teacher status, the perceptions and opinions of administrators and employers, teacher evaluation results, and students' academic achievement. Despite the increased focus on both processes and outcomes in evaluations, there is no consensus on the relative merits of using specific measures, data sources, or evaluation methods (Floden, 2012; Noell, Brownell, Buzick & Jones, 2014).

Many studies have focused on the development of teacher preparation programs in general and science teacher programs in particular, given the significant role science plays in our lives. These studies have recommended the need to improve the specialized scientific content, pedagogical methods, and evaluation techniques of teacher preparation programs, and to develop science teacher preparation programs in light of the roles and competencies required to achieve these goals (APA, 2014; Association Psychological American, Fifth Teacher Preparation Conference, Umm Al-Qura University, 2016; Abd El-Salam, 2023).

In light of the above, the importance of preparing physics teachers and the necessity of evaluating and reviewing physics teacher preparation programs in Iraq and Egypt to align with modern trends and social, economic, scientific, educational, and technological developments are evident.

Feeling the problem:

The researcher identified the problem of this study through four sources:

First: Reviewing the Literature and Previous Studies Related to the Current Research Reveals the Following:

1- Previous writings and studies indicate the weakness of physics teacher preparation programs in providing student teachers with the necessary cognitive, performance, and affective competencies to carry out their current and future roles and responsibilities (Abdel Salam , 2023, 197 : in Arabic).

2- This research was conducted in response to recommendations from various conferences, discussion panels, and seminars held by the Iraqi Ministry of Higher Education and Scientific Research, and Iraqi universities, aimed at opening up to teacher preparation programs both regionally and globally. Therefore, the current research focused on exploring modern global trends in physics education and teacher preparation, as well as analyzing their needs.

3- The field of physics education has undergone significant transformations worldwide in recent years. With technological advancements and social and economic changes, new trends in physics education have emerged that seek to enhance the learning experience and improve the quality of education. It is well recognized that physics teachers play a crucial role in achieving these objectives. Therefore, institutions responsible for preparing science teachers must demonstrate flexibility by adopting innovations and changes in the knowledge era, with increased focus and attention on the scientific and practical aspects of preparing future teachers (Al-Shahrani, 2012, 12).

4- Specific studies and research on teacher preparation programs are needed to improve teachers' performance, enabling decision-makers to enhance these programs to align with the current and future roles of teachers (Perry & Straiton, 2011, 3).

Second: Interviews with faculty members from Colleges of Education and Sciences in Iraq and Egypt revealed that physics teachers face numerous challenges, including the inability to use modern teaching methods and difficulties with the curriculum, which negatively impact teacher performance and result in weakened achievement of the educational objectives of the teaching process.

Third: Interviews with some physics supervisors and teachers in high schools and intermediate schools in Iraq and Egypt indicated several issues that physics teachers encounter during the educational process.

Fourth: The researcher's experience and the nature of their work in supervising student field training also contributed to identifying the research problem.

Based on the above, the researcher felt the need to conduct this study and evaluate physics teacher preparation programs in Colleges of Education in Iraq and Egypt.

Research Problem:

Colleges of Education are responsible for the qualification and training of teachers across various specializations, including physics. As knowledge and scientific concepts in the field of physics evolve, new global trends in the teaching and learning of physics and teacher preparation have emerged. Understanding these global trends and their impact on teacher preparation is crucial for improving the quality of physics education.

Therefore, the current research problem lies in understanding and analyzing modern trends in the preparation of physics teachers and how these trends affect teacher preparation programs in Colleges of Education. The study also seeks to identify the challenges faced by physics teachers in Colleges of Education in keeping pace with these trends and in adapting their preparation curricula and teaching methods.

The research problem can be framed by the following main question:

- What is the current state of the implementation of physics teacher preparation programs in Colleges of Education in Iraq and Egypt in the light of the proposed standards from the perspective of faculty members point of view?

This main question is further divided into the following sub-questions:

1-What are the recent global trends that must be taken into account in the physics teacher preparation program in colleges of education?

2-What are the proposed standards in the light of recent global trends for evaluating the current state of implementation of physics teacher preparation programs in Colleges of Education in Iraq and Egypt?

3-To what extent do the two programs for preparing physics teachers in colleges of education take into account the proposed standards in Iraq and Egypt from the point of view of faculty members?

Research Objectives:

The current research aimed to ;

1-Identify recent global trends in the physics teacher preparation program in Colleges of Education.

2-Determine the proposed standards in the light of recent global trends for evaluating the current state of implementation of physics teacher preparation programs in Colleges of Education in Iraq and Egypt.

3-Assess to what extent do the two programs for preparing physics teachers in colleges of education take into account the proposed standards in Iraq and Egypt from the point of view of faculty members?

Significance of the Research:

The significance of the current research lies in the following:

1-The importance of the evaluation process in general, and the evaluation of College of Education programs in particular, as it can provide indicators useful in developing the physics teacher preparation program.

2-Guiding specialists and officials in Colleges of Education on the importance of developing physics teacher preparation programs, and emphasizing the need for the Ministry of Higher Education and Scientific Research to prioritize the preparation of physics teachers capable of developing and improving the educational process in schools.

3-The importance of teacher preparation, as teachers are the architects of future generations. A well-prepared teacher can address some curriculum shortcomings, facilitate its teaching and implementation, and contribute to graduating learners with a high level of quality and achieving the targeted learning outcomes.

4-To the best of the researcher's knowledge, this is the first study conducted in Iraq (following the period of war and the stabilization of life) aimed at comparing and contrasting physics teacher preparation programs in Colleges of Education in Iraq and Egypt.

5-The current research contributes to developing a vision for the improvement of physics teacher preparation programs in Colleges of Education in light of modern global trends in Colleges of Education in Iraq and Egypt.

6-The research findings could be valuable to decision-makers in Iraq in preparing physics teacher programs in Colleges of Education to achieve quality and academic accreditation from specialized bodies.

-Research Hypothesis:

There are no statistically significant differences in the availability of the proposed standards in the implementation of physics teacher preparation programs in Colleges of Education in Iraq and Egypt from the perspective of faculty members.

-Research Terminology:

Evaluation:

Abd Elsalam (2001, 273) defines evaluation as a set of procedures and steps by which data or information related to a particular thing, phenomenon, situation, behavior, field, or subject is collected, analyzed, interpreted, and used to diagnose strengths (positives) and weaknesses (negatives), and to propose solutions that correct and improve the course of action.

The researcher operationally defines evaluation as the process of issuing judgments on the similarities and differences between physics teacher preparation programs in Iraq and Egypt, and providing recommendations for improving the physics teacher preparation programs in Colleges of Education.

Comparative Studies:

Al-Khayal and Abdul Rahim (2019, 1064) define comparative studies as educational studies that encompass all aspects related to curricula and their comparison at the level of different countries or comparison of their components to identify similarities and differences, to recognize strengths and areas of deficiency, and to use this information to improve curricula. These studies rely on methodological approaches specialized in curriculum comparison and the comparative analysis of different units in this context.

Teacher Preparation Programs in Colleges of Education:

Abd El-Salam (2022, 956) defines a teacher preparation program as "a study plan that includes the objectives of teacher preparation, the number of study years, the study system, the total number of program hours, and the number of hours for each aspect of the teacher preparation program (academic specialization preparation, educational or professional preparation, cultural and social preparation), and a set of curricula and course descriptions for each aspect of preparation that student teachers must study and complete to achieve the program's objectives and obtain a certificate of completion and a Bachelor's degree in educational sciences."

Abd El-Salam (2016, 564) further defines teacher preparation and training as "the process of preparing the professional teacher and equipping them with the necessary knowledge, skills, values, and attitudes in Colleges of Education or post-graduation and during service at training centers, or providing opportunities for the teacher for continuous professional development and improving their cognitive, performance, and emotional competencies to fulfill their expected roles and achieve quality education."

The researcher's operational definition of a teacher preparation program in Colleges of Education: It is an academic process aimed at preparing physics teachers during the designated study period by equipping them with knowledge and skills, preparing them academically, educationally, and socially in Colleges of Education in Iraq and Egypt to perform their educational duties effectively and achieve the desired objectives.

The researcher's operational definition of physics teacher preparation program courses: These are all the courses included in the physics teacher preparation program plan, classified into: educational courses; specialized academic courses, and cultural and social courses, offered by the College of Education. These courses aim to equip student teachers (future physics teachers) with the knowledge, skills, and attitudes that qualify them to carry out their roles and responsibilities.

Colleges of Education in Iraq: "They are among the institutions of higher education and scientific research in Iraq, carrying a significant humanitarian mission and comprising various humanities departments. Their goal is to prepare specialists who are educationally and scientifically qualified to teach in intermediate and secondary schools, as well as in teacher preparation institutes" (Republic of Iraq, College of Education Guide, 1990).

Colleges of Education in Egypt: They are higher education institutions subject to the Egyptian Universities Organization Law No. 49 of 1972, established by the community to achieve its objectives. They aim to prepare future teachers in various specializations required by the Ministry of Education to teach courses at different educational stages, including in international schools, to prepare researchers and teachers in various educational specializations, and to contribute to scientific research and community service as a whole (Abd Elsalam, 2023, 952).

The researcher's operational definition: They are educational institutions affiliated with the Ministry of Higher Education and Scientific Research, responsible for the academic, professional, and cultural preparation of teachers for educational stages, according to preparation standards adopted by the college. The duration of study is four years, after which the graduating student receives a Bachelor's degree in science and education.

- **Delimitations of the Study**

This study was delimited to:

- The Department of Physics in Colleges of Education in Iraq and Egypt.
- The College of Education, University of Baghdad in Iraq, and the College of Education, Mansoura University in Egypt.
- The academic year 2023-2024.
- Areas of academic specialization, professional education, cultural and social preparation.

Research Population and Sample:

- **Research Population:**
  - Colleges of Education in both the Republic of Iraq and the Arab Republic of Egypt.
- **Research Sample:**
  - The Department of Physics, College of Education for Pure Sciences/Ibn Al-Haytham, University of Baghdad in Iraq.
  - The Department of Physics, College of Education, Mansoura University in Egypt.
  - Some faculty members from the Colleges of Education at the University of Baghdad in Iraq and Mansoura University in Egypt.
- **Research Methodology:**

The researcher relied on:

  - The descriptive method for reviewing previous research and studies, collecting and organizing information, preparing research materials and tools, and gathering accurate data from primary sources regarding the physics teacher preparation program.
  - The comparative method to study the research problem and compare the experiences of the Iraqi and Egyptian societies in the field of secondary school physics teacher preparation, studying the problem in its natural context as a direct source of information.
- **Research Materials and Tools:**

The research materials included:

  - A list of proposed standards for evaluating the physics teacher preparation program in Colleges of Education.

The research tools included:

  - A questionnaire for faculty members in Colleges of Education in Iraq and Egypt.
- **Research Steps :**

The researcher followed these steps to answer the research questions:

1. Reviewing Arabic and foreign literature, studies, and research that addressed science teacher preparation programs in general and physics teacher preparation in particular, and using them in writing the research literature, previous studies, preparing research materials and tools, and discussing and interpreting the results.
2. Preparing the research materials and tools as follows:
   - Preparing a list of proposed standards for evaluating the physics teacher preparation program:

- The researcher relied on the following sources in preparing the list of proposed standards for evaluating the implementation of the physics teacher preparation program in Colleges of Education in Iraq and Egypt: a. Global trends in physics teacher preparation in Colleges of Education. b. Quality and accreditation standards for Colleges of Education. c. Interviews and opinions of faculty members and specialists in teaching courses in the Department of Physics at Colleges of Education. d. Physics teacher preparation standards in Colleges of Education in some Arab countries. e. Results of inspection and analysis in the preparation program in both colleges in Iraq and Egypt. f. Exploratory studies in the field of preparation and evaluation in educational colleges.

-Defining the proposed standards and organizing them into a list comprising several axes.

-Presenting the list of proposed standards for evaluating the implementation of the physics teacher preparation program in Colleges of Education to a group of specialized evaluators (Appendix 1) in Colleges of Education in Iraq and Egypt.

-Making the necessary adjustments to the list of proposed standards in light of the evaluators' opinions.

-Preparing the list of proposed standards for evaluating the implementation of the physics teacher preparation program in its final form.

-Preparing the proposed standards list in the form of a questionnaire for faculty members in Colleges of Education in Iraq and Egypt to evaluate the physics teacher preparation program:

-The researcher finalized the list of proposed standards for evaluating the physics teacher preparation program (Appendix 2) in the form of a questionnaire for faculty members in Colleges of Education in Iraq and Egypt, comprising eight axes, with each axis containing several statements totaling 73 statements (Appendix 3).

-Present the research materials and tools to a group of evaluators (Appendix 1) to ensure their validity and to calculate the reliability of the research tools.

-Selecting research participants from faculty members in Colleges of Education in Iraq and Egypt and applying the research tools.

-Collecting and recording the data.

-Using appropriate statistical treatments.

-Discussing and interpreting the research results.

-Providing recommendations and suggestions in light of the current research findings.

-Theoretical Framework and Previous Studies:

- First Section: The Importance, Status, and Preparation of Teachers:

This section includes the importance of teacher preparation, the concept of teacher preparation, the objectives of teacher preparation, and teacher preparation programs, discussed as follows:

- **The Importance of Teachers and Their Preparation:** Teachers are considered one of the fundamental pillars in improving the educational process and achieving its objectives. Therefore, many countries around the world, despite their differing philosophies, goals, and educational orientations, place significant emphasis on education in general and teachers in particular, recognizing them as one of the most crucial elements (Abd El-Salam, 2023, 957).
- **The Concept of Teacher Preparation:** Abd El-Salam (2016, 564) defines teacher preparation and training as "the process of preparing the professional teacher and equipping them with the necessary knowledge, skills, values, and attitudes in Colleges of Education, or providing appropriate opportunities for continuous professional development, enhancing and developing their cognitive, performance, and emotional competencies to fulfill their expected roles and achieve quality education."

Abd El-Salam (2023, 952) further defines a teacher preparation program as "a planned and organized study program lasting four academic years in Colleges of Education, distributed across three areas: academic specialization, professional pedagogy, and cultural and social aspects. The program aims to equip future teachers with the educational competencies necessary for professional growth, enabling them to fulfill their roles and achieve quality education."

Al-Ruwais (2018, 582) defines it as "a set of procedures, processes, and activities adopted by teacher preparation institutions aimed at qualifying teachers academically, professionally, and culturally to practice the profession in a manner consistent with societal requirements."

- Second Section: Modern Trends in Physics Teacher Preparation:

There are several modern trends in the preparation of physics teachers, including role-based preparation, competency-based preparation, standards-based preparation, and STEM-based preparation. These trends can be discussed as follows:

-First: Role-Based Preparation of Physics Teachers:

- The development of science curricula at various educational stages occurs periodically as a necessary requirement for the advancement of education and the achievement of its philosophy and objectives. Consequently, the roles of science teachers evolve and multiply to keep pace with modern trends in teacher preparation. Specialists have emphasized preparing teachers based on the roles required of them, which align with contemporary demands, helping them perform their various tasks efficiently (Abd El-Salam, 2018, 512-513; 2023).

Since the beginning of this century, the world has witnessed a significant cultural shift that has affected all areas of life, introducing new challenges and transformations that require competent teachers with new knowledge, skills, and ideas to manage these changes successfully. These transformations have cast their shadow over the structure of the educational system and teacher preparation.

- **Roles of a Physics Teacher:**

Abd El-Salam (2018, 512-519; 2023) outlines the roles of a physics teacher as follows:

- Knowledge transmitter
- Responsible for the holistic development of students
- Master of various teaching competencies
- Monitor of recent changes in curriculum content
- Participant in educational innovation processes
- Participant in school administration
- Responsible for maintaining order
- Responsible for student assessment
- Participant in curriculum planning and development
- Implementer of the curriculum
- Researcher
- Member of the profession
- Community member
- Cultural guide

A study by the American Association of Physics Teachers (AAPT, 2009, 1-27), titled "Roles, Preparation, Qualification, and Professional Development of Secondary Physics Teachers," provides guidelines for officials to assess the performance of candidates in the necessary qualifications for teaching physics, including physics content knowledge, physics teaching knowledge (classroom environment, curriculum, student

understanding, and effective teaching strategies), and assessment. The roles of a physics teacher were identified as self-preparation, teacher-student interaction, social construction in the classroom, scientific literacy development, and additional responsibilities.

-Second: Competency-Based Preparation of Physics Teachers:

Definition of Competencies:

Abd El-Salam (2023,952) defines the competencies of a physics teacher as "a set of knowledge, skills, values, and attitudes that a physics teacher must possess to perform their professional roles and tasks effectively to achieve the objectives of physics teaching and the targeted learning outcomes for students. These competencies include academic specialization, professional pedagogy, emotional competencies, and cultural and social competencies."

-Third: STEM-Based Preparation of Physics Teachers:

Definition of STEM: The United States Department of Education defines STEM as programs that provide support for or enhance science, technology, engineering, and mathematics (STEM) education from elementary through secondary school and beyond, including adult education.

The Importance of STEM-Based Preparation for Physics Teachers:

Literature, research, and previous studies (Sherif, 2019, 327-339; Al-Dughaim, 2017, 86-121; Abd El-Salam , 2023) indicate that within the growing trend of integrating STEM into the educational framework, it has been observed that teachers lack effective teaching skills and capabilities. Moreover, professional development programs do not adequately address the actual needs of teachers, relying instead on traditional teaching methods that are inconsistent with inquiry-based, discovery-oriented learning, and the implementation of activities and projects. This calls for the development of a distinguished program for teachers who are candidates to teach in STEM schools, to overcome existing teaching challenges and enable teachers to establish strong relationships among students, their peers, and STEM educators. A STEM teacher is responsible for teaching subjects in science, technology, engineering, or mathematics. They may specialize in one area, such as physics or chemistry, if they wish to teach at the secondary school level. STEM teachers perform various tasks depending on the subjects they teach.

The goal of a STEM teacher is to help create an environment that encourages creativity, collaboration, and innovation among students. In doing so, they help prepare the next generation of innovators and creators.

Objectives of STEM Teacher Preparation in Colleges of Education: Many studies and research (Al-Dughaim, 2017; Dawood, 2019; Sherif, 2019; Al-Masry, 2022; National Science and Technology Council (NSTC), 2018) have focused on STEM education and the preparation of STEM teachers. The researcher was able to identify the following objectives:

Acquiring sufficient knowledge of STEM subjects and areas.

Equipping potential teachers with the necessary pedagogical skills for teaching STEM.

Providing them with skills for implementing activities and projects (capstone projects).

Enabling teachers to understand child (or student) psychology in STEM education.

Developing positive attitudes towards teaching.

Equipping them with inquiry-based teaching skills.

Developing scientific, innovative, and critical thinking skills through STEM education.

Equipping them with assessment methods and tools in STEM education.

Building self-confidence in teachers within STEM education.

Enabling teachers to use educational tools effectively.

Enabling teachers to understand the importance of individual differences among children (or students) and to take appropriate steps to develop them in a better way.

Developing the ability to achieve direct parental satisfaction with their children's achievements and characteristics.

Dawood's (2019,. 119-142) study, titled "Preparation of STEM School Teachers in America and Its Application in Egypt," aimed to understand how STEM school teachers are prepared in the Arab Republic of Egypt. The research utilized the comparative method and concluded that STEM teacher preparation in Egypt suffers from several deficiencies, such as the absence of a clear philosophy for STEM education, reliance on traditional teaching strategies, and a lack of qualifying courses for STEM teachers. Consequently, the research proposed a framework for the preparation of STEM school teachers in Colleges of Education in Egypt based on the American experience.

-Fourth: Standards-Based Preparation of Physics Teachers:

Definition of Standards: Abd El-Salam (2018, 217) defines standards as "rules or principles used to judge the quality and type (or method) of science teaching."

Development of Standards Projects:

National Science Teacher Association (NSTA) Standards: The National Science Teacher Association (NSTA) established a set of characteristics and standards in 2005 that must be present in a science teacher preparation program to ensure quality and meet the standards for preparing science teachers (NSTA, 2003). These characteristics include:

To ensure the effective preparation of teachers for science instruction, the NSTA recommends that science teacher preparation programs include curricula that provide real experiences, enabling student teachers to:

Deepen and focus their knowledge and skills related to the curricula they will teach, following national standards for science education for the grade levels they are preparing to teach.

Teach science effectively in a manner that aligns with students' cognitive development.

Understand scientific concepts, the history, and nature of science, including the development of scientific concepts, hypotheses, and beliefs in scientific practice.

Understand the applications of science in society and the relationship between science and technology, and the impact of personal and cultural values on science.

Create a learning environment that encourages inquiry, questioning, evidence evaluation, and scientific reasoning, which should be reflected in the practices of student teachers during instruction.

Collaborate with the learning community, including experienced science teachers, science educators, and scientists in applied science fields.

Participate in meaningful laboratory activities and simulations that use contemporary technological tools and effective science teaching strategies, consistent with the strategies and practices they are expected to use in their teaching.

Understand educational knowledge related to science teaching, which revolves around contemporary cultural and school environments.

Observe the diversity of students' ideas about science and prepare teaching plans that help students develop meaningful understanding of science.

Implement their teaching plans and assessment methods in a way that reflects on learning outcomes and adjust their teaching to improve students' understanding of science.

Participate in decision-making processes based on available data regarding teaching behaviors, strategies, subjects, activities, and materials they teach.

Understand how to obtain accurate information about the school community and curriculum, and the effective and safe use of laboratory activities, independent science projects, exhibitions, field trips, simulations, computer tools, and alternative curriculum resources.

Effectively develop science teaching arrangements, including a sense of responsibility toward students and the community, and emphasizing the ongoing need for knowledge growth through participation in the broader science learning community.

Based on the above, the researcher believes it is crucial to prepare physics teachers in a manner that aligns with the responsibilities and roles assigned to them in the educational process. Their preparation should consider the changing goals and objectives of education, which now focus on preparing individuals in all aspects of life to contribute effectively to their own development and that of their society. Hence, the importance of preparing teachers in ways that enable them to acquire general and specialized confidence, as well as scientific and practical teaching skills, becomes evident.

A Study by Al-Balawi (2021): Al-Balawi conducted a study in 2021 to determine the extent to which physics teachers in the Tabuk region adhere to professional and specialized standards. To achieve the study's objectives, the researcher used both quantitative and qualitative methods. The tools included an observation checklist and a semi-structured interview guide based on a set of predefined questions. The study was applied to a sample of 19 physics teachers, with four additional teachers selected to explore the obstacles preventing adherence to standards through semi-structured interviews. The results showed that the overall adherence of physics teachers to professional and specialized standards achieved an average score of 3.55 out of 5, indicating a high level of adherence. At the level of individual standards, the results revealed variability in the degree of adherence, ranging from very high to low. Three standards received a very high adherence rating, six standards received a high adherence rating, seven standards received a moderate adherence rating, and one standard received a low adherence rating.

The obstacles to adherence to professional and specialized standards among physics teachers included weak training programs provided to teachers, inadequate laboratory facilities, a mismatch between the volume of

scientific content and the allocated class time, an increased academic workload on teachers, and issues related to rented school buildings.

-Third Section: Preparation of Physics Teachers in Some Arab and Foreign Countries:

This section includes: systems for preparing physics teachers, aspects of teacher preparation, the current state of physics teacher preparation in some Arab and foreign countries, the status of teacher preparation institutions, and teacher preparation development projects in Colleges of Education in Egypt, as follows:

Systems for Preparing Physics Teachers: Teacher preparation systems in most educational systems around the world are classified in terms of academic structure into two types: the integrative system and the sequential system. These can be explained as follows (UNESCO, 2017, 18-21; Abd El-Salam, 2018, 427):

Aspects of Physics Teacher Preparation: Abdul-Tawab, Abdul-Mu'ti, and Omar (2022, 185), along with Abdulsalam (2018, 521-523), indicate that teacher preparation focuses on three main aspects:

Specialized (Academic) Preparation: This aims to equip student teachers with the information, knowledge, skills, attitudes, and values within their area of specialization. It prepares them to understand their field of specialization in terms of its theories, structure, concepts, development, and techniques, and to acquire the skills and competencies needed to research their field and stay updated on new developments.

Educational and Professional Preparation: This aims to provide student teachers with information, knowledge, skills, attitudes, and values related to curricula, teaching methods, psychology, developmental psychology, and the principles and philosophies of education. This preparation elevates the teacher's level and provides them with the foundations and rules of the teaching profession, as well as the diverse duties and roles of a teacher within the educational process.

Cultural and Social Preparation: This is linked to the teacher's role and understanding of the culture of society and the fulfillment of the social function of education. The teacher is seen as a transmitter and interpreter of societal culture, contributing to the social upbringing of the younger generation. General cultural knowledge is essential for every teacher by virtue of their role as an educator. The more information and general culture a teacher possesses, the more capable they are of gaining their students' trust and influence, aiding in their intellect and personality maturity, and broadening their horizons and understanding.

Based on the above, the researcher believes that the issue of teacher preparation, their qualifications, and the aspects of their preparation represent the common foundation upon which most projects for developing teacher preparation programs are built. It is upon this foundation that all future hopes for advancing the educational process are based. Teacher preparation is fundamental to any development because efforts to improve any aspect of the educational process cannot lead to the desired progress unless they begin with the preparation of well-qualified teachers. Teacher preparation institutions in both public and private universities have become key players in preparing and qualifying teachers at all educational stages and levels. Therefore, they must continuously and comprehensively develop their teacher preparation programs to keep pace with the demands of the modern era and the needs of students and society.

- Previous Studies on Teacher Preparation Programs:

A study by Al-Shamiri (2022) aimed to identify contemporary global trends in teacher preparation and utilize them to develop a proposed framework for improving teacher preparation programs in Yemeni universities. To achieve this goal, the study employed a descriptive-analytical method. The study concluded with a proposed framework for developing teacher preparation programs in light of modern trends, based on the findings of previous studies in this field. The study recommended that Colleges of Education in Yemeni universities conduct periodic reviews of their teacher preparation programs and develop them in line with contemporary global trends, to meet the needs of teachers in the field, fulfill societal aspirations, and keep up with the demands of the modern era. Additionally, the study suggested reevaluating the selection and recruitment policy for students in teacher preparation programs by implementing criteria that ensure the selection of the best candidates, adopting an integrated preparation system within the College of Education over five years, and reconsidering the duration of practical training to extend its implementation period. Furthermore, it recommended expanding cooperation between Colleges of Education and civil society organizations to build programs that meet market demands and fulfill societal needs and aspirations.

A study by Al-Nafisah and Al-Harbi (2023) aimed to identify the professional development needs of middle school science teachers in light of some professional standards for teachers, from the perspective of science supervisors. The researcher developed a list of professional development needs for science teachers, and the study sample consisted of 40 science supervisors for middle schools in the Riyadh Education Department. The

descriptive method was employed, and the results indicated that employing different teaching approaches and modern trends requires professional development, particularly through in-depth studies in educational assessment. The researcher made several recommendations, including the necessity of holding courses in the field of learning unit planning and effective implementation to enhance the professional development of teachers. Additionally, the study emphasized the importance of providing an interactive educational environment to contribute to the professional and developmental growth of science teachers.

-Fourth Section: Evaluation of the Physics Teacher Preparation Program:

This section includes the definition of teacher preparation program evaluation, the current state of physics teacher preparation in some Arab and foreign countries, and can be discussed as follows:

Definition of Teacher Preparation Program Evaluation: Evaluation is defined as the systematic collection of information on program outcomes to make judgments about the program's effectiveness, improve the quality of the program's effectiveness, and make appropriate decisions regarding the development of future programs (Anderson & Postlethwaite, 2007, 1).

Abd Elsalam (2018, 399-400) defines evaluation as "a set of procedures and steps through which data or information is collected about a specific thing, phenomenon, situation, behavior, field, or subject, analyzed, interpreted, and the strengths (positives) and weaknesses (negatives) are diagnosed, and solutions are proposed to correct and improve the course of action."

The Current State of Physics Teacher Preparation Programs and Justifications for Their Development: Some writings and studies, such as those by Al-Maghribi and Abd al-Mawjud (2005, 266) and Abd Elsalam (2018), indicate that teacher preparation programs in Egypt suffer from several problems that significantly impact the future of the teaching profession, including:

Teacher preparation programs do not adhere to innovative trends and continue to follow traditional programs in content delivery, where quantity is prioritized over quality. As a result, Colleges of Education focus on producing large numbers of inadequately qualified teachers for the labor market.

There is a gap between the ideal theories taught to students in Colleges of Education and the realities imposed by practical experience.

Several studies have been conducted to evaluate the science teacher preparation programs in Colleges of Education, such as:

A study by Al-Baz (2010, 759-799) aimed to evaluate the effectiveness of the science teacher preparation program for the physics and chemistry divisions in Colleges of Education in light of quality standards. The study provided recommendations that could be used to achieve the quality of the science teacher preparation program in Colleges of Education.

In a study by Ahmed (2024), the research aimed to determine the effectiveness of a program based on the professional needs of student teachers in the science division of the College of Education, in light of Egypt's Vision 2030, to develop their teaching skills. The research found a significant need for student teachers to receive extensive training in all aspects of the survey, and it confirmed the effectiveness of the training program in light of Egypt's Vision 2030 in developing their teaching skills.

A study by Al-Nafisah and Al-Harbi (2023) aimed to identify the professional development needs of middle school science teachers in light of some professional standards for teachers from the perspective of science supervisors in the Riyadh Education Department. The researcher made several recommendations, including the necessity of holding courses in the field of learning unit planning and effective implementation to enhance the professional development of teachers, and the importance of providing an interactive educational environment to contribute to the professional and developmental growth of science teachers.

-Research Procedures:

1. Preparing the Initial Draft of the Proposed Standards List (Axes and Statements) for Evaluating the Implementation of the Physics Teacher Preparation Program in the Colleges of Education in Iraq and Egypt Based on the Opinions of Faculty Members.
2. Presenting the Proposed Standards List to a Group of Evaluators (Appendix 1) and Modifying It According to Their Opinions and Suggestions, Then Finalizing It.
3. The List Included Eight Axes, Each Containing a Set of Statements, Amounting to a total of 73 Statements, as Follows:
    - The initial standards list includes eight axes, comprising 73 statements: standards and objectives of the physics teacher preparation program in light of modern global trends (9 statements), curricula and courses offered in the physics teacher preparation program (7 statements), field training in the physics teacher preparation program (9 statements), teaching strategies, activities, learning environment, practical applications, the use of technology, and artificial intelligence applications in the physics

teacher preparation program (17 statements), assessment methods and procedures (student learning, course) in the physics teacher preparation program (10 statements), the role of the academic and educational department in the professional development of faculty members and teaching assistants in the physics teacher preparation program (7 statements), the role of the academic and educational department in ensuring quality in the physics teacher preparation program (9 statements), and policies and procedures for the admission of new students (5 statements).

4. The Proposed Standards List (Appendix 2) Was Converted into a Questionnaire (Appendix 3), Consisting of Eight Axes, including 73 Statements, to Gather the Opinions of Faculty Members on the Reality of Implementing the Physics Teacher Preparation Program in the Colleges of Education in Iraq and Egypt. This was done by placing five response options in front of each statement, using a five-point Likert scale (5-1), where the number (5) indicates the highest level of availability of the standard, and the number (1) indicates the lowest level of availability of the standard. The five responses are: Highly Available (5), Moderately Available (4), Slightly Available (3), Don't Know (2), Not Available (1).
5. After Preparing the Research Tools and Presenting Them to the Evaluators to Ensure Their Validity, Reliability, and Suitability for Field Application, the Validity and Reliability of the Questionnaire Were Calculated as Follows:

- **Internal Consistency Calculation:**
  - The internal consistency validity of the questionnaire was calculated after it was administered to a random sample of 20 individuals not part of the study sample from the College of Education in Iraq, by:
    - Calculating the correlation coefficient of each item's score with the total score of the axis to which it belongs. The results are presented in the following tables:

Table (1)
Correlation Coefficients for Each Item of the Questionnaire with the Total Score of the Axes to Which They Belong

Axes	Item Number	Correlation Coefficient	Significance Level	Axes	Item Number	Correlation Coefficient	Significance Level
First: Standards and Objectives of the Physics Teacher Preparation Program in Light of Modern Global Trends:	1	0.807	0.01	Fourth: Teaching Strategies, Activities, Learning Environment, Practical Applications, Technology Utilization, and AI Applications in the Physics Teacher Preparation Program:	13	0.948	0.01
	2	0.848	0.01		14	0.953	0.01
	3	0.682	0.01		15	0.824	0.01
	4	0.506	0.05		16	0.912	0.01
	5	0.572	0.01		17	0.787	0.01
	6	0.721	0.01	Fifth: Assessment Methods and Procedures (Student Learning, Course) in the Physics Teacher Preparation Program:	1	0.768	0.01
	7	0.796	0.01		2	0.879	0.01
	8	0.939	0.01		3	0.716	0.01
	9	0.814	0.01		4	0.54	0.05
Second: Curricula and Courses Offered in the Physics Teacher Preparation Program	1	0.933	0.01		5	0.612	0.01
	2	0.574	0.01		6	0.736	0.01
	3	0.88	0.01		7	0.764	0.01
	4	0.735	0.01		8	0.92	0.01
	5	0.454	0.05		9	0.777	0.01
	6	0.6	0.01		10	0.706	0.01
	7	0.884	0.01	Sixth: The Role of the Academic and Educational Department in the Professional Development of Faculty Members and Assistants in the Physics Teacher Preparation Program:	1	0.831	0.01
Third: Field Training in the Physics Teacher Preparation Program:	1	0.841	0.01		2	0.773	0.01
	2	0.859	0.01		3	0.907	0.01
	3	0.487	0.05		4	0.919	0.01
	4	0.601	0.01		5	0.881	0.01
	5	0.859	0.01		6	0.942	0.01
	6	0.84	0.01		7	0.746	0.01
	7	0.551	0.05	Seventh: The Role of the Academic and Educational Department in Ensuring Quality in	1	0.719	0.01
	8	0.61	0.01		2	0.485	0.05
	9	0.561	0.01		3	0.71	0.01
Fourth: Teaching	1	0.662	0.01		4	0.46	0.05

Axes	Item Number	Correlation Coefficient	Significance Level	Axes	Item Number	Correlation Coefficient	Significance Level
Strategies, Activities, Learning Environment, Practical Applications, Technology Utilization, and AI Applications in the Program:	2	0.538	0.05	**the Physics Teacher Preparation Program:**	5	0.668	0.01
	3	0.88	0.01		6	0.867	0.01
	4	0.892	0.01		7	0.67	0.01
	5	0.791	0.01		8	0.95	0.01
	6	0.672	0.01		9	0.906	0.01
	7	0.465	0.05	**Eighth: Policies and Procedures for the Admission of New Students:**	1	0.841	0.01
	8	0.662	0.01		2	0.807	0.01
	9	0.69	0.01		3	0.797	0.01
	10	0.659	0.01		4	0.854	0.01
	11	0.884	0.01		5	0.53	0.05
	12	0.732	0.01				

From the previous table : it is clear that the correlation coefficients were significant at the 0.05 and 0.01 significance levels, indicating a strong relationship between the scores of the questionnaire items and the total score of the axes to which they belong.

- **Calculation of the Correlation Coefficient of Each Axis with the Total Score of the Questionnaire:**

To ensure the validity of the hypothetical construct (hypothetical consistency) of the questionnaire, the correlation coefficients between the scores of the axes and the total score of the questionnaire were calculated. The following table shows the values of the correlation coefficients and their significance levels:

Table (2)

Correlation Coefficients of the Questionnaire Axes with the Total Score of the Questionnaire

Third: Field Training in the Physics Teacher Preparation Program	0.697	0.01
Fourth: Teaching Strategies, Activities, Learning Environment, Practical Applications, Technology Utilization, and AI Applications in the Physics Teacher Preparation Program	0.946	0.01
Fifth: Assessment Methods and Procedures (Student Learning, Course) in the Physics Teacher Preparation Program	0.863	0.01
Sixth: The Role of the Academic and Educational Department in the Professional Development of Faculty Members and Assistants in the Physics Teacher Preparation Program	0.912	0.01
Seventh: The Role of the Academic and Educational Department in Ensuring Quality in the Physics Teacher Preparation Program	0.94	0.01
Eighth: Policies and Procedures for the Admission of New Students	0.941	0.01

From the previous table, it is clear that the correlation coefficients are positive and statistically significant at the 0.01 level, indicating the internal consistency validity of the questionnaire.

2. **Calculation of the Questionnaire's Reliability Using Cronbach's Alpha:** The reliability of the questionnaire was calculated using the Cronbach's Alpha method. This method involves calculating the variance of the questionnaire items, which indicates the extent to which the questionnaire items are correlated with each other and the correlation of each item with the total score of the questionnaire. The results are presented in the following table:

Table (3)
Cronbach's Alpha Reliability Coefficients for the Questionnaire Axes and the Entire Questionnaire

Questionnaire Axes	Number of Items	Alpha's Reliability Coefficient
First: Standards and Objectives of the Physics Teacher Preparation Program in Light of Modern Global Trends	9	0.894
Second: Curricula and Courses Offered in the Physics Teacher Preparation Program	7	0.857
Third: Field Training in the Physics Teacher Preparation Program	9	0.879
Fourth: Teaching Strategies, Activities, Learning Environment, Practical Applications, Technology Utilization, and AI Applications in the Physics Teacher Preparation Program	17	0.936
Fifth: Assessment Methods and Procedures (Student Learning, Course) in the Physics Teacher Preparation Program	10	0.905
Sixth: The Role of the Academic and Educational Department in the Professional Development of Faculty Members and Assistants in the Physics Teacher Preparation Program	7	0.913
Seventh: The Role of the Academic and Educational Department in Ensuring Quality in the Physics Teacher Preparation Program	9	0.855
Eighth: Policies and Procedures for the Admission of New Students	5	0.793
Entire Questionnaire	73	0.982

From the previous table, it is clear that the reliability coefficients for the test dimensions ranged from (0.857 – 0.936), which are considered acceptable reliability values. The overall reliability coefficient for the questionnaire was 0.982, indicating that the questionnaire is suitable for research purposes.

6. After identifying the research sample from the faculty members of the Colleges of Education in Iraq and Egypt, the researcher obtained the necessary administrative approvals to apply the questionnaire to faculty members in these institutions.

- The researcher personally met with faculty members from the College of Education and the College of Science at Mansoura University in Egypt, distributed the questionnaire, and applied it to 36 faculty members. The questionnaires were collected over a period of two weeks, from Saturday, February 10, 2024, to Thursday, February 22, 2024. The number of fully completed and collected questionnaires was 32.
- Similarly, the researcher personally met with faculty members from the College of Education and the College of Science at Baghdad University in Iraq, distributed the questionnaire, and applied it to 32 faculty members. The questionnaires were collected over a period of two weeks, from Sunday, February 25, 2024, to Sunday, March 10, 2024. The number of questionnaires distributed to faculty members was 32, and the number of fully completed and collected questionnaires was 27.
- After completing the application of the questionnaire to the research participants in the Colleges of Education in Iraq and Egypt, the data were processed and statistically analyzed, followed by a discussion and interpretation of the results.

-Research Results:

Results related to the third question: To what extent do the two programs for preparing physics teachers in colleges of education take into account the proposed standards in Iraq and Egypt from the point of view of faculty members?

To test this hypothesis, the researcher used the "t-test" for independent samples to determine the significance of differences in the availability of the proposed standards in the implementation of the Physics Teacher Preparation Programs in the Colleges of Education in Iraq and Egypt from the perspective of faculty members. This is illustrated in the following table:

Table (4)
"T" Value and Its Statistical Significance for the Differences in the Availability of Proposed Standards in the Implementation of Physics Teacher Preparation Programs in the Colleges of Education in Iraq and Egypt from the Perspective of Faculty Members

Questionnaire Axes	Country	N	Mean	Standard Deviation	"T" Value	Degrees of Freedom	Significance Level
First: Standards and Objectives of the Physics Teacher Preparation Program in Light of Modern Global Trends	Iraq	27	33.93	4.287	0.756	57	Not Significant
	Egypt	32	33.12	3.789			
Second: Curricula and Courses Offered in the Physics Teacher Preparation Program	Iraq	27	25.83	4.626	0.378	57	Not Significant
	Egypt	32	26.15	4.457			
Third: Field Training in the Physics Teacher Preparation Program	Iraq	27	33.87	4.127	3.87	57	0.01
	Egypt	32	27.33	8.03			
Fourth: Teaching Strategies, Activities, Learning Environment, Practical Applications, Technology Utilization, and AI Applications in the Physics Teacher Preparation Program	Iraq	27	59	6.367	2.793	57	0.01
	Egypt	32	53.36	8.919			
Fifth: Assessment Methods and Procedures (Student Learning, Course) in the Physics Teacher Preparation Program	Iraq	27	33.3	3.921	3.42	57	0.01
	Egypt	32	26.7	8.872			
Sixth: The Role of the Academic and Educational Department in the Professional Development of Faculty Members and Assistants in the	Iraq	27	24.02	3.52	1.897	57	Not Significant
	Egypt	32	21.91	4.718			

Questionnaire Axes	Country	N	Mean	Standard Deviation	"T" Value	Degrees of Freedom	Significance Level
Physics Teacher Preparation Program							
Seventh: The Role of the Academic and Educational Department in Ensuring Quality in the Physics Teacher Preparation Program	Iraq	27	31.07	2.786	2.462	57	0.05
	Egypt	32	27.39	7.648			
Eighth: Policies and Procedures for the Admission of New Students	Iraq	27	15.52	1.156	0.883	57	Not Significant
	Egypt	32	15.21	1.386			
Total Score	Iraq	27	256.54	15.478	4.956	57	0.01
	Egypt	32	231.18	21.609			

From the previous table, it is evident that:

There are no statistically significant differences in the following **Axes**:

1. **First:** Standards and Objectives of the Physics Teacher Preparation Program in Light of Modern Global Trends.
2. **Second:** Curricula and Courses Offered in the Physics Teacher Preparation Program.
3. **Sixth:** The Role of the Academic and Educational Department in the Professional Development of Faculty Members and Assistants in the Physics Teacher Preparation Program.
4. **Eighth:** Policies and Procedures for the Admission of New Students between the Colleges of Education in Iraq and Egypt.

The "T" values are (0.756, 0.378, 1.897, 0.883), which are not statistically significant at the 0.05 significance level.

However, there are statistically significant differences in the following **Axes**:

1. **Third:** Field Training in the Physics Teacher Preparation Program.
2. **Fourth:** Teaching Strategies, Activities, Learning Environment, Practical Applications, Technology Utilization, and AI Applications in the Physics Teacher Preparation Program.
3. **Fifth:** Assessment Methods and Procedures (Student Learning, Course) in the Physics Teacher Preparation Program.
4. **Seventh:** The Role of the Academic and Educational Department in Ensuring Quality in the Physics Teacher Preparation Program.

5. **Overall Questionnaire Score** between the Colleges of Education in Iraq and Egypt, favoring Iraq (with higher means of 33.87, 59, 33.3, 31.07, and 256.54).

The "T" values are (3.87, 2.793, 3.42, 2.462, 4.956), which are statistically significant at the 0.05 significance level.

Therefore, we partially reject the hypothesis: "There are no statistically significant differences between the availability of the proposed standards in the implementation of the Physics Teacher Preparation Programs in the Colleges of Education in Iraq and Egypt from the perspective of faculty members."

The Rephrasing hypothesis is: "There are statistically significant differences in the availability of some of the proposed standards in the implementation of the Physics Teacher Preparation Programs in the Colleges of Education in Iraq and Egypt from the perspective of faculty members."

-Research Recommendations and Suggestions:

Research Recommendations: In light of the current research findings, the researcher recommends the following:

1. Colleges of Education in Iraq and Egypt should utilize the research literature related to modern global trends in preparing physics teachers.
2. Colleges of Education in Iraq and Egypt should benefit from the proposed list of standards for the Physics Teacher Preparation Program in their respective institutions.
3. The Physics Teacher Preparation Programs in the Colleges of Education in Iraq and Egypt should be reviewed and developed in light of modern global trends.

Research Suggestions: Based on the findings of the current research, the researcher suggests the following:

1. Conduct a study to assess the current implementation of Physics Teacher Preparation Programs in other Colleges of Education in Iraq and Egypt.
2. Conduct a comparative study of Physics Teacher Preparation Programs in Iraq, Egypt, and other Arab countries.
3. Conduct a comparative study of Physics Teacher Preparation Programs in Iraq, Egypt, and other foreign countries.

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