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The Effectiveness Of A Training Program In Light Of The Integration Of Technology With Education For Innovative Professional Development Among Geography Teachers For The Secondary Stage In Asir Region

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Abstract

The study aimed to design a training program in the light of the integration of technology with education, and to investigate its effectiveness in a program for innovative professional development for geography teachers, and to achieve the goal of the study, the developmental approach was used, through the constructivist approach, and the semi-experimental approach with a pre-dimensional design for an experimental group, and the study tools were: a list of innovative teaching skills, a note card for innovative teaching skills,[1] and a training program based on the integration of technology with education, and the experimental study sample consisted of (20) geography parameters for the stage Secondary school in Asir region, and after conducting the experiment, which lasted six weeks, and the application of study tools, it was found that there were differences between the averages of the scores of the experimental group teachers in the pre-application and their scores in the post-application in favor of the post-application at the level of planning, implementation and evaluation skills and the total degree of innovative teaching skills, and it was also found that the training program based on the integration of technology with education has great effectiveness, as the gain coefficient for Black reached (1.04).

In light of the results of the study, the researcher recommended relying on the training program developed by the researcher to improve the innovative teaching skills of geography teachers in the Kingdom of Saudi Arabia, and to enable geography teachers to apply the integration of technology in education at all stages of the teaching process, especially planning, implementation and evaluation, and to include the courses of the faculties of education with topics related to the integration of technology with education.

Keywords: *training program, integration of technology with pedagogy, innovative teaching skills, geography.*

Introduction

Education plays a pivotal role in the development of students' personalities and in equipping them to face contemporary challenges. With rapid global advancements, education systems strive to enhance critical thinking and adaptability, enabling students to apply their skills and knowledge effectively in daily life.

Recent developments in educational technology have spurred efforts to reform educational systems and improve outcomes. The integration of technology in education has emerged as a critical response to these advancements, aiming to harmonize knowledge, content, and modern technologies. Mabrouk (2021: 163) highlights that technological advancements

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challenge educational institutions to incorporate these tools into their teaching and learning processes, thereby enhancing the efficacy of educators. Al-Hanafi (2019: 482) emphasizes that a framework integrating technology in education is essential for quality teaching that utilizes modern educational techniques to enhance student knowledge in constructive ways.

Literature, including studies by Mabrouk (2021) and Al-Ghamdi (2018), underscores the importance of training teachers. Specialized, integrated training programs are crucial for educators to leverage modern technologies and meet the requirements of educational frameworks. This approach is increasingly significant in teacher preparation programs to facilitate the adaptation and effective utilization of new technologies (Bilici, Yamak, Kavak, & Guzey, 2013: 38).

In the context of the 21st century, educators are expected to adeptly integrate ICTs into the planning, design, and development of educational materials and assessments to boost student motivation and enhance performance (Munyengabe, Yiyi, Haiyan, & Hitimana, 2017: 7195).

In Saudi Arabia, the Ministry of Education has outlined essential skills for geography teachers, which include linguistic, quantitative, and digital competencies; knowledge of student learning processes; content mastery; and familiarity with curriculum and general teaching methods. These also encompass professional practices such as planning, preparing learning environments, and evaluating student performance (Education and Training Evaluation Commission).

The U.S. National Council for Social Studies (NCSS, 2018) identifies foundational elements for training geography teachers, encompassing content knowledge, educational methodologies, and technological integration, focusing on planning, design, implementation, understanding the nature of learners, and professional responsibilities.

Among the goals of modern education is to engage students' senses, providing experiences and concepts that stimulate their minds, foster enthusiasm, and enhance their effectiveness inside and outside the classroom. Therefore, teachers require innovative teaching skills to adapt to evolving educational demands.

Innovative teaching, focusing more on the quality rather than the quantity of information, is fundamental in modern education. It plays a crucial role in transforming teaching practices and positively affecting students' thinking patterns. Numerous studies have advocated for the enhancement of innovative teaching skills to improve educational outcomes (Eid, 2015; Al-Haddabi et al., 2014; Al-Ali, 2011; Sale, 2015; Asif & Rodrigues, 2015).

Schleicher (2018) notes that utilizing technology is vital for enhancing teaching performance and fostering innovative teaching methods, particularly in planning, implementation, and evaluation. Urban, Navarro, & Borron (2018: 82) argue that technological innovations support e-learning, meet contemporary challenges, and bolster teacher creativity, ultimately reflecting on students' innovative capabilities.

The integration of technology in education represents a significant trend in contemporary education. It aligns with developments in the field and enhances teachers' abilities to integrate modern technologies with content, aiming to fulfill the objectives of modern education. Such integration requires a comprehensive approach and professional training for teachers, enabling them to employ technology creatively in their teaching practices.

I. Study Problem and Questions

Recent changes within educational institutions, driven by advancements in technology, have transformed teaching methods and strategies, as well as curricula. The implementation of Saudi Arabia's Vision 2030 has further influenced the role of teachers, necessitating

greater effort in lesson planning and execution. Teachers now require innovative skills to foster creativity among students, a key goal of the Kingdom's vision, which focuses on enhancing students' critical thinking and talent development.

Burnage (2018) emphasizes that fostering student innovation is achieved through the development of teachers' innovative skills via targeted training and education. Studies have highlighted the classroom dynamics between students and teachers, where teachers often encounter challenges related to students' advancement. Innovative teaching methods have proven effective in overcoming these challenges and enhancing the quality of educational outcomes (Hamed, 2013; Student & Lopez, 2013).

Koehler and Mishra (2009) note that innovative teaching demands a deep well of knowledge. To teach innovatively, mere theoretical knowledge is insufficient; teachers must apply knowledge practically and utilize technological tools in their educational practices.

Further, research (Salam, 2018) points to a deficiency in the innovative teaching performance among geography teachers. This is corroborated by Hassan (2018), who links poor performance to inadequate training programs, with 90% of geography teachers still adhering to traditional teaching methods.

This study aims to develop a training program integrating technology with education, evaluating its effectiveness in fostering professional development among geography teachers. This research seeks to address the following questions:

1. What innovative teaching skills should be developed among geography teachers at the secondary level in the Asir region?
2. What should the training program entail, considering the integration of technology and education for geography teachers at the secondary level in the Asir region?
3. How effective is the training program in enhancing innovative teaching among geography teachers at the secondary level in the Asir region?

II. Objectives of the Study

The study aims to:

1. Develop a proposed training program integrating technology with education for geography teachers at the secondary level in the Asir region.
2. Evaluate the effectiveness of this training program in promoting innovative teaching.

III. Study Hypotheses

1. There are no statistically significant differences ($\alpha \leq 0.05$) between the pre-application and post-application average scores of the experimental group teachers on the innovative teaching skills observation card (planning, implementation, evaluation, and overall).
2. The proposed program integrating technology with education is not effective for professional development among secondary school geography teachers in the Asir region, as indicated by Black's learning rate.

IV. Importance of the Study

The findings may benefit:

- Education policymakers in Saudi universities by identifying essential innovative teaching skills for inclusion in teacher training curricula.
- Geography teachers by providing innovative professional development strategies and classroom practices.
- Researchers and educators by opening new avenues for further studies on integrating technology and innovative teaching.

V. Limitations of the Study

The study is confined within the following parameters:

1. Objective limits: Effectiveness of a training program integrating technology for innovative teaching among geography teachers in the Asir region.
2. Spatial boundaries: Limited to the Asir region.
3. Human limits: Conducted among secondary stage geography teachers in the Asir region.
4. Time limits: Conducted during the academic year 1444 AH.

VI. Terminology

- **Effectiveness:** Defined as changes in geography teachers' practices and performance in planning, implementation, and evaluation, as measured by the innovative teaching skills observation card.
- **Training Program:** Defined as a series of training activities using modern technology to develop geography teachers' innovative teaching capabilities through presentations, virtual discussions, role-playing, and interactive activities.
- **Integration of Technology with Education:** Defined as the use of strategies that merge content knowledge, educational knowledge, and technological knowledge to enhance the skills of geography teachers, thereby improving their innovative teaching skills.
- **Innovative Teaching Skills:** Defined as the teaching procedures and performances employed by geography teachers when interacting with students to foster a stimulating and creative learning environment. These skills are measured by the scores on a specially prepared observation card

Methodology and Procedures

This section of the study provides a detailed explanation of the methodology, methods, experimental design, study sample, tools, and materials in terms of design and implementation. It also includes a clarification of the statistical methods and tests used in the study.

I. Study Methodology and Method

The study aimed to construct a list of innovative teaching skills, design a note card based on this list, and develop a training program integrating technology with education. Consequently, the researcher employed multiple approaches, primarily focusing on the developmental approach.

The developmental approach, also known as the procedural approach, is crucial within descriptive methodologies. It involves studying existing phenomena and data to identify strengths and weaknesses, then developing strategies and programs to enhance strengths

and address deficiencies. This approach also measures the effectiveness of proposed solutions in improving various indicators, performances, capabilities, and skills.

Furthermore, the developmental approach encompasses several scientific methodologies, including descriptive, constructivist, and experimental approaches. In this study, the constructivist approach was used to develop the training program, and a semi-experimental design with pre-test measures was utilized for the experimental group.

II. Study Population and Sample

The study population comprised all geography teachers at the secondary level within the Asir Education Department, totaling approximately 280 teachers during the academic year 1444 AH. A random sample of 20 geography teachers who expressed interest in participating in the training program was selected with assistance from the Asir Education Department.

III. Study Tools and Materials

A. Study Tools

To achieve the study objectives, the following tools and materials were utilized:

1. **List of Innovative Teaching Skills:**
    - **Objective:** The list aims to address the first study question and assist in constructing the observation note card.
    - **Sources:** The list was prepared based on the researcher's extensive teaching experience, consultations with curriculum and teaching methods faculty members at Saudi universities, and relevant literature and studies.
    - **Adjustment and Final Form:** The initial list featured three main skills—lesson planning, organization, and evaluation—divided into 42 sub-skills. After expert reviews, it was finalized with 41 items distributed as follows: 13 in planning, 14 in organization, and 14 in evaluation.
2. **Innovative Teaching Skills Note Card:**
    - **Objective:** The note card measures the effectiveness of the training program by evaluating the performance of teachers and testing the study hypotheses.
    - **Sources:** The card was developed from the list of innovative teaching skills and relevant studies.
    - **Application and Scoring:** The card was used before and after direct observations, with scoring based on a scale from 1 to 3, and total scores for planning, implementation, and evaluation phases.

B. Study Materials

- **Training Program:** Based on the integration of technology with education, the program steps included determining objectives, formulating content, selecting teaching methods, choosing training tools, defining evaluation methods, and scheduling the implementation period.

IV. Steps to Conduct the Study

The study followed these sequential steps:

- Identifying and formulating the study problem, questions, hypotheses, and objectives.
- Reviewing educational literature and preparing theoretical frameworks.
- Developing the list of innovative teaching skills and the note card.
- Deepening the study of technology integration with education and designing the training program.
- Selecting a sample of geography teachers for the experimental application.
- Implementing the training program and note card assessments over six weeks.
- Comparing pre- and post-test scores to identify differences and derive conclusions.

V. Statistical Methods Used

Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS). The following statistical tests were applied:

- Frequency and percentage calculations.
- Cooper's equation for the stability of observation results.
- Wilcoxon test to detect differences between two correlated groups.

Presentation of Results and Discussion In this section, the researcher presents the most important findings by answering the study questions, interpreting, and discussing them in light of educational literature and previous studies. It also includes recommendations for future research.

Results Related to the First Question and Their Discussion To answer the first question, which states: "What are the innovative teaching skills required for high school geography teachers in the Asir region in light of integrating technology and education?" A list of innovative teaching skills was prepared, and the procedures and steps for preparing them were presented in light of some previous studies (Abdel-Qader, 2020; Al-Shammari, Al-Atl, and Al-Mansouri, 2019; Al-Aswad, 2018; Abdel-Razzaq, 2018). A list of innovative teaching skills suitable for high school geography teachers was developed, comprising (41) subsidiary skills, distributed into the following main skills:

- Innovative teaching skills (planning domain), comprising (13) skills.
- Innovative teaching skills (implementation domain), comprising (14) skills.
- Innovative teaching skills (assessment domain), comprising (14) skills. Table (1) shows the list of main and subsidiary innovative teaching skills:

Table (1): List of Main and Subsidiary Innovative Teaching Skills

Planning for Innovative Teaching	**Implementing the Lesson**	**Assessment**
Planning to create an educational environment that has an educational return for students.	Presenting enrichment activities that allow students to engage with others' ideas and produce new and unusual ideas.	Using questions that provoke students' thinking about the content of geography.
Providing educational situations that require the presentation of	Focusing on equipping students with the knowledge and skills to solve problems they face in academic or life situations, rather	Improvising different examples and problems from those

diverse opinions and ideas.	than presenting ready-made solutions.	presented in the study materials.
Diversifying educational goals for the educational setting that align with innovation.	Paying attention to students individually, acknowledging each one's abilities, inclinations, weaknesses, and strengths.	Encouraging students to ask questions to support innovation on the lesson topic.
Developing teaching plans for students to face open-ended situations.	Presenting scientific material by relying on various technologies that support the integration of technology in education.	Training students to think scientifically through problem-solving.
Using teaching and technological methods based on student performance in the classroom.	Allowing students a degree of freedom to work and express their opinions.	Training on self-assessment of the solutions to innovative problems and activities they present.
Using innovative methods to stimulate students' interest and develop innovation.	Using new technologies for educational purposes that support geography topics and enhance innovation.	Formulating and directing questions to students that measure higher levels of thinking.
Providing students with online environments that contribute to their knowledge and skills innovatively.	Using collaborative media and social media that enhance innovation in geography.	Using various sources and technological tools that students can use to address the problem.
Diversifying strategies, methods, and technologies used in the classroom.	Giving students the opportunity to choose aspects of activities that suit them whenever the opportunity arises.	Directing open-ended questions that require multiple answers.
Planning geography lessons as educational situations that challenge and support students' thinking through technology integration.	Identifying misconceptions that students may encounter in geography material.	Setting questions to list as many results as possible related to geography topics to support fluency.
Using the most appropriate strategy and method for teaching geography concepts.	Considering any potential individual differences during teaching.	Formulating "what if" questions to support flexibility.
Flexibility in determining the timeline for completing the learning process.	Meeting students' innovative needs by accepting unusual questions, respecting odd ideas, and directing thought-provoking questions, and being enthusiastic about students' ideas by listening to them.	Avoiding constant criticism and quick judgments on students' tasks, activities, and ideas.
Planning how to use technology to generate new concepts and ideas in geography.	Meeting students' innovative needs by accepting unusual questions, respecting odd ideas, and directing thought-provoking questions, and being enthusiastic about students' ideas by listening to them.	Providing sufficient time for students to understand the question and think about the answer.

Using various teaching methods that have proven effective in fostering innovation.	Fostering a fair competitive spirit among students.	Considering individual differences among students when directing questions.
Planning how to use technology to generate new concepts and ideas in geography.	Setting traditional and technological accompanying duties and activities that help develop innovation.	Providing opportunities for practice and experimentation without fear of the assessment style.

Results Related to the Second Question and Their Discussion

To address the second question which states: "What is the proposed framework for an innovative professional development program for high school geography teachers in the Asir region in light of integrating technology and education?" A review of several studies that targeted the development of training programs combining technology and education was conducted, including works by Abu Dayya (2021), Abdulraouf (2020), Hassan (2020), and Mohammed (2018). Specialist consultations were also held. Based on these, the researcher developed a training program generally aimed at an innovative professional development for geography teachers. The program included four units and employed various methods such as lectures, participation, group discussions, and role-playing. It utilized modern technologies, activities, drawings, videos, and scientific projects, and was implemented over a six-week training program comprising 25 lectures. The researcher clarified this in the methodology and procedures section.

Results Related to the Third Question and Their Discussion

To answer the third question, which asks: "What is the effectiveness of the training program in light of integrating technology and education into an innovative professional development program for high school geography teachers in the Asir region?" the pre-test and post-test averages of the innovative teaching skills observation card were calculated. The effectiveness was measured using Black's gain formula to test the second hypothesis: The second hypothesis states: "The proposed program, which is based on integrating technology with education, is not effective in an innovative professional development program for high school geography teachers in the Asir region as measured by Black's gain rate."

Where: P: Post-test average. S: Pre-test average. D: Total score. Table (4): Pre-test and post-test averages for the areas of innovative teaching skills and the total score

No.	**Area**	**Total Score**	**Pre-test Average**	**Post-test Average**
1	Planning	39	19.4	33.10
2	Implementation	42	20.55	35.70
3	Evaluation	42	19.90	34.25
	Innovative Teaching Skills	123	59.85	103.10

The table above shows that the total score for the innovative teaching skills observation card for geography teachers is 123, with a pre-test average of 59.85 and a post-test average of 103.10. This indicates a significant improvement in innovative teaching skills. By monitoring these indicators, the effectiveness was calculated using Black's gain formula, resulting in a gain rate higher than one, at 1.04. The researcher attributes these results to

several factors, primarily that the training program focused on educational aspects and the development of technological skills and their application in relevant teaching situations in geography. The program facilitated the exchange of experiences among the teachers themselves and between the researcher and the teachers. It introduced the teachers to their strengths and weaknesses in classroom practices and ways to enhance strengths and address weaknesses and deficiencies. Additionally, the program introduced the teachers to various teaching strategies and methods that could be used in educational situations, allowing them to choose the most appropriate strategy. The program encouraged teachers to participate, cooperate, and engage in dialogue, providing them with new ideas about social studies lessons and aiming to enhance the application of innovative ideas. Although some teachers had creative ideas, they faced difficulties in using them in planning, implementing, and evaluating lessons. Through the techniques and activities of the program, they were encouraged and made aware of ways to leverage these ideas in teaching situations and steps. These results align with many previous studies that have highlighted the effectiveness of integrating technology with education, such as the studies by Abu Dayya (2021), Hassan (2020), Abd Rabbo (2019), and Mohammed (2018).

Recommendations and Future Studies

In light of the findings of this study, the researcher recommends the following:

1. Focus on technological aspects by conducting training courses for high school geography teachers.
2. Pay attention to training geography teachers on building and using modern technological tools for creatively assessing teaching.
3. Empower geography teachers to integrate technology into education at all stages of the teaching process, especially planning, implementation, and evaluation.
4. Conduct further studies on the impact of training programs based on integrating technology into education to develop the self-efficacy of teaching among other groups of teachers and from different specialties.

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References

- Abu Diyeh, Hanaa Khamis. (2021). Effectiveness of a Proposed Training Program Based on Integrating Technology into Education (TPACK) in Developing Some Teaching Competencies (PTPDI) for Basic Stage Student Teachers at the Faculty of Education, Islamic University – Gaza. Journal of the Islamic University for Educational and Psychological Studies, Issue (29), Vol (2), pp. 469 – 501.
- Abu Talib, Fuad bin Hussein Ali (2016). Evaluation of Teaching Performance of Primary School Mathematics Teachers in Light of Innovative Teaching Skills. Journal of Mathematics Education, Issue (19), Vol (4), Part (1), pp. 130-170.
- Al-Aswad, Zahra Ali (2018). Level of Innovative Teaching Skills Among Faculty Members at Algerian Universities. Arab Journal for Quality Assurance in University Education, Issue (11), Vol (38), pp. 61-84.

- Badawi, Abeer Ali. (2018). Comparing Methods for Measuring Effect Sizes for Various Statistical Techniques with Different Sample Sizes. Journal of Scientific Research in Education, Issue (19), pp. 433 – 491.
- Al-Jamal, Sumaya Helmi Mohamed (2017). Effectiveness of a Proposed Training Program Based on Active Learning Strategies in an Innovative Professional Development Program for Basic Education Mathematics Teachers, Master's Thesis, Islamic University, Gaza, Palestine.
- Hamed, Saeed Mohamed. (2013). Effectiveness of a Proposed Training Program Based on Quality Standards for an Innovative Professional Development Program for Science Student Teachers at Education Colleges. Arab Studies in Education and Psychology, Issue (42), Vol (4), pp. 135 -168.
- Al-Haddabi, Dawood Abdul Malik, Fatima Abdul Rahman Abu Al-Asrar, and Sofyan Al-Azb (2014). Mastery Level of Ninth Grade Science Teachers in Innovative Thinking Skills and Its Relationship with Their Students' Innovative Thinking Skills. Arab Journal for Scientific Education, Yemen, Issue (2), pp. 80-112.
- Hasan, Hanan Abdul Salam (2018). Impact of a Training Program Based on Integrating Technology into Education on the Teaching Performance of Basic Education Geography Teachers. Journal of the Educational Association for Social Studies, Issue (103), pp. 221 - 253.
- Al-Hanafi, Amal Mohamed. (2019). A Program Based on the Flipped Classroom Using Smart Learning and Its Effectiveness in Developing a Model for Integrating Technology into Education and Reducing Mathematics Teaching Anxiety Among Education College Students. Journal of the Faculty of Education, Banha, Issue (120), Vol (5), pp. 479 – 541.
- Hawas, Khadra. (2017). Teaching Strategies for Critical and Innovative Thinking - Contemporary Roles for the Teacher. The Third International Conference of the Faculty of Education, October 6 University, in Cooperation with the Arab Educators Association, titled "The Future of Teacher Preparation and Development in the Arab World" - Egypt, pp. 237-253.
- Zahi, Musawir. (2012). A Vision in Innovative Teaching. Journal of Studies – Algeria. Issue (20), pp. 53 – 64.
- Al-Saht, Mostafa Zakaria. (2014). The Impact of Using the Six Thinking Hats Strategies on Geography Achievement and Development of Innovative Thinking Skills Among Second Intermediate Grade Students. Arab Studies in Education and Psychology, Issue (2), Vol (48), pp. 164-194.
- Salam, Basem Sabri Mohamed (2018). Evaluation of the Teaching Performance of Primary Stage Social Studies Teachers in Light of Innovative Teaching Skills. Educational Journal - Sohag University, Issue (55), pp. 303-342.
- Al-Shammari, Obeid Mohammed, Al-Atel, Mohamed Hamad, Al-Mansouri, Mishal Badr. (2019). Extent of High School Teachers' Practice of Innovative Teaching Skills in Kuwait in Light of Some Variables. Journal of Scientific Research in Education, Issue (20), pp. 225 – 277.
- Sabri, Rasha El-Sayed. (2019). The Impact of a Program Based on Integrating Technology into Education (TPACK) Using Infographic Technology on Developing the Production Skill and Cognitive Achievement of High School Mathematics Teachers and the Visual Generative Thinking and Mathematical Communication Skills of Their Students. Journal of Mathematics Education, Issue (22), Vol (6), pp. 178 – 264.
- Abdul Raouf, Mustafa. (2020). A Training Program in Light of the Technology Integration Education Model Framework for Developing Design Thinking and Technological Acceptance Towards the Internet of Things Among Chemistry Student Teachers at the Faculty of Education and Its Impact on Their Teaching Practices in Virtual Laboratories. Educational Journal - Sohag University, Faculty of Education, Issue (75), pp. 1717- 1850.

- Abdul Qader, Hussein Khalil (2020). Awareness Level of East Jerusalem School Teachers of Innovative Teaching Skills and Their Attitudes Towards It. Rawafid Journal for Studies and Scientific Research in Social Sciences and Humanities, Issue (4), Vol (1), pp. 60-91.
- Abd Rabbo, Sayed Mohamed Abd Allah (2019). Effectiveness of a Proposed Program Based on Flipped Teaching in an Innovative Professional Development Program and Self-Efficacy Among Mathematics Division Students at the Faculty of Education. Journal of the Faculty of Education, Banha University, Issue (30), Vol (119), pp. 129- 186.
- Abdu, Walaa Mohamed Salah El-Din (2019). A Training Program Based on the Lesson Study for an Innovative Professional Development Program and the Attitude Towards Its Employment Among High School Philosophy Teachers. Educational Journal - Sohag University, Issue (68), pp. 1-52.
- Al-Ajaji, Maryam Nasser. (2016). Evaluation of the Teaching Performance of High School English Teachers in Buraidah in Light of Innovative Teaching Skills, Master's Thesis, Faculty of Education, Qassim University.
- Al-Ali, Taghreed. (2011). The Availability of Innovative and Critical Thinking Skills Among Science Division Student Teachers at the Faculty of Education, Hodeidah, Master's Thesis, Faculty of Education, University of Sanaa.
- Azaoui, Rahim. (2008). Introduction to Scientific Research Methodology, First Edition, Dar Dijla. Baghdad, p. 103.
- Al-Omari, Faisal Yahya (2020). Impact of a Training Program in an Innovative Professional Development Program for Teachers of Gifted Students and Acquiring Innovative Productivity Skills. International Journal of Educational and Psychological Sciences, Issue (20), Vol (39), pp. 109- 138.
- Eid, Hala Fawzi (2015). Meeting the Professional Development Requirements of Faculty Members at Bisha University in Light of the Requirements Necessary for Their Current and Future Roles. Journal of the Faculty of Education - Banha University, Issue (26), Vol (102), pp. 73 - 102.
- Al-Aishi, Jamila Abdul Razzaq. (2021). Mastery Level of Science Teachers in Technological Pedagogical Knowledge According to the TPACK Model From Their Perspective in Taif Governorate. Arab Journal for Scientific Publishing. Issue (30), pp. 226 – 256.
- Al-Ghamdi, Azza Ali. (2018). Integrating Technology into Education as One of the Contemporary Models for Identifying and Evaluating Characteristics of Effective Teaching in the 21st Century. Comprehensive Multidisciplinary Knowledge E-Journal for Publishing Scientific and Educational Research, Issue (7), pp. 1 – 13.
- Fouda, Faten (2017). Development of Professional Development Programs for Commercial Science Teachers in Light of the Dimensions of the Content Knowledge and Technology Teaching Model TPACK. Arab Research Journal in the Fields of Specialized Education, Issue (5), pp. 49 – 97.
- Lafi, Fathiya Ali Hameed. (2019). Evaluation of the Performance of History Teachers at General Education Stages in Light of Innovative Teaching Standards. Journal of the Educational Association for Social Studies, Issue (111), pp. 157 – 194.
- Mabrouk, Ahlam Abdul Azim. (2021). Evaluation of Professional Performance Competencies in Light of Integrating Technology into Education and the Attitude Towards Professional Learning Community Requirements for Home Economics Teachers. Research Journal in the Fields of Specialized Education, Issue (7), Vol (33), pp. 159 – 233.
- Mahmoud, Abdul Razzaq Mukhtar. (2018). An Innovative Professional Development Program Suitable for Practicing Standards of Authentic Teaching Among Arabic Language Teachers. International Journal for Educational Research, Issue (1), Vol (2), pp. 235-383.

- The Fifth International Conference "The Future of Arab Education Reform for a Knowledge Society" (2010). Experiences, Standards, and Visions, Cairo, Arab Center for Education and Development, Arab Open University, July 13-15.
- Al-Nimer, Mohamed Abdul Qader. (2014). Mastery Level of Primary Stage Mathematics Teachers in Saudi Arabia of Innovative Teaching Skills. Journal of Scientific Research in Education, Issue (15), Vol (3), pp. 765-796.
- Educational Evaluation and Teaching Authority. (2023). Accessed on January 13, 2024. (www.etec.gov.sa)