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THE ROLE OF MODERN TECHNOLOGICAL MEANS IN RAISING THE LEVEL OF ACADEMIC ACHIEVEMENT AMONG THIRD GRADE INTERMEDIATE LEARNERS IN GEOGRAPHY(TIKRIT SCHOOLS AS A MODEL)

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Abstract
The study aimed to explore the role of using technological tools in enhancing the academic achievement of third-grade intermediate students in geography. The study employed a descriptive-analytical approach. The research tools included personal interviews with teachers and the distribution of questionnaires to assess the impact of technological tools on students' understanding and comprehension of geography. Additionally, the researcher distributed another questionnaire to teachers to gather their opinions on the role of modern technological tools in improving the academic achievement of third-grade intermediate students in geography in Tikrit schools. The key findings of the study were as follows: technological tools facilitated access to diverse resources and visual explanations, simplifying complex geographical concepts. They also enhanced modern teaching strategies focusing on understanding rather than rote memorization. The results revealed that technology effectively improved geography learning in Tikrit schools by providing diverse educational tools that simplified complex concepts and promoted self-learning in line with individual learner differences. Interactive programs and educational games created an engaging and interactive learning environment, encouraging active participation and fostering collaboration and communication among students through group projects and online discussions. The findings related to teachers indicated that the use of technology contributed to advancing modern teaching strategies that emphasize a deep understanding of geographical content over memorization. Digital tools enabled teachers to design flexible and engaging educational content that supports interactive teaching through simulation programs and 3D models. Furthermore, technology facilitated effective communication between teachers and students via online platforms and provided innovative assessment tools to measure academic achievement accurately and efficiently. The study recommended integrating innovative technological tools into the design of geography curricula to simplify complex concepts and increase student engagement with the material. It also suggested providing interactive educational programs that simulate geographical phenomena and utilize 3D models.

Keywords: Modern technological means - level of academic achievement - third intermediate grade - geography subject.

1- INTRODUCTION

In the midst of the digital revolution that the world is experiencing, modern technological means have become an integral part of the fabric of the contemporary educational process. Rapid technological advancements have led to radical changes in teaching and learning, moving away from traditional methods of indoctrination and memorization, and towards more interactive and flexible learning environments. With the increasing reliance on technology in various areas of life, there is an urgent need to invest these means effectively to improve learners' academic achievement and develop their skills to meet the demands of the 21st century.

Geography is one of the subjects that can benefit greatly from technological applications, as its nature, which combines abstract concepts (such as climate and ecosystems) with visual and spatial aspects (such as maps and terrain) makes technology an ideal tool to bring it closer to the minds of learners. Interactive tools such as digital maps, 3D simulation software, and virtual tours give the learner the ability to explore the world around them in a way that was not possible before, helping to simplify complex geographical concepts and stimulate their scientific curiosity.

In Tikrit schools, as in the rest of Iraq, the use of technology is both a challenge and an opportunity. On the one hand, there are challenges related to infrastructure and teacher training, and on the other hand, there is a huge opportunity to make a quantum leap in the quality of education. Educational software, interactive maps, and presentations, as well as the internet and smart devices, range from educational software. These tools enhance learners' ability to understand and analyze geographical concepts in depth, as well as motivate them to think critically, solve problems, and interact with educational content creatively.

1-1- Research Problem

Despite the efforts made, some learners still face difficulties in comprehending the geographical subject in traditional ways, which negatively affects their levels of achievement and interest in the subject. Hence, the problem of this research, which revolves around the evaluation of the role of modern technological means as a potential solution to these difficulties, and their ability to enhance the ability of learners to learn effectively and develop multiple dimensions in them, including the educational, interactive, analytical, and communicative dimensions, with the aim of raising the level of academic achievement from the perspective of both teachers and learners.

Based on this, the main question of the study can be posed as follows:

Is there a role of modern technological means in raising the level of academic achievement among the learners of the third intermediate grade in the subject of geography in Tikrit schools from the point of view of teachers and learners?

The following sub-questions emerge from it:

Is there an important role of modern technology in developing the educational and explanatory dimension to raise the level of academic achievement among third-grade intermediate learners in the subject of geography?

Is there an effective role of modern technology in developing the interactive dimension to raise the level of academic achievement among third-grade intermediate learners in the subject of geography?

Is there a developmental role of modern technology in the analytical dimension to raise the level of academic achievement of third-grade intermediate learners in the subject of geography?

Is there a role for modern technology in developing the communicative and cooperative dimension to raise the level of academic achievement among third-grade intermediate learners in the subject of geography?

1-2- The importance of the research

The importance of this research is highlighted by the following points:

Theoretical Importance: This research contributes to enriching the educational literature related to educational technology and teaching geography in the Iraqi context, and provides a theoretical framework for understanding the impact of different dimensions of technology (educational, interactive, analytical, and communicative) on academic achievement.

Applied Importance:

Improving academic achievement: Applying the research results can contribute to improving the academic achievement of third-grade intermediate learners in geography through the use of effective tools such as interactive maps and digital simulations.

Increased motivation to learn: The integration of technology into education creates a stimulating and enjoyable learning environment that encourages learners to explore and interact, which increases their interest in the subject.

Linking theory to practice: Modern technological tools make it possible to directly link theoretical knowledge with practical application, through simulation programs and digital models that make geographical phenomena more realistic.

Self-Skill Development: Technology helps learners acquire research, analysis, and critical thinking skills, which contributes to enhancing their abilities in self-learning and preparing for the future.

1-3- Research Objectives

This research seeks to achieve a set of main objectives, which are:

1. Exploring the role of using technological means in raising the level of academic achievement of third-grade intermediate learners in the subject of geography.
2. Identifying the reality of using modern technological means in teaching geography in Tikrit schools.
3. Analyze the extent to which learners interact with various technological tools and assess the extent to which they benefit from them.
4. Provide practical and targeted recommendations for educational decision-makers and teachers to improve the process of integrating technology into geographical education.

1-4- Research Hypotheses

To answer the research questions, the following hypotheses were formulated:

Main Hypothesis: There is a positive and statistically significant role of modern technological means in raising the level of academic achievement among third-grade intermediate learners in the subject of geography in Tikrit schools.

Sub-hypotheses:

There is an important role of modern technology in developing the educational dimension to raise the level of academic achievement among the learners of the third grade intermediate.

There is an effective role of modern technology in developing the interactive dimension to raise the level of academic achievement among the learners of the third intermediate grade.

There is a developmental role of modern technology in the analytical dimension to raise the level of academic achievement among third-grade intermediate learners.

There is a role for modern technology in developing the communicative and cooperative dimension to raise the level of academic achievement among third-grade intermediate learners.

1-5- Research Limitations

Objective Limitations: This research is limited to exploring the role of modern technological means and their impact on academic achievement in the subject of geography.

Spatial Limitations: This research was applied in a sample of public middle schools in the city of Tikrit.
Temporal Limits: This research was conducted during the academic year 2024-2025.
Human Limits: The research included a sample of geography teachers and third grade intermediate students.

1-6- Previous Studies

1.6.1. Previous Studies in Arabic

1. Study: (Abdullah 2024)**"The Impact of Modern Technological Means on Raising Academic Achievement among Secondary School StudentsE**. The study aimed to analyze the impact of the use of modern technology, such as smart boards and educational applications, on improving the levels of academic achievement, and the study followed the quasi-experimental approach, using two groups: a control and an experimental, which aimed to analyze the impact of the use of modern technology, and its results showed that the academic achievement of the group that used technology increased by 30% compared to the control group.

2. study (A. Abdullah 2024): **The Effect of Modern Technological Means on Improving Academic Achievement among Secondary School Students، Arab Journal of Modern Education, Cairo University, Egypt"**. The aim of the study is to explore the role of technology such as interactive boardsand smartphone applications in improving academic achievement, and The study used the experimental method by dividing the learners into two groups (experimental and control)، The results showed a significant increase in the performance of learners in the experimental group, and recommended the integration of technological means into the curriculum.

1.6.2 Previous studies in English

(Ivgin, A. B and Akcay, H 2024) "The role of gamified learning in boosting middle school student outcomes"- Turkey.

(Evgen, A. B. and Akcay, H. 2024) "The Roleof Game-Based Learning in Enhancing Middle School Learners' Outcomes" - Turkey.

The study aimed to explore the role of gamified learning in improving learners' outcomes in the preparatory stage, and the study used a mixed approach that includes quantitative and qualitative data collection, the results showed that game-assisted learning achieved higher levels of interaction, motivation, and achievement.

2. **(Smith, J 2024). The Role of Modern Technological Tools in Enhancing Academic Achievement.**
(Smith, 2024): "Modern Technological Tools and Their Impact on Academic Achievement".

The study aimed to analyze the impact of the use of modern technological means such as artificial intelligence and virtual reality on improving the level of academic achievement among high school learners, andthe researcher relied on the experimental approach by applying the technology to two groups, one experimental and the other control, the results showed a significant improvement in the performance of the group that used modern technology (artificial intelligence and virtual reality).

1-7- Commenting on previous studies:

Previous studies agree on the positive impact of technology on education. The current research is characterized by its focus on geography specifically, and in a specific context, the schools of the city of Tikrit, and it combines the perspectives of teachers and learners, and uses a descriptive-analytical approach to provide a comprehensive picture of reality.

1-8- Research Terms

Modern Technological Means: Procedurally defined as the set of tools, programs, and digital applications (such as computers, smart boards, the Internet, interactive map programs, and e-learning platforms) that can be used in the classroom environment to support the process of teaching and learning the subject of geography.

Academic Achievement: Procedurally defined as the level of knowledge and skills achieved by third-grade intermediate students in the subject of geography, which is measured by the scores they obtain in school tests, in addition to their ability to understand and apply geographical concepts as reflected in their responses to the research questionnaire.

2- Basic Concepts of Modern Technology

In today's era, modern technology has become an integral part of our daily lives, playing a pivotal role in developing societies and improving the quality of life. Modern technology includes a wide range of tools and technologies that rely on digital innovations and smart solutions, such as the internet, smartphones, artificial intelligence, the Internet of Things, and virtual reality. These tools facilitate communication, enhance productivity, and provide quick access to information and services.

2-1- The Concept and Importance of Modern Technological Means

2.1.1. The Concept of Modern Technological Means

It can be said that the concept of modern technology is represented by a set of tools, devices and systems that have been developed using scientific knowledge with the aim of improving the efficiency of daily human activities. UNESCO defines technology as the application of scientific knowledge in ways that enhance the development of society and contribute to finding innovative solutions to human problems.UNESCO, 2021). The concept of modern technological means lies in the tools and techniques that rely on scientific and engineering developments to facilitate human life and achieve efficiency in work. According to (Smith, J and Jones, R 2020, p:59)Prensky (2011), Modern Technology refers to digital applications that are used to meet the needs of individuals in various fields, ranging from education to communication and entertainment. The researcher concludes from the above that modern technology is the application of scientific knowledge and the development of digital tools and technologies to improve the quality of life, increase

efficiency, and solve problems in innovative ways, including smart devices, software, and systems, with a focus on enhancing the interaction between humans and the surrounding environment.(Rogers, E. M 2013, p:120)

2.1.2. The Importance of Modern Technological Means in Education

Modern technological means are considered one of the most prominent axes of progress in the contemporary world, and their importance in education lies in the following points:

Enhancing teaching and learning: Technology is transforming education from a monotonous process to an interactive and enjoyable experience. Tools such as virtual reality (VR) and augmented reality (AR) allows learners to explore distant geographical places or understand complex natural phenomena in an immersive way.(Smith and Johnson 2021, p:149)

Personalized Learning: Using technology, schools can tailor learning experiences to each learner's needs based on their level and abilities. Smart software helps analyze learners' performance and suggest personalized lessons or exercises to reinforce their weaknesses.

Facilitating communication and communication: Applications such as Zoom Microsoft Teams has become essential tools used to improve the interaction between learners and teachers. These tools offer many features, such as virtual meetings and instant sharing of educational resources. (Jones, A 2020, p:318)

Data analysis and decision-making: Data management systems allow schools to collect and analyze vast amounts of information related to learners, such as academic performance and attendance rates, which helps management make informed decisions.

2-2- Dimensions of the Impact of Technological Means on Teaching Geography

Modern technological means play an important role in promoting the teaching of geography through several basic dimensions, including:

Educational and Explanatory Dimension: Technological means help clarify complex geographical concepts and present them visually and tangibly. Use digital maps, such as Google Earth, allows learners to explore the world in three dimensions and understand geographical distributions clearly. (Buheiri 2023, p:113)

Interactive dimension: Technology enhances learners' engagement and interaction with the material, making the learning process more enjoyable and effective. Learners can use educational apps and geographic programs to conduct simulation experiments and interact with geographic data directly. (Al-Hashemi 2023, p:108)

Analytical dimension: Technological means enable learners to access tools for analyzing geographic data and using geographic information systems (GIS)GIS). This helps develop their analytical and inference skills, which enhances their understanding of geographical events and their impacts. (Sirhan 2010, p:91)

Communicative and collaborative dimension: Technology provides means to connect learners with the latest geographical developments in the world, and allows them to communicate with experts. It also facilitates teamwork through participatory learning platforms, which fosters collaboration between learners in geographical projects. (Raqiq 2024, p:66).

2-3- Raising academic achievement

2.3.1. Basic Concepts in Raising Academic Achievement

Academic achievement is one of the most important indicators of the success of the educational process, as it reflects the extent to which the learner benefits from the curriculum and achieves educational goals.

The concept of raising the level of academic achievement: It is "the process of improving the ability of learners to absorb the knowledge and skills associated with the curriculum, by enhancing interaction with educational materials and providing appropriate academic support." This concept includes the development of the academic, social, and psychological skills of learners by improving self-learning strategies and enhancing motivation.(Smith, J; Brown, T 2020, p:19)(Johnson, P 2018, p:131)

2.3.2. Dimensions of Raising Academic Achievement in Geography:

Educational and Educational Dimension: Developing interactive teaching strategies and integrating modern technologies.(Al-Sahli, S 2024, p:93)

Motivational Dimension: Linking the material to reality and providing examples from everyday life to illustrate the importance of geography. (Hassani, M. S 2020, p:215)

Environmental and social dimension: Providing a comfortable and equipped classroom environment, and encouraging parental participation.(Ghanem, L 2020, p:351)

The personal dimension of the learners: providing individual support and developing research and analysis skills.(El-Masri, I 2024, p:127)

3- Practical Study

3-1- Authenticity and Consistency of the Tool

Validity: The questionnaire was presented to a group of reviewers specialized in the field of curriculum, teaching methods, and educational technology to ensure the clarity of the paragraphs, their linguistic integrity, and their belonging to the axis assigned to them. Some paragraphs were amended based on their observations.

Reliability: The stability coefficient was calculated using Cronbach's Alpha equation on a survey sample. The value of the stability coefficient was (0.88), which is a high percentage that indicates that the instrument has a high degree of stability and reliability.

3-2- Testing research hypotheses

The first hypothesis:

There is an important role of modern technology in developing the educational dimension to raise the level of academic achievement from the point of view of learners and teachers.

From the learners' point of view:

Table (1) from the Learners' Point of View	
Value	**Variables**
0.993	Correlation coefficient (R)
0.986	Determination coefficient (R^2)
285	Degrees of Freedom (df)
200073.530	F-Test Value
0.000	Probability value (Sig.)
0.983	Coefficient value (B)
0.993	Beta-value
141.681	T value

These values indicate a very strong correlation between the use of technology and academic achievement, as technology explains 98.6% of the changes in academic achievement, with a high statistical significance that supports the rejection of the null hypothesis.

From the teachers' point of view:

Table No. (2) from the Teachers' Perspective	
Value	**Variables**
0.973	Correlation coefficient (R)
0.947	Determination coefficient (R^2)
44	Degrees of Freedom (df)
774.954	F-Test Value
0.000	Probability value (Sig.)
0.943	Coefficient value (B)
0.973	Beta-value
27.838	T value

These findings confirm a strong relationship between technology and academic achievement, with technology accounting for 94.7% of the changes, with a high statistical significance.

Conclusion: There is a convergence between the two viewpoints, as the great positive impact of modern technology in developing the educational dimension and raising the level of academic achievement is highlighted.

The second hypothesis:

There is an effective role of modern technology in developing the interactive dimension to raise the level of academic achievement from the point of view of learners and teachers.

From the learners' point of view:

Table No. (3) from the Learners' Point of View	
Value	**Variables**
0.960	Correlation coefficient (R)
0.922	Determination coefficient (R^2)
285	Degrees of Freedom (df)
3376.901	F-Test Value
0.000	Probability value (Sig.)
1.170	Coefficient value (B)
0.960	Beta-value
58.111	T value

From the teachers' point of view:

Table No. (4) from the Teachers' Point of View	
Value	**Variables**
0.955	Correlation coefficient (R)
0.912	Determination coefficient (R^2)
44	Degrees of Freedom (df)
442.974	F-Test Value
0.000	Probability value (Sig.)

1.161	Coefficient value (B)
0.955	Beta-value
21.047	T value

The data reflect a very strong correlation between the use of technology, enhanced interaction and improved academic achievement, with clear statistical significance and rejection of the null hypothesis.

The third hypothesis:

There is a developmental role of modern technology in the analytical dimension to raise the level of academic achievement among third-grade intermediate learners.

From the learners' point of view:

Table No. (5) from the Learners' Perspective	
Value	**Variables**
0.509	Correlation coefficient (R)
0.259	Determination coefficient (R^2)
285	Degrees of Freedom (df)
99.480	F-Test Value
0.000	Probability value (Sig.)
0.573	Coefficient value (B)
0.509	Beta-value
9.974	T value

From the teachers' point of view:

Table No. (6) from the Teachers' Point of View	
Value	**Variables**
0.577	Correlation coefficient (R)
0.333	Determination coefficient (R^2)
44	Degrees of Freedom (df)
21.433	F-Test Value
0.000	Probability value (Sig.)
0.643	Coefficient value (B)
0.577	Beta-value
0.000	T value

The result indicates a moderately positive relationship between technology and academic achievement within the analytical dimension, with a greater belief by teachers in the impact of technology according to statistical values.

Fourth Hypothesis:

There is a role for modern technology in developing the communicative and collaborative dimension to raise the level of academic achievement.

From the learners' point of view:

Table No. (7) from the Learners' Perspective	
Value	**Variables**
0.112	Correlation coefficient (R)
0.013	Determination coefficient (R^2)
85	Degrees of Freedom (df)
3.626	F-Test Value
0.048	Probability value (Sig.)
0.121	Coefficient value (B)
0.112	Beta-value
1.904	T value

From the teachers' point of view:

Table No. (8) from the Teachers' Perspective	
Value	**Variables**
0.973	Correlation coefficient (R)
0.947	Determination coefficient (R^2)
44	Degrees of Freedom (df)
774.954	F-Test Value
0.000	Probability value (Sig.)
0.943	Coefficient value (B)
0.973	Beta-value

27.838	T value

The results reflect a wide difference between learners and teachers, with teachers seeing a strong and high impact on the relationship between technology and academic achievement in the communicative and collaborative dimension, while learners present a weak but statistically significant correlation.

3-3- Results of Interviews with Teachers

The interviews confirmed the quantitative findings and added important qualitative dimensions. Teachers were unanimous on the following benefits:

Addressing individual differences: Technology allows for the delivery of diverse content that suits different levels of learners.

Save time and effort: Tools like presentations and ready-made online resources save the teacher preparation time.

But they also pointed to key challenges:

Poor infrastructure: Lack of computers, slow internet in some schools.

The need for ongoing training: Some teachers feel that they need to constantly develop their technological skills to keep up with developments.

Curriculum intensity: The teacher may not find enough time to effectively integrate technological activities.

RESULTS

Based on the previous analysis, the research concluded the following results:

There is a positive and effective role of modern technological means in its four dimensions (educational, interactive, analytical, and cooperative) in raising the level of academic achievement in the subject of geography among the students of the third grade of intermediate in Tikrit schools.

The educational and explanatory dimension is the most influential from the point of view of teachers and learners, which emphasizes the importance of visual tools in teaching geography.

The application of technology in Tikrit schools faces challenges related to infrastructure and the need for continuous training of teachers.

RECOMMENDATIONS

In light of the findings, the research recommends the following:

To the decision makers at the Ministry of Education:

Infrastructure development: The need to equip schools with the necessary technological infrastructure, such as computers, smart boards, and high-speed internet service.

Curriculum Modernization: Integrating innovative technological means into the design of geographical curricula in a formal manner to simplify complex concepts and increase learner engagement.

For Teachers and Educational Supervisors:

Training and Professional Development: Organize specialized and ongoing training courses for teachers on how to integrate the latest technological tools (e.g., GIS, simulation) into teaching strategies.

Enable Active Learning: Encourage teachers to use technology to activate active learning and project-based learning strategies.

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