



**Cambridge**  
International

**Professional Research Thesis**

**Titled**

*The role of modern technology in improving the  
educational process.*

**Researcher**

*Mohammed abdelasslam Mohammed ali alahoul*

**Supervisor signature**

**2025**



## Introduction.

*Over the past few decades, the world has witnessed an unprecedented technological revolution that has transformed various aspects of life, with education receiving a significant share of these changes. Modern technology has become an integral part of the educational process's infrastructure and an effective tool in developing teaching methods, enhancing efficiency, and achieving educational goals. This technological advancement is reflected in the diversity of educational tools and methods, such as e-learning, smart classrooms, interactive education, and digital platforms, which are increasingly utilized across educational institutions at various levels. As a result of this expansion, there is an urgent need to study the effectiveness of these tools in improving the quality of education and their alignment with desired educational objectives, especially amidst the rapid changes in labor market requirements and the skills needed for the 21st century.*

*The challenges facing traditional education, such as overcrowded classrooms, shortages in qualified educators, and disparities in students' academic levels, have prompted researchers and specialists to seek alternative solutions to ensure effective and inclusive education. This has highlighted the importance of integrating modern technology into education as a strategic option to address these issues. Technology provides a flexible and motivating learning environment, enabling students to access knowledge resources anytime, anywhere, while equipping teachers with diverse tools to deliver content in more interactive ways tailored to different learning styles.*

*With growing global interest in developing educational systems, many countries and educational institutions have adopted policies and regulations to promote the use of modern technology in education, contributing to improved learning outcomes, ensuring equitable access to knowledge, and enhancing both academic and administrative performance. However, despite this progress, several challenges hinder the optimal utilization of technology, including weak digital infrastructure, insufficient training for educators, and the lack of a comprehensive strategic vision for integrating technology into education.*

*Based on this background, this study aims to shed light on the role of modern technology in improving the educational process by analyzing the most significant technological applications used, measuring their impact on educational quality, identifying key obstacles to achieving their full potential, and proposing practical solutions to advance education in alignment with modern requirements. The study seeks to provide a scientific framework to assist educational policymakers in adopting effective strategies to optimize technology use in education, fostering sustainable human and intellectual development.*

## The study Problem.

*Despite the remarkable advancements in modern technology and its increasing use in various aspects of life, particularly in education, the actual integration of technology in educational institutions remains below expectations, especially in many developing countries. Field experiences and scientific studies have revealed a gap between the potential of modern technology and its actual utilization in improving the educational process. Although technologies such as e-learning, interactive whiteboards, and learning management platforms have been introduced, their actual impact on educational quality remains limited in many cases due to factors such as weak infrastructure, lack of professional training for teachers, or the absence of clear educational policies to regulate and support their use.*

*The issue becomes more complex due to a lack of sufficient educational awareness among some stakeholders about the true potential of technology in advancing education, whether in improving teaching methods, increasing student motivation, or fostering critical thinking and self-learning skills. Additionally, there is a noticeable disparity in technology adoption among schools and educational institutions, which widens the digital divide among students and negatively impacts the principle of equal educational opportunities.*

*In light of the above, there is a pressing need for an in-depth study to examine the reality of modern technology use in the educational process, determine its actual contribution to improving the learning environment, and identify the main challenges hindering its full utilization. The study also aims to analyze the dimensions of this problem in its practical context*

*and explore ways to effectively and sustainably activate the role of modern technology to positively impact educational quality and outcomes.*

## The importance of studying:

*The significance of this study stems from the growing impact of modern technology in shaping the educational process in the current era, where technology has become a critical factor in improving educational quality and expanding its horizons. With the rapid transformations occurring in digital and intellectual domains, it is essential to understand how these technological capabilities can be effectively utilized to serve educational goals and overcome the traditional challenges that have long hindered the development of this vital sector. Thus, this study emerges as a scientific contribution aimed at providing a clear, methodologically grounded vision of the role of modern technology in advancing the educational environment and enhancing its efficiency.*

*The study's importance extends beyond theoretical aspects to include practical and applied dimensions, as it seeks to provide a realistic analysis of the effectiveness of technology use in the educational field, focusing on factors that either promote or hinder this use. It also aims to equip educational policymakers, school administrations, and teachers with a knowledge framework to make more informed and effective decisions regarding technology integration in education. Consequently, this study is not merely an addition to educational literature but serves as a tool that can be built upon to formulate educational strategies more responsive to the demands of the digital age.*

*Furthermore, the study's significance lies in the increasing need to develop flexible educational models that align with social and technological changes, particularly after global experiences during crises, such as the COVID-19 pandemic, which clearly exposed the digital divide among*

*educational systems and underscored the necessity of investing in technological infrastructure and developing the skills of educators and students in using digital educational tools. From this perspective, the study represents a significant contribution to understanding the current reality, anticipating the future, and laying the foundation for a more inclusive and advanced education system.*

## Objectives of the study:

1. *Identify the most significant forms of modern technology used in the educational process.*
2. *Analyze the impact of using modern technology on the quality of education and its outcomes.*
3. *Determine the readiness of educational institutions to adopt technology in education.*
4. *Explore the role of teachers and students in activating technology use within the educational environment.*
5. *Identify the main obstacles limiting the effectiveness of modern technology use in education.*

## Study hypotheses and questions.

### ***Research Questions***

- 1. To what extent is modern technology used in the educational process within educational institutions?*
- 2. What is the impact of employing modern technology on the quality of education and its outcomes?*
- 3. How ready are the infrastructure and educational staff to use technology in education?*
- 4. What role do teachers and students play in activating technology within the educational environment?*
- 5. What are the main obstacles limiting the effective use of technology in education?*

### ***Research Hypotheses***

- 1. There is a positive impact of using modern technology on the quality of the educational process.*
- 2. There is a relationship between the readiness of technological infrastructure and the level of technology integration in education.*
- 3. Training teachers to use technology contributes to improving the efficiency of the educational process.*
- 4. Students' participation in using technology positively affects their academic achievement.*

## Study Approach.

*The study employs the descriptive-analytical approach to explore "the role of modern technology in improving the educational process."*

**The limits of the study:**

**Spatial boundaries:** *The Arab World*

**Time limits:** 2025-2003

## **Study plan.**

*The research plan is organized as follows, consisting of several chapters, sections, subsections, and a conclusion:*

### ***Chapter One: Theoretical Framework and Scientific Concepts Section One: Introduction to Understanding Educational Technology***

- 1. The Concept of Educational Technology*
- 2. The Relationship Between Educational Technology and Information Technology*
- 3. Theoretical Foundations of Educational Technology*

### ***Section Two: The Concept of Modern Educational Strategies***

- 1. Definition of Strategy*
- 2. The Difference Between Education, Teaching, and Learning*
- 3. Active Learning Strategy*

### ***Chapter Two: Some Modern Technologies Used in Education Section One: Educational Holograms***

- 1. What is a Hologram? What Are Its Types?*
- 2. Types of Holograms*
- 3. History and Benefits of Holograms*

### ***Section Two: The Use of Hologram Technology in Education***

- 1. Characteristics and Advantages of Holograms*
- 2. The Use of Holograms in Education*
- 3. Some Applications of Holograms in Schools*

### ***Section Three: Arduino Technology***

- 1. What is Arduino Technology?*
- 2. Its Importance and Uses*
- 3. The Use of Arduino Technology in Education*

### ***Section Four: The Role of Modern Technology in Advancing Education***

- 1. Modern Technology: Concept and Characteristics*
- 2. The Role of Modern Technology in Improving Educational Quality*
- 3. Traditional Education vs. Modern Education*

## Conclusion.

*The educational field can no longer ignore the wave of scientific and technological progress to build a strong society capable of facing challenges, keeping pace with new and beneficial developments, and catching up with human intellectual innovations. Therefore, the Ministry of Education has emphasized adopting the most effective methods and strategies to advance the educational process, including integrating technology into education.*

*Effective integration of technology into the educational environment will enhance students' academic and professional progress and increase opportunities for communication between the school community and the external society, enabling students to adapt and harmonize with a learning environment aligned with their needs and the advancements in society.*

*Moreover, integrating technology into education is no longer as challenging as it once was; it has become a feasible process, as the vast majority now possess personal and portable technological devices that can be dynamically linked to the learning process, supporting education and enhancing the desired efficiency and effectiveness in the educational environment.*

## Results:

1. *Integrating modern technology into the educational process increases student engagement and interaction.*
2. *Incorporating modern technologies into education improves the performance of both teachers and students in the educational process.*
3. *The use of technology in education has eliminated educational boundaries, allowing students and teachers to collaborate in real-time using advanced educational technologies.*

## Recommendations:

*Based on the findings of this study, the following recommendations are proposed to maximize the benefits of modern technology in education:*

- 1. Educational systems must prioritize educational technology and technological standards, initiating high-quality projects to achieve the desired transformation for quality education.*
- 2. Prepare teachers in colleges of education and equip them with modern teaching practices and educational trends based on technological standards.*
- 3. Provide teachers with thorough training to fulfill their roles effectively in the era of information and technological advancements.*
- 4. Leverage educational technology standards.*
- 5. Utilize technological programs to integrate technology into general education curricula.*
- 6. Focus on studies and keep abreast of the latest developments in educational technology.*
- 7. Work to reduce the obstacles teachers face in using modern technology.*
- 8. Activate electronic archiving for student and teacher records in schools to facilitate easy and efficient access when needed.*

## The reviewer:

- 1- أحمد محمد سالم ، الوسائل وتقنيات التعميم"1"، مكتبة الرشد ، الرياض 2011 .
- 2- أحمد منصور ، تكنولوجيا التعليم ، الجنادرية للنشر والتوزيع ، الأردن ، الطبعة الأولى 2015.
- 3- عبد الجواد الطيبي ، تقنيات التعليم بين النظرية والتطبيق ، دار قدسية ، الاردن ، الطبعة الأولى ، 1992.
- 4- عبدالعظيم الفرجاني ، التكنولوجيا وتطوير التعميم ، دار غريب لمطباعة والنشر والتوزيع ، مصر ، الطبعة الأولى ، 2002م
- 5- عبد الله الصوفي ، التكنولوجيا الحديثة والتربية والتعليم ، مؤسسة الوراق للنشر والتوزيع ، الاردن ، الطبعة الأولى ، 2002 .
- 6- محمد السيد ، الوسائل التعليمية وتكنولوجيا التعليم ، الاردن الطبعة السادسة ، 1985.
- 7- محمد محمود الحيلة ، تفريد التعليم ، ، دار الفكر ، الاردن ، الطبعة الثالثة ، 2017 .
- 8- مصطفى نمر دعمس ، تكنولوجيا التعلم وحوسبة التعليم ، دار غيداء ، الأردن ، 2019 .
- 9- مها تاج السر كرار الريح ، تكنولوجيا التعليم ، الجامعة العربية المفتوحة ، الكويت ، الطبعة الثانية ، 2004.
- 10- نرجس العميان ، استخدام التقنية الحديثة في العملية التعليمية ، مجلة كلية التربية الأساسية للعلوم التربوية والإنسانية بجامعة بابل ، ع11 ، ص113- 111، 1131

11-نيوباي, تيموثي ج; ستينيش, دونالد أ ; وآخرون .( ترجمة د.سارة العريني ) ، التقنية التعليمية  
للتعليم والتعلم ، دار جامعة الملك سعود للنشر الرياض ، 2011.

## Foreign references:

1-GUDANESCU, Nicoleta. *Using modern technology for improving learning process at different educational levels. Procedia-Social and Behavioral Sciences, 2010, 2.2: 5641-5645.*

2-MAKAROVA, Elena A.; MAKAROVA, Elena L. *Blending pedagogy and digital technology to transform educational environment. International Journal of cognitive research in science, engineering and education, 2018, 6.2: 57.*

3-SIMUFOROSA, Magwa. *The impact of modern technology on the educational attainment of adolescents. International Journal of Education and Research, 2013, 1.9: 1-8.*

4-SMITH, Wm; FLINT, Ed. *Modern Technology in Foreign Language Education: Applications and Projects. The ACTFL Foreign Language Education Series. National Textbook Company, 4255 West Touhy Avenue, Lincolnwood (Chicago), IL 60646-1975., 1991.*