Modern Technology in Teaching Science

Doaa Anis Elshafey , **Esraa Abdel Rehim Gana**, **Manar Ahmed Mohamed**, **Manar Khaled Youssef**, **Mariem Gamal Mohamed**, **Menna Allah Khaled**, and **Menna Allah Mohammed Samir**

Supervisor: **Dr**.**Eman Mohamed Assem**, **Assistant Professor of Solid State Physics**.

Ain Shams University, **Faculty of Education**, **Bachelor's degree in Science and Education** (**Primary**), **Science**.

Abstract

The study aims to investigate the impact of the use of and employing of technology in teaching in schools on the quality of the educational process. Which achieves many benefits, including helping students enjoy learning, encouraging the learner to innovate, implementing cooperative learning, and taking into account individual differences among students. To achieve the objectives of the study, we relied on applying periodic tests after explaining the lessons. The study tools were applied to the female students of Umm Kulthum Primary School in several classes for two groups of female students. The explanation was given to the first group in the traditional way and to the second group using modern technological means. The study came out with a set of results, the most important of which is the necessity of using and employing technology to increase the effectiveness of the educational process and improve students' absorption and understanding, especially in the primary and middle stages, where artificial intelligence applications were used, such as chat GPT, and programs for developing lesson evaluations based on artificial intelligence, as well as PowerPoint. And other tools such as smart boards, electronic games, and virtual laboratories. We applied these tools to students through the school's media lab. We conducted tests for the students, and their grades were monitored. The research recommends the importance of using technology in schools, especially in basic education.

Key Words:

 Artificial intelligence – Chat GPT – Evaluation program – Electronic games – Smart board.

1.

Introduction:

The era we currently inhabit is referred to as the "age of speed." Yes, we live in a time where anyone can quickly use technology to search for anything and find answers or solutions. Every gadget we use now contains cutting-edge technology since it has grown more widely available and integrated into every aspect of our lives (Lim, Educational Technology: How Important Is It In Today's Education Industry?, 2021).
Several technologies

Because it enables teachers to incorporate new tools and technologies into their lessons and enhance the learner-centeredness of their teaching, educational technology plays a critical role in education today. More over It helps educators involve their pupils in fair, creative, and distinctive ways. Consequently, we employed technology and those methods in science education, particularly with artificial intelligence (AI). One of the instruments we employed was artificial intelligence (AI), which has numerous applications, including PowerPoint, GPT chat, assessment software, and other tools like instructional films, computer games, a virtual laboratory, and a smart board. Artificial intelligence can be divided into two primary categories: strong artificial intelligence and weak artificial intelligence. Strong artificial intelligence refers to the development of systems with general cognitive skills that can comprehend and solve problems in a wide range of domains, while weak artificial intelligence refers to specialized systems built to perform specific tasks, like speech recognition or machine translation (Orcales, 2024).

 A variety of AI-based techniques were used in this investigation, such as the following: PowerPoint is a widely used presenting tool in many fields, including education. It provides an abundance of features and capabilities that are useful for creating visually beautiful and instructional presentations, especially in the educational sector, where it improves the efficiency of the educational system and facilitates teaching and learning for all parties involved. Both educators and learners. Chat GPT is an artificial intelligence technology created by Open AI that facilitates conversational dialogue. Using machine learning methods, this highly efficient chatbot processes and analyses large amounts of data to provide solutions to client inquiries. The software for language processing is capable of understanding spoken and written human language, which enables it to identify input and decide what has to be output. "Students can ask questions, and ChatGPT will provide them with a variety of formats for a clear, succinct response. For example, you could ask, "Explain how climate change affects endangered species (Chat GPT, 2024).
." The smart board is an additional example of contemporary technology that has multiple applications and assists in displaying earlier tools like PowerPoint and films. Teachers have a lot of chances in the classroom with smartboards. The presence of a program like Smart Note Book, which allows us to add activities for students, post them on the board, and process information in a

variety of formats, sets the smart board apart from other writing surfaces and helps teachers draw students' attention through engaging lessons that make the content more lively (Esther Bouchillon, 2023).

One of the educational methods that relies on modern technology and has been very successful in attracting the attention of students, especially in the early educational stages, is electronic games. The use of games in education is considered one of the most effective means of attracting learners' attention. Educational theories confirm that attracting attention is more important than encouragement in the learning process. Therefore, educational games help to focus the information and stick it in the minds of students due to their ability to attract students' attention while using them (Abdedaem, 2017).

Another type of modern technology that is used in the education system is known as a virtual laboratory, or virtual learning and teaching environment, aimed at developing students' laboratory work skills. This environment is located on a website on the Internet. This site usually includes a main page and has a number of links or icons (tools) related to laboratory activities, their achievements, and their evaluation. An electronic board on the computer or phone in which the scientific experiments requested by students are simulated at school and university. It may remain in two dimensions, as in traditional competitions on the phone, or it may be a three-dimensional experience available through VR technology. – Using the latest technologies to carry out experiments instead of devices that may be somewhat outdated in real laboratories gives students the opportunity to keep up with modern

developments and technologies. (What are virtual labs? Why is it important right now?, 2024).

E-assessment, which offers a variety of techniques beyond conventional pen and paper evaluations, makes use of information technology to evaluate performance and monitor student learning. By utilizing digital platforms like online tests, interactive simulations and automatic grading systems, it seeks to overcome the drawbacks of traditional assessment methods. This method improves the evaluation process's efficiency, adaptability, and accessibility while giving teachers insightful knowledge about their students' development and opportunities for growth (Fanus van Tonder, 2018).

We chose this topic especially since e-technology is essential to enhancing the educational system and gives instructors and students access to a wide range of creative and new teaching tools. Because it's critical to address the issues and challenges students have when learning science using conventional techniques. The purpose of this study is to determine the value and benefits of technology in education, as well as the most useful tools and methods for utilizing them to get the best outcomes for students in the classroom.

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2. The Theoretical Framework

By reviewing previous studies of interest in the research topic, we found the following:

1– Educational technology and its importance.

Increasing the variety of experiences that the student is given: With the help of the instructional strategies offered, the student can broaden his experience by practicing, observing, listening, and

thinking. Review the instructional materials on a regular basis. The incorporation of educational technology into the process guarantees the introduction of regular and efficient updates, hence guaranteeing increased efficacy of the educational process. assisting in retaining the course through the application of contemporary educational research. the efficiency and influence needed to meet the targeted learning objectives. The components of educational technology are as follows: Theory and practice: All of the information and systems that are taught are founded on certain theories and useful techniques that give the student the necessary concepts and tenets. Techniques: These are the approaches and calculated measures. utilized in educational materials and gadgets, as well as by individuals. Locations: the setting where students engage with educational materials, such as a lab or school facility ((Amin, 2022).

2: **Effects of Technology on Student Learning**. The purpose of this study is to examine the impacts of utilizing technology to enhance student learning. As a result of technology's continuous advancement, more and more classrooms are incorporating it into our children's curricula. Technology's convenience and support for learning possibilities can be advantageous to students. Technology can have a positive or negative impact on children's motor development and problem-solving skills, so more education is necessary. Given to teachers and students to improve the way technology is integrated. The researchers report that a survey was administered to kindergarten through twelfth grade instructors to get their perspectives on the ways in which technology is changing their classrooms. To examine the effects, the researchers used a mixed-method approach.

information for as long as feasible. Utilizing both human and non-human resources, educational technology is an integrated system that plans, assesses, and guides the educational process to meet the goals of education

To gather data, a survey was created and sent using Qualtrics. There were fourteen different question formats in the study. like Likert scales, multiple-choice, and open-ended questions. Plano & associates (2010). Descriptive statistics such arithmetic means, standard deviation, and percentages were used to analyze the data. The study's findings show that there are a lot of advantages and disadvantages to utilizing technology in the classroom. Teachers felt that students' desire and participation rose with the use of technology, although they needed more training on the available technology. The study showed that the good benefits outweighed the negative ones. Technology use also results in increased training for teachers.(Mohamed; Al-Bataineh & Adel, 2021).

3: **Impact of modern technology in education**. Many believe that technology is a gift from God that has shaped civilizations, the arts, and the sciences. It has had a tremendous impact on many facets of life, revolutionizing the way we live. Modern technology has significantly changed education, increasing the effectiveness and interactivity in learning. Internet connectivity helps students nowadays since it gives them access to a multitude of educational resources. Projectors and other visual aids improve learning experiences, and digital platforms allow for constant connectivity. Also, flexible study alternatives are provided via online degrees. All things considered; technology is

now a vital instrument in determining the direction of education.

Impact of ICT on education: ICT tools aid in the computation and analysis of information, which has a significant impact on students' and teachers' knowledge acquisition. ICT promotes communication and collaboration between educators and students, irrespective of the physical distance separating them. Additionally, it gives students the opportunity to collaborate in groups and engage with individuals from other cultural backgrounds. Instead of having pupils memorize facts and perform rote learning, ICT allows them to discover and learn through innovative teaching and learning methods that are supported by constructivist learning theories (Harwati Hashim, 2021)

4: **lmpacts of digital technologies on education and factors influencing schools' digital capacity and transformation**.

The impact of digital technology on education and the factors influencing schools' capacity to implement and adjust to digital change. Digital technologies have brought about a shift in the character and scope of education, compelling educational systems to implement global information technology integration strategies. The study aims to show the extent to which digital technologies have altered the nature of education and have impacted the global adoption of technology. This has been used to highlight the shortcomings of the technology. The most important aspect of technology is the lack of expertise of educators, the decline in digital capabilities, etc., and finding methods to make real improvements in this technology before investing in it.(Stella, et al., 2022).

5: **Impact of modern technology on students' performance**.

educational outcomes Impact of modern technology on students' performance

The impact of educational technology in terms of ease of use indicates that students perceive technology-based education as somewhat accessible and convenient, with certain aspects being more favored than others. For example, easily downloadable applications and free programs are highly regarded, while aspects like access to the internet at the university and the placement of homework assignments on Moodle are less favored. In terms of perceived usefulness, students generally find technology-based education beneficial, with features such as creating and innovating using technological facilities, the online availability of instructors for assignment feedback, and opportunities for critical thinking and creative solutions being highly valued. Additionally, interactive assessment tools like Cahoots and engaging activities such as gamification in lessons are appreciated, while participation in online games in class is seen as less motivating. It can be concluded that technology has become an additional common feature of education globally over the past twenty years. Educational technology has evolved as a teaching tool, then as a learning aid, and finally, as a systems approach. Instructors are responsible and committed to finding innovative ways to generate improved learning situations for the students. The findings of the study can be used as a basis for future research about the relationship between e-learning and effective educational (Maryam , Anjum , Allam, & Anji, 2019).

6: **Effect of Technology Use in Education**.

Students today are greatly impacted by technology. This gives teachers a fantastic chance to include students by using tools, applications, and online resources that match their interests. The secret is to carefully choose these resources and skillfully incorporate them into the educational process. Still, it's difficult to define technology integration in the classroom precisely. Here's a viewpoint: A continuous process of effective technology integration helps students become adept at selecting the right resources to: Learn effectively by looking for, assessing, and choosing trustworthy web sources. Examine the material critically, noting connections and important details. Create new concepts and connections between knowledge to synthesize it. Present information using a variety of technology tools in a clear, timely, and professional manner. It's important to keep that in mind. Clearer titles and topic focus are improvements. enhanced flow and sentence structure. a focus on the viewpoint and skill development of the learner. Reiterating the use of technology to accomplish learning goals. (Shahnawaz & Salah, 2018).

7: **The development of the concept of technology and its use in the educational process**.

Technology is a concept that changes from time to time. This is the idea behind educational technology. The term refers to the tools used in the educational process, regardless of its complexity, manual or automatic nature, individual or collective, etc. This means that educational technology encompasses a wide range of machines, devices, supplies, and equipment, from the classic blackboard to cutting-edge instructional techniques, each with unique benefits and drawbacks. The qualities, balance, and goals of each of these technologies, as well as the conditions surrounding their use, functioning, and employment in the educational setting, determine how effective they are and how much of an impact they have on education.

Educational technology is the technological, scientific, and useful method that an educator uses to carry out his duties in a more thorough manner. From here on, we can clearly see the role that instructional technology plays—it involves more than just employing tools and machines. The most crucial thing is to employ the system's methodical approach, which forms the basis of these robots' operation, to do particular tasks with great efficiency. Consequently, instructional technology offers the instructor a service that enables him to do his tasks more effectively and with less effort.

Generally speaking, there are four main phases that the idea of instructional technology went through during its development: the phase in which learning through the senses is addressed, and the notion of visual or auditory education is used. In order to support instruction and speed up the learning process, the educational approach was employed in the second stage. The third phase This phase is known as communication, and communication is the process or means by which information is shared among individuals until it is made available to the general public. Systems are the fourth step, although a system is made up of a number of connected, interacting parts that cooperate to accomplish a particular objective.

Components of educational technology: Comprising the following components, educational technology is an integrated system:

1. The human being: Without him, the educational process would not be able to be finished. He is the key component in this process. He is the target that the educational establishment aims to achieve; he is also the instructor and the pupil.

2. The machine: Everything in life, at home, at school, etc.—is managed by the machine. Similar to computers and calculators, it saves a person money, time, and effort.

3. Ideas and opinions: In order for the machine to function and aid in the dissemination of information, ideas and opinions are required.

To assist us in spreading information and enable the machine to accomplish its objectives, ideas, and opinions are needed.

Strategies: Since ongoing strategy development is one of the key components of technology, they are the tools individuals use to create things that are appropriate for the objectives to be met. (Sabah Soleimani, 2013).

3. Methods of Research and the tools used

The descriptive approach was used in writing this research, as it is the most prominent method used in scientific studies, master's and doctoral studies, and all scientific research methods in general, because it contributes greatly to identifying the phenomenon of the study, placing it in its correct context, and interpreting all the circumstances surrounding it.

The descriptive method is a method of studying scientific phenomena or problems by carrying out an accurate description in a scientific manner and then arriving at a logical conclusion that has

evidence that gives the researcher the ability to set specific frameworks for the problem, and this is used to determine the results of the research (Saif Islam Saad, 2009)

The tools used were as follows:

Chat GPT

Chat GPT has emerged as artificial intelligence's poster child quite rapidly. The AI chatbot, which is used by millions of people, can write web code, tell stories, respond to inquiries, and even conceptualize extremely complex subjects.

The AI tool, created by OpenAI, has undergone numerous modifications since its first release. In addition to a free version, the chat GPT Plus and its Enterprise versions are commercial versions that are offered. Anyone can use the chat GPT website to access the free version of Chat GPT (GPT–3.5). To begin exploring the depths of the AI model, all you need to do is register for a login. Additionally, Chat GPT is accessible on Apple and Android smartphones.

Since its first release, Open AI's AI tool has undergone a number of changes. Apart from the free version, there are two commercial versions available: ChatGPT Plus and ChatGPT Enterprise. A free version of Chat GPT (GPT–3.5) is available to anyone via the Chat GPT website. All you have to do is create a login in order to start delving into the AI model. Chat GPT is also accessible on Apple and Android–powered devices (Alex , 2023).

Benefits include increased accessibility to education. It helps with homework completion. Offers support to the instructor. Assists in preparing for exams. Work out the mathematical equations. Translate into other languages. Debug and correct

the code. Compose a poem or tale. Sort things into categories (SNEHNATH , 2024).

Plagiarism is a possibility and should be avoided at all costs. Chat GPT has trouble with more complicated concepts or problems, even though it can produce information on straightforward subjects fast and accurately. Users need to be aware that Chat GPT is still in its learning phase and may not always yield flawless outcomes. It can be useful in terms of learning, but it also implies that the tool might not always produce the most appropriate or accurate answers. It is obvious that inconsistent material could result in mistakes or misinterpretations, which could have a detrimental effect on the user experience. For optimal results, The user must receive extensive training and fine-tuning.

Lack of Academic Integrity (SAYVEE, 2023).Provides inaccurate information.

Limited Knowledge.

Smart board:

David Martin and Nancy Norton began thinking about using the smart board in 1987 in Canada at one of the major companies. Then they conducted research and produced the first smart board. (Smart board in Egypt, 2023).

It is considered one of the most important technological tools in educational media, especially after the change from the traditional system of receiving information from a system using technology. We have shown that technology creates an attractive and flexible environment.

The smart board, or interactive whiteboard, is a special type of sensitive interactive whiteboard or board that...

It is handled by touch, and the smart panel is used to display applications such as videos, movies, PowerPoint, and others on the screen.

Which contributes directly to enriching the educational material by adding dimensions, special effects, and distinctive programs that help expand the learner's experiences and satisfy his needs (Belalia & Nebih, 2021).

Advantages of using the smart board

- You define the general goal, clarify it, and simplify ideas, as well as explain complex concepts.
- It helps the teacher to use most teaching aids with visual, kinesthetic, and auditory approaches.
- It helps the teacher explain and present lessons through virtual laboratories.
- Enhance the content of the presentation tools it includes.
- Arouse the student's attention and stimulate his motivation by using more than one sense during the educational presentation.
- It can easily save and print the whiteboard of educational content and return to it easily.
- – Presenting the lesson in an interesting and different way with students interacting with the content by writing on it, moving and moving it Drawings and shapes.
- It makes it easier for slow learners to benefit from it in designing and using symbols and images.

- The smart board addresses individual differences among students (Belalia & Nebih, 2021).

A smart board is more expensive than a regular board, and the cost is not one number that fits everyone. It varies according to several factors, such as screen size, brand, and others (Anish, 2024).

Disadvantages of smart boards
- The cost of the smart board is higher than that of the traditional board.
- You must practice on the smart board because it does not tolerate many mistakes.
- You need specific lighting during the show inside the hall.
- It must be placed in a place of a certain size and distance so that students can clearly see it.
- Too much focus on the blackboard sometimes causes eye fatigue (Al Masria, 2021).

Types of smart boards
The three best types are:
The T880 smart board: is the most interactive type, and it has many factors that help in explaining easily by connecting it to the computer and transferring the information in it to it.

• Smart Board W580: This type is characterized by a very large screen size of up to 86 inches. It can be used in halls with a large area and is characterized by its extreme sensitivity. It can be written on with the fingers or an electronic pen.
• Hitachi 79 Smart Board: One of the best types of smart boards in terms of quality, with a large screen area to display a large amount of information in one time (Al Masria, 2021).

Power point:
PowerPoint is a presentation software commonly used in many fields, including education. PowerPoint provides a wide range of tools and features that can be used to create attractive and useful presentations.
How to use PowerPoint in education
There are many different ways to use PowerPoint in education. It can be used at all levels of education, from basic education to higher education. Here are some examples of how PowerPoint is used in education:
Lessons:
PowerPoint can be used to present lessons in all subjects. Graphics, pictures, text, and other multimedia can be used to explain complex concepts and make lessons more engaging.
Quizzes:
PowerPoint can be used to create quizzes and assessments. Questions, discussions, games, and other interactions can be used to make tests more interesting and effective.
Tasks:
PowerPoint can be used to create tasks and projects. Graphics, photos, text, and other multimedia can be used to make tasks more creative and interesting (Teraza, 2014).

Benefits of PowerPoint in education
PowerPoint can be a powerful tool to enhance learning in many ways. Here are some of the major

benefits of PowerPoint in education. Improve communication.

PowerPoint can help teachers communicate effectively with students by presenting information in an organized and clear way. Graphics, pictures, text, and other multimedia can be used to make presentations more attractive and interesting and enhance understanding.

PowerPoint can help students understand complex concepts by breaking them down into smaller, more understandable parts. Graphics, pictures, text, and other multimedia can be used to make information more memorable. Boost engagement: PowerPoint can help teachers motivate students to participate in learning. Questions, discussions, games, and other interactions can be used to make presentations more engaging.

Boost creativity:

PowerPoint can help students express their creativity by creating their own presentations. Graphics, photos, text, and other multimedia can be used to create unique and creative presentations. There are artificial intelligence programs that provide us with the ability to create a complete PowerPoint in simple and easy ways and in a short time by creating an email with the user's name and then write only the topic you want.

Examples: –

Tome ai.com

Gamma.com

Disadvantages of PowerPoint:

1. The file does not work well when it is saved in a new version and displayed on an old PowerPoint program, which requires following the latest version of the program.

2. It is difficult to play PowerPoint when the presentation is loaded with audio or video clips of large sizes.

3. The monotony in the program quickly makes the learner bored. Some studies have indicated that PowerPoint presentations should not exceed ten minutes.

4. It is not possible to enter complex programming functions and commands when designing compared to Flash and Art ware.

5. The program lacks effectiveness and therefore cannot be used in virtual education.

6. An Office suite is required to run the program if the file is in PowerPoint (PTT) format.

7. It is not possible to preserve the designer's rights to a large extent in the PowerPoint program. There are many programs that copy the slides, which wastes the effort and rights of the software designer in the event of changing the name (Zubin, 2023).

E– Assessment:

E-assessment: It entails leveraging information technology to evaluate performance and gauge student learning, aiming to address the limitations of traditional pen and paper assessment methods.

The adoption of electronic assessment programs in Egypt has seen significant growth up to 2022, particularly within the realms of education and training. These platforms are utilized across schools, universities, educational institutions, and corporations to streamline testing processes and enhance evaluation methods. They offer benefits such as accessibility, time efficiency, and decreased workload. Additionally, these programs typically accommodate multiple languages, including English and Arabic, to meet the diverse requirements of users across various nations and cultures (Anamika, Kajal, Anurag, & Devansh, 2018).

Advantages of e-assessment

1. Rapid Results

E-assessments platforms deliver swift results by automatically scoring various question formats, including essays, and facilitating easy distribution to participants with a simple click.

2. Adaptability

Unlike traditional paper-based an exams, e-assessment platforms allow for on-the-fly adjustments and the removal of incorrect questions, ensuring exam integrity without added stress.

3. Customization

E-assessment platforms offer personalized pathways based on participants' proficiency levels, utilizing metadata to link questions with difficulty and deliver tailored experiences.

4. Assurance

Digital assessments mitigate the risk of lost or stolen exams, providing peace of mind for both examiners and students and avoiding the disruptions and extra work associated with such incidents.

5. Flexible Attendance

E-assessment tests provide unmatched flexibility, enabling students to take exams anytime and from anywhere. This feature is particularly beneficial for remote students, international learners, and those with physical limitations. Additionally, customizable settings allow educators to adjust exam timing as needed (Filip , 2023).

Disadvantages of e-assessment

1. Technological Adoption Challenges

Implementing e-assessments may face minor disruptions and require user familiarization and system upgrades. However, adequate training for users and evaluators can mitigate these challenges by educating them about the technology's features and benefits, especially when transitioning from traditional methods to online systems.

2. Infrastructural Limitations

Issues like electricity shortages and unreliable internet connections in remote areas can pose challenges for online examinations. Examiners should accommodate candidates by allowing them ample time to arrange the necessary equipment when transitioning to online modes.

3. Grading Complexity for Long-Answer Questions

While online examinations simplify invigilation, grading long answer-type questions remains labor-intensive due to manual assessment requirements. Advanced proctoring technology can aid in streamlining this process through norming techniques, external invigilator support, and comprehensive reports.

4. Vulnerability to cheating

Test takers often resort to cheating methods such as impersonation and using external aids like smartphones or smart watches.

5. Transition to Open-Book Exams

Online exams are often perceived as akin to open-book exams, where external materials are allowed. This differs from traditional exam settings, where external resources are prohibited inside the exam hall, posing a challenge to maintaining the exam integrity and fairness (Vaishali, 2018).

virtual laboratories:

An educational program that allows students to perform laboratory experiments over the Internet. And applying concepts without having to enter a

laboratory or requiring the student to take a specific time.

Features of virtual laboratories:

1: Virtual laboratories helped cover the lack of capabilities and funding to conduct experiments.

2: Protecting students from the risks they are exposed to inside the laboratory while conducting experiments, as it makes them use materials in an intangible way, such as toxic chemicals, as well as other dangers such as electrical connections.

3. It works to show results in a more accurate way that may not appear or be noticed by using simple laboratory tools that require expensive tools and devices.

4: It helps the student and teacher to re-apply the experiments at any time and place.

saving a lot of money for educational institutions.

6: Time synchronization between the process of explaining theoretical information and conducting practical application, as laboratory experiments are linked to a separate schedule from theoretical lectures.

Obstacles to using virtual laboratories:

1. It needs unusual computers that have special specifications in order to be able to depict phenomena in a more accurate way and create three-dimensional virtual laboratories.

2: It requires programmers with strong professional skills in different types of programming. It also requires experts in scientific subjects and teachers.

3: It reduces direct communication and interaction between students and also between students, and teachers.

When did humanity enter the world of virtual reality?

Virtual laboratory technology is an old technology that dates back decades of the last century and was not a product of recent years. The concept of virtual laboratories appeared before the advent of phones and the Internet. After that, this technology and the devices supporting it began to spread, but on a very small scale.

Economy of scale

It can be highly costly to carry out various investigations in actual laboratories in a concrete manner. Thus, in order to conduct experiments inside virtual laboratories, costly instruments, and gadget are needed (Mustafa, 2018).

Electronic educational games:

A planned educational exercise occurs when two or more students collaborate to accomplish particular learning objectives. One of the ways they connect with each other is through competition, which happens under the teacher's supervision and direction. When circumstances call for it, he offers them support. Following the game, there is a conversation between the student and the learner. In 1958, the history of electronic games officially began (amr, 2022).

Types of electronic games

1-Puzzle Games

2: Games for learning languages

3: Games using math and logic

4: Games based on culture and history

5 games that explore science and the natural world (amr, 2022)

Features of electronic games:

Educational games help develop memory and thinking.

2: It accelerates the understanding process among students, specifically children.

3:It helps the teacher discover and take into account individual differences.

4: It also psychologically motivates children to learn and encourages them to learn(Afnan2023).

Disadvantages of electronic games:

Parents and teachers do not want their children to use their phones excessively for educational games. Teachers understand that time is a valuable resource that needs to be conserved and used sparingly throughout the day.

2: According to some educators, learning occurs more quickly when students acquire books and references, deal with translation, write articles, expand their vocabulary, and conduct research in order to gain knowledge, rather than when they play educational games and get information instantly.

3: Lack of desire to practice other hobbies because of his attraction to games (bousy, 2020).

We applied these tools in schools to primary school students in science as follows:

1-**Smart board**

The smart board was implemented in the fourth, fifth, and sixth grades of primary school, as shown in figure (1). Students were able to significantly enjoy the lessons and achieve a deeper understanding of the subjects in a fun and interactive way.

Figure (1) (Shows students' interaction with the educational whiteboard)

2-**Power point**

The use of technology has already been implemented in the fifth grade of primary school using the Power Point tool as shown in Figure (2)
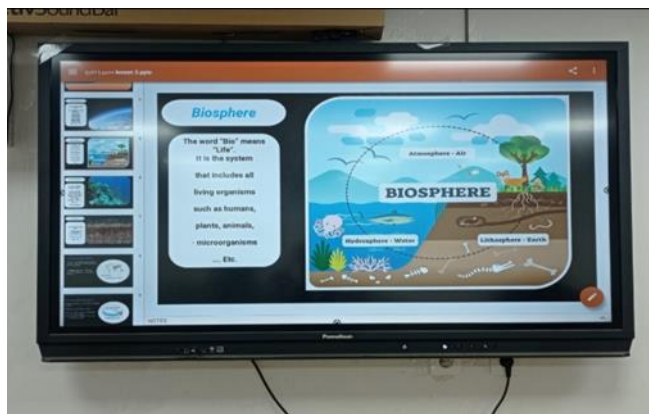
Figure (2) (Shows explaining one of the lessons using a power point).

And this has led to achieving the required goals and attracting the attention of the students, as shown in Figure (3).

Figure (3) (Shows students' attention during the power point presentation)

Which has led to facilitating the explanation process for the teacher, linking the information, and fixing it in the students' minds better.

3-Electronic games

Concept 3 was applied to 6th grade primary students using educational games, as shown in the picture, where there was interaction and enthusiasm between students in class, as shown in Figure (4)
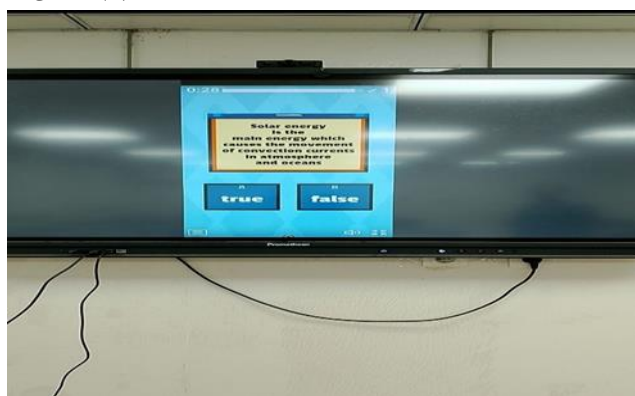

Figure (4) (Shows applying questions using electronic games)

4-Electronic assessment

The first lesson of the first unit for fourth grade was implemented using the electronic assessment program, which brought great joy and comfort to the students during the teaching process, as it facilitated their performance evaluation in an enjoyable and beneficial manner, as shown in Figure (5)
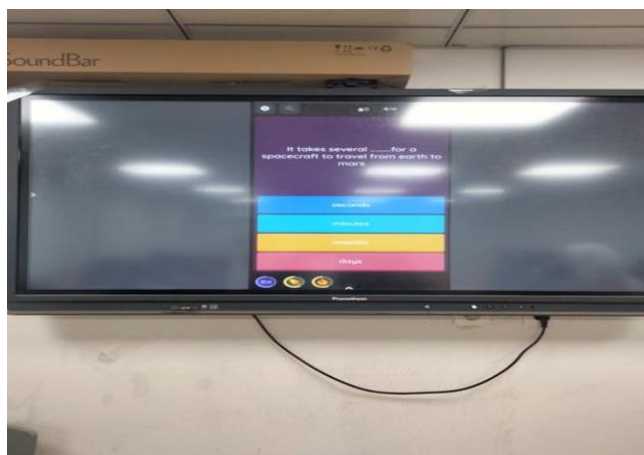
Figure (5) (Shows applying questions using the E-assessment program)

5- Chat GPT

I used GPT Chat to prepare a lesson plan for the fifth grade of primary school. He helped me prepare the lesson easily and explained the lesson in a simplified way for the students, and this appeared in Figure (6), and it became clear when the students understood the lesson easily.
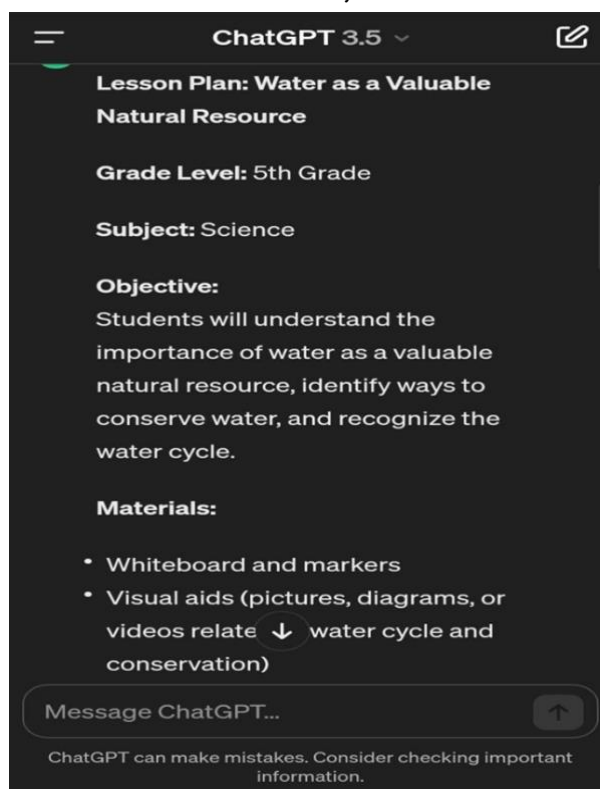

Figure (6) (Shows lesson plan by using ChatGPT)

6– Virtual laboratories

Due to the stages that were taught, we did not have the opportunity to apply the virtual laboratory practically because there were no parts in the classes that were taught that would give us the opportunity to use the virtual laboratory tool. As for the other stages, it is applied to their courses very easily, and the tool was also trained practically during the school day, as shown in Figure (7) .
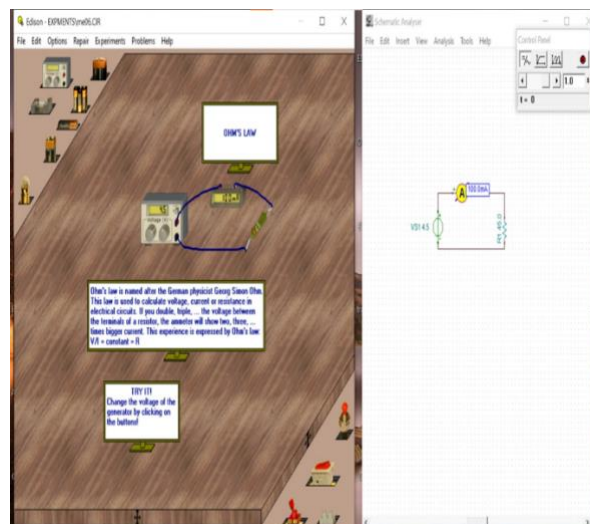

Figure (7) (Shows applying experiment by using virtual laboratories

4. Results of Research

We applied modern technology tools, artificial intelligence, and teaching in traditional ways.

 After applying these tools and conducting tests for the students before and after, these results were monitored and shown as follows: these results were collected in Tables (1,2 and 3) for the fourth, fifth, and sixth grades of primary school, and also these results were represented graphically in Figures 8(a, b and c),9(a ,b and c) and 10(a ,b and c) as shown in the following:

Table No. (1) shows the grades obtained by fourth–grade primary school students in three different tests after teaching in the usual way and using artificial intelligence technology.

| Score	Class 1		Class 2		Class 3	
	TM	AI	TM	AI	TM	AI
10	1	37	4	11	10	17
9	7	3	5	8	7	10
8	10	0	2	6	6	5
7	8	0	3	4	3	1
6	0	0	1	5	4	1
5	0	0	4	1	2	0
4	0	0	1	0	1	0
3	0	0	7	0	2	0
2	0	0	6	0	0	0
1	11	0	2	0	0	0
0	3	0	0	0	0	0
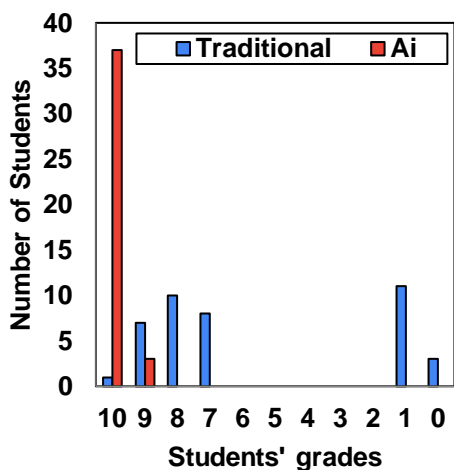
Fig.8 (a)
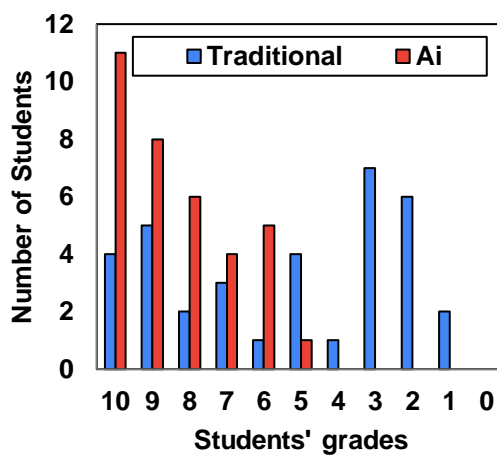
Fig.8 (b)
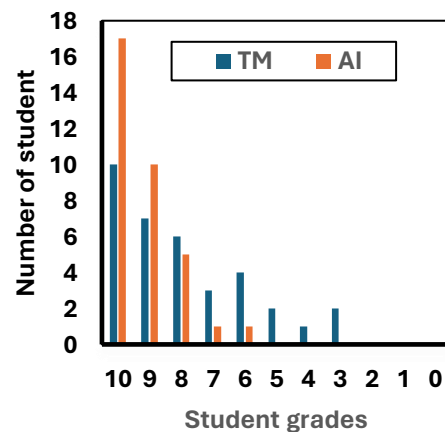
Fig.8 (c)

Figure 8(a ,b& c) Shows a comparison between the grades obtained by fourth year students before and after the explanation using modern technological methods .

Table No. (2) shows the grades obtained by fifth–grade primary school students in three different tests after teaching in the usual way and using artificial intelligence technology.

Score	Class 1		Class 2		Class 3	
	TM	AI	TM	AI	TM	AI
10	9	13	3	9	2	16
9	0	0	2	11	1	12
8	0	3	4	8	4	9
7	0	0	4	6	6	7
6	0	0	6	4	2	2
5	0	0	1	2	5	3
4	14	0	5	1	7	5
3	12	4	9	1	9	4
2	0	0	7	0	1	0
1	0	0	0	0	0	0
0	0	0	0	0	0	0
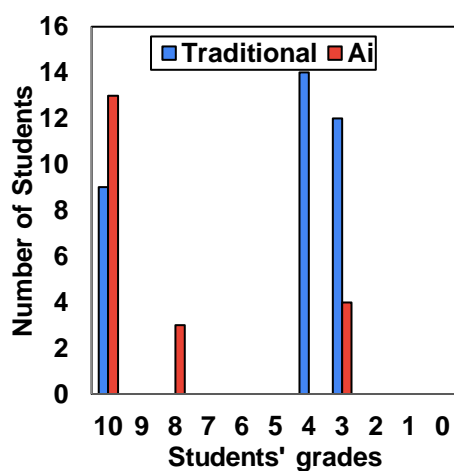
Fig.9 (a)
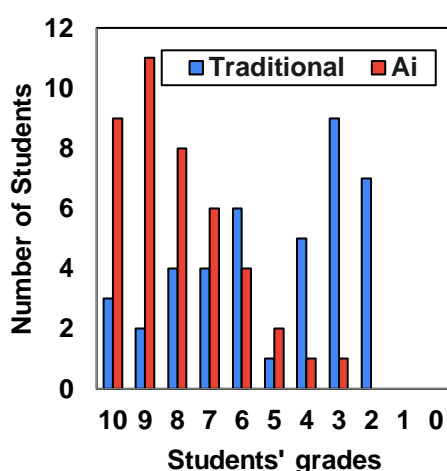
Fig.9 (b)
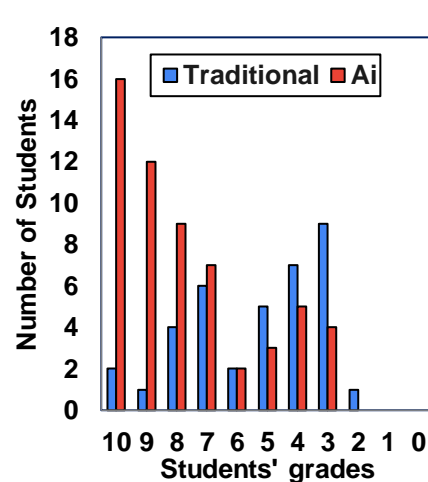
Fig. 9 (c)

Figure 8(a, b& c) Shows a comparison between the grades obtained by fifth year students before and after the explanation using modern technological methods.

Table No. (3) shows the grades obtained by sixth grade students in three different tests after teaching in the usual way and using artificial intelligence technology.

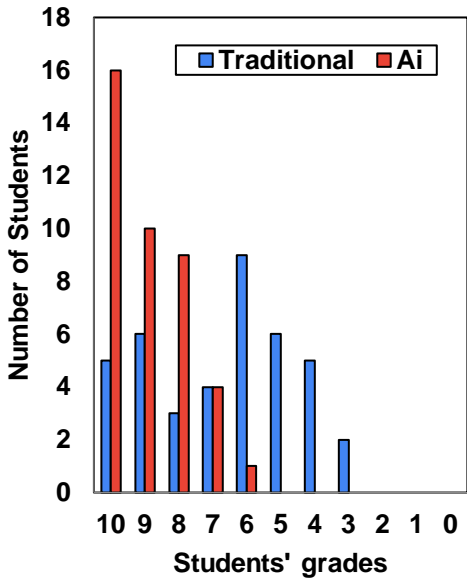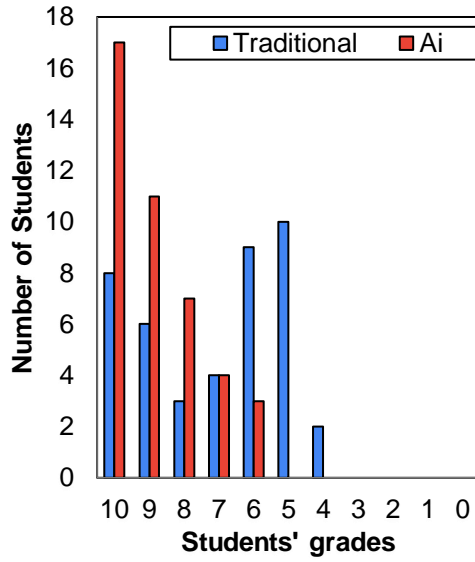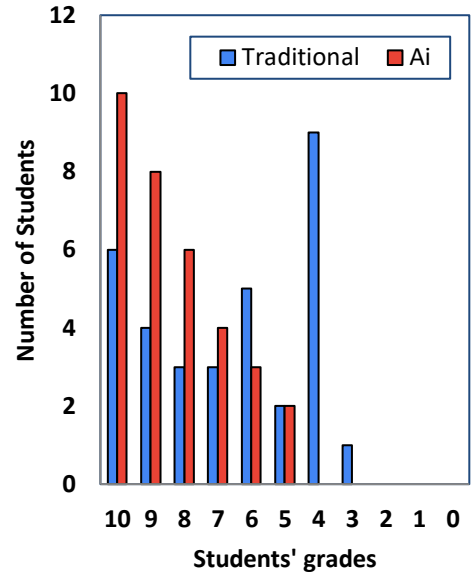| Score	Class 1		Class 2		Class 3	
	TM	AI	TM	AI	TM	AI
10	5	16	8	17	6	10
9	6	10	6	11	4	8
8	3	9	3	7	3	6
7	4	4	4	4	3	4
6	9	1	9	3	5	3
5	6	0	10	0	2	2
4	5	0	2	0	9	0
3	2	0	0	0	1	0
2	0	0	0	0	0	0
1	0	0	0	0	0	0
0	0	0	0	0	0	0

Fig.10 (a)

Fig.10 (b)

Fig.10 (c)

Figure 10(a, b &c) Shows a comparison between the grades obtained by sixth year students before and after the explanation using modern technological methods .

5. Interpretation of Results

According to the results that we obtained in the tables and illustrations, it is clear that students obtained higher grades if they used teaching methods based on artificial intelligence technology. These results were determined more than once in different classes, as for students in the fourth grade of primary school, the results using technological methods were higher than traditional methods, and in the fifth and sixth grades of primary school. This demonstrates that the use of technology in education affected the educational process in a better way, and this appeared in monitoring the results of the tests that we conducted on students using traditional and technological methods, and the highest percentages were using technological methods.

6. Conclusion

At the end of this exciting journey into the world of artificial intelligence, we discover that this field represents an important pivotal point in human progress. Against this background, technological development continues to accelerate and has a significant impact on all aspects of our lives. Artificial intelligence is a technological jewel for us, leading us to a new era of transformation and progress. Artificial intelligence has fueled innovation in various fields through its ability to analyze data and make complex decisions at extremely high speeds. This technological change forms the basis for the development of a new relationship between humans and technology, in which human capabilities are enhanced through smart systems. Despite these significant positive effects, the use of artificial intelligence requires caution and ethical thinking. We must work to direct this technology to achieve social and economic benefits without negatively affecting individual rights or cybersecurity. Overall, AI is an indispensable partner for our future development.

Since the educational process did not depend only on the student but also on the student, and the teacher, so we used technological applications and applied them to ourselves using the smart board, the virtual laboratory, PowerPoint, chat GPT, electronic games, and other tools. In addition to this, we also used traditional methods, and statistics were generated among the students and through the results. We noticed that understanding students using the modern method gave high results. Therefore, we recommend applying artificial intelligence teaching technology at all educational levels because it facilitates the educational process between the student and the teacher by developing plans for the teacher and providing tools that can be applied practically. Therefore, we must be provided with tools and equipment that prepare us for the use of technology.

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