

REVIEW ARTICLE

Traditional or modern education with artificial intelligence for physical therapy students

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Keywords: Artificial intelligence, physical therapy, traditional education, modern education

ABSTRACT

Introduction: This article explores the role of artificial intelligence (AI) in physiotherapy education, comparing traditional and modern teaching methods. Traditional education relies on direct lectures, in-person practical training, and immediate supervision. Its strengths include building a strong theoretical foundation, fostering teamwork, and developing interpersonal skills. However, it often fails to address individual learning differences and limits exposure to diverse clinical cases.

Methodology: Modern education is student-centered, using active learning, simulation, and problem-based approaches. It enhances critical thinking, clinical application, and flexibility but can be resource-intensive and may neglect theoretical depth if not carefully implemented.

Results: AI acts as a bridge between these two models. Through virtual patients, real-time feedback, personalized learning platforms, medical image analysis, and AI tutors, AI provides endless clinical simulations, adapts content to individual student needs, and offers objective assessment. It does not replace human teachers but complements them by handling technical instruction while educators focus on guidance and emotional support.

Conclusion: The article concludes that the optimal approach is an integrated hybrid model: classical methods deliver essential theoretical knowledge (anatomy, biomechanics), modern methods enable active application, and AI enhances personalization and safe, repetitive practice. This combination produces physiotherapists who are scientifically competent, clinically skilled, and technologically prepared, while retaining essential human qualities like empathy and communication.

International Healthcare Review (online)

eISSN: 2795-5567

How to Cite

Jouni, H. (2026). On The role of artificial intelligence in physical therapy education. International Healthcare Review (online). <https://doi.org/10.56226/129>

Published online: 9/June/2026

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What do we already know about this topic?

The article shows that artificial intelligence (AI) is becoming more important in both academic and professional settings, especially in digital education. In physiotherapy education, AI is used to personalize curricula, improve assessment tools, and boost student-teacher interaction. The article mentions that virtual reality (VR) and augmented reality (AR) are also used to enhance practical training. While AI has many advantages, it cannot replace the role of a human teacher. Traditional education provides a strong theoretical foundation, direct hands-on experience, and immediate feedback. In contrast, modern education focuses on student-centered learning, active participation, problem-solving, and simulations.

What is the main contribution to Evidence-Based Practice from this article?

The article's main contribution to Evidence-Based Practice is the proposed integrated educational model that merges traditional and modern teaching methods with AI. It offers a comparison of traditional and modern techniques, particularly in physiotherapy, and lists specific AI applications as evidence-based tools that connect theory with practice. These applications include simulating virtual patients, offering real-time feedback through sensors, personalizing learning experiences, training in medical image analysis, and using virtual assistants. This integration aims to create a stronger model that produces physiotherapists who are knowledgeable, clinically skilled, and proficient in using technology.

What are this research's implications towards health policy?

The text suggests that health policy should support and fund the integration of AI into physiotherapy education. This includes investing in technology infrastructure, such as simulation labs and AI platforms, and providing training for educators. The article indicates that health policies should promote the creation of adaptable curricula based on cognitive neuroscience principles and move toward a hybrid education model that combines human and artificial intelligence. Additionally, policies should consider the challenges posed by modern education, such as high costs and the potential over-reliance on technology, which may undermine essential human skills like empathy and tactile communication. The ultimate goal of health policy would be to graduate healthcare professionals who are prepared for the technological changes in their field.

Authors' Contributions Statement:

The author confirms sole responsibility for the study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

Introduction

As technology advances, artificial intelligence is gaining increasing importance in our academic and professional lives. There is almost no activity scientific, or my work is integrated with artificial intelligence in one way or another. We use it ourselves, even if we are sometimes unaware of it. And Artificial intelligence has a significant impact on digital education and various aspects of society - educational, social, economic, etc.

Artificial intelligence is revolutionizing the learning process compared to traditional methods. In physiotherapy education, AI is used to personalize curricula, improve assessment tools, and enhance interaction between students and teachers. According to UNESCO, AI can accelerate the achievement of global education goals by removing learning barriers and automating administrative processes. Virtual reality (VR) and augmented

reality (AR) technologies are also used in higher education to improve the quality of practical training, helping students understand complex medical concepts in a more interactive and realistic way. This moves them away from abstract concepts and imagination, which do not always reflect reality.

We cannot imagine daily life without artificial intelligence systems: industrial robots, medical equipment, the automotive industry, drones, games, household appliances, and robots. AI technology offers numerous benefits across various fields, including education. Artificial intelligence and machine learning are undoubtedly impacting education, elevating it to a higher level. The latest innovations enable programmers to create programs that allow computers to perform complex tasks, thus enhancing the learning process. However, despite the many benefits AI offers to both students and teachers, it cannot replace the

teacher and their role in student education and development.

In the age of digital transformation, the application of artificial intelligence in education represents a paradigm shift that is redefining traditional learning concepts. Thanks to data analytics and adaptive intelligence technologies, the educational process has become more flexible and effective. These tools help meet the individual needs of students and enable educational institutions to achieve their strategic goals, from improving the quality of content to simplifying it.

Classroom management and curricula and Artificial intelligence is paving the way for a comprehensive educational revolution. In the field of physiotherapy, AI can contribute to the development of personalized training programs, analyzing student data to provide tailored educational recommendations. It can also be used to simulate clinical cases, enhancing students' ability to interact with patients in a safe environment before practical application.

AI-powered information systems are increasingly being developed across numerous fields of work and life. This research paper explores the diverse applications and impacts of AI in education in general, and specifically in physical therapy education. It highlights the advantages of AI in physical therapy education, such as personalized learning, exploratory learning, data analysis and processing, and the use of voice assistants and interpreters. AI can significantly contribute to providing the necessary educational support to help students reach higher levels, enabling them to easily access educational materials. It also greatly facilitates communication between students and faculty members, as well as providing multiple, user-friendly ways to access required materials.

Artificial intelligence (AI) offers a variety of learning opportunities tailored to meet students' needs, considering their educational level and subject knowledge. This system enables students to master course content at their own pace and according to their own dynamics. One of the most significant advantages of using AI is its ability to identify knowledge gaps and learn from the information presented. It is also used to personalize curricula according to students' needs, helping them understand complex medical concepts more effectively.

Furthermore, it can improve learning outcomes by providing personalized learning recommendations and supporting the assessment and evaluation of customized materials to achieve the best possible success. AI-powered platforms provide virtual mentors who monitor students' progress and responses, continuously assessing each student's ability to progress from understanding to mastery. The best approach remains the move towards hybrid education, which combines human and artificial intelligence, because the teacher focuses on guidance and emotional direction, while artificial intelligence focuses on teaching, understanding and preparing educational plans.

Returning to classical (traditional) education He In its centrality, the teacher is considered the source the foundation of knowledge (the core of the entire educational process). The teaching method relies on direct theoretical lectures and memorization. And repetition. As for Educational tools include the blackboard, printed books, and slides (transparencies). The observations. And they come the student assessment stage involves theoretical and oral exams that measure memorization and recall more than application. Traditional education revolves around:

- ✓ Through live training sessions supervised by skilled instructors, combining theoretical instruction with practical application, students gain secure learning experience and practice in muscle and limb examination techniques and medical assessment. Students also develop positive relationships with their peers and exchange information with them.
- ✓ -Interaction and active participation in lectures, discussions, asking questions, seeking clarification on unclear issues, and discussing difficult cases with professors and students, which allows for building good relationships between the teaching staff and students, as well as among the students themselves, and encourages students to work as a team.
- ✓ This study will present the advantages and disadvantages of traditional and modern education, and their impact on students in terms of knowledge acquisition, its application, and its practical use in life. We live in an era of rapid technological advancement, marked by a constant struggle between the past and the future. Failure to keep pace with the new world, the world of technology, including education—will leave societies lagging behind, as happened after the Industrial Revolution and the division of nations into First, Second, and Third World countries.

Methodology

Educational, scientific, and ethical outcomes for education using traditional or modern methods, as well as adopting Decisions Approved on intelligence artificial in area Care Health, including physical therapy. The methodology was designed to ensure analysis precise My topic for research Current, with the focus on Articles The court Case studies and frameworks Ethics Published during the

contract the past. It explains Steps Next Practical Search:

1. Collection Data:

Sources gathered Data from rules Data Academy prestigious, In Google Scholar, PubMed, JSTOR, IEEE Xplore

It used words Key like “intelligence artificial in healthcare and traditional and modern education, as well as physical therapy and modern teaching methods.

As well as ethics Learning, and” to make decision in intelligence artificial”, and “algorithmic bias and “Accountability in intelligence artificial “To determine Studies the Connection.

✓ Inclusion criteria:

She was Studies Included in Review Limited in Studies Published between My year2020 and 2025 and written in the language English, which focus on The traditional and modern educational aspects of physiotherapy and its impact For intelligence artificial in The educational process in its traditional and modern dimensions.

✓ Exclusion criteria:

It was completed Exclusion Articles that She was technique Purely educational in nature, focusing more on the practical aspect (on Way For example, that focus only on intelligence algorithms artificial Don to treat Educational, scientific, and ethical concerns) or that lack to review peers.

2. Analysis Data:

✓ Objective analysis:

It was completed analysis Literature The assembly using approach objective to determine Topics Challenges and gaps Frequent in Search. It included Topics Home Transparency, bias, and independence Education in terms of decision-making: traditional or modern?

and impact that on relationship between educational institutions and students.

✓ Case studies:

It was completed to examine studies the condition Specific that was completed in it Use intelligence artificial in Taking Decisions Critical medical to highlight light on Dilemmas And the results Ethics in the world The real.

✓ Comparative analysis:

Done comparison Educational and practical frameworks as well as Ethics and principles Guidance from areas different (on Way The example of the union European, States United) to determine better practices and fields Consensus or Conflict.

3. Considerations Ethics

✓ Reducing Bias:

To reduce Bias in choice, it included review Literature studies from Geographical regions and systems Educational healthy various.

✓ Transparency:

It was completed documentation methodology and standards choice to ensure possibility repetition and transparency in practical Search.

4. Verification

Verified from health Results from during Referral mutual with sources Multiple and opinions Experts in Fields Traditional and modern education is integrated with intelligence artificial.

Traditional learning:

One of the advantages of traditional education is that it builds a solid foundation for a strong theoretical knowledge base in basic sciences, including anatomy and physiology. It is a structured process that is easy for educational institutions to manage and implement. As for the financial cost...For institutions the number of individuals is relatively low and it does not

require a complex technological infrastructure.

And we mention one of the most important features of traditional education is:

1. Direct practical learning and clinical application:

Through applied laboratories where students receive intensive practical training in well-equipped laboratories, they learn assessment and examination techniques (such as muscle and joint examination) and manual therapy techniques under the direct supervision of professors.

It also provides immediate feedback, enabling the teacher to correct the student's hand position, pressure, or movement technique immediately, thus preventing errors from becoming ingrained and ensuring that skills are learned with high accuracy.

And we will not forget dealing with the "patient" in a simulation environment where students can practice techniques on their peers in a safe environment, building confidence and developing the necessary sensory and motor skills before dealing with real patients.

2. Direct interaction and rich discussions of medical cases:

Direct dialogue in lectures allows for face-to-face interaction, in-depth discussions of complex clinical cases, immediate questioning, and the exchange of experiences among students. This facilitates the building of a professional network through campus engagement, fostering strong relationships with colleagues and professors, which often translates into a professional support network and future employment opportunities.

And Education works traditionally to strength Teamwork, where students learn how to work as part of a team, is a key skill in healthcare where physical therapists collaborate with doctors, nurses, and other specialists.

3. Intensive clinical supervision and guidance: Supervised clinical training Direct to the

teaching staff the student will have a direct clinical supervisor in hospitals and clinics who will guide him step by step, evaluate his performance with real patients, and provide him with valuable professional advice.

A role model in which the student is exposed to highly experienced professors and clinical supervisors, giving him the opportunity to observe and learn professional ethics and best clinical practices directly.

4. Structure and discipline:

- ✓ A fixed schedule: The traditional system provides a clear structure for lectures, laboratories, and clinical training, helping the students to organize their time and adhere to a strict educational schedule, which reflects the future professional work environment.
- ✓ Commitment and responsibility: The traditional classroom environment fosters a sense of responsibility and self-discipline in the student, where their presence and participation are direct and tangible.

5. Access to specialized resources and equipment:

- ✓ Advanced equipment and technologies: Traditional colleges provide laboratories equipped with the latest physiotherapy equipment (such as ultrasound and stimulation devices). Electrical equipment, assessment and training equipment, which may be difficult for the student to access at home.
- ✓ Libraries and reference works Academy and gives to the student direct access to specialized scientific books and journals in university libraries.

6- Language and communication:

Effective communication strategies play a crucial role in physical therapy education, improving interaction between students and teachers and fostering a deeper understanding

of therapeutic concepts. According to some studies, the use of effective communication strategies contributes to improved educational quality, particularly in medical fields that require precise information transfer and practical interaction.

In the field of physiotherapy, effective communication can include the following:

- **Verbal communication** Improving dialogue skills between students and teachers to ensure a comprehensive understanding of therapeutic concepts.
- **Nonverbal communication** Use body language and gestures to enhance understanding during practical training.
- **Electronic communications** Utilizing digital platforms to provide interactive learning environments.

7. Developing "soft" interpersonal skills:

Nonverbal communication where students learn to read patients' body language and facial expressions, which are vital skills in assessing pain and reactions to treatment. Tact and empathy in direct interaction with colleagues and supervisors contribute to the development of emotional intelligence and empathy skills, which are essential qualities for any successful physical therapist.

While e-learning offers significant flexibility, traditional education remains the cornerstone of physical therapy training due to the highly practical and skill-based nature of the profession. The combination of theoretical classroom learning, practical laboratory application, and direct clinical experience under supervision creates a competent, confident physical therapist, ready to meet real-world clinical challenges.

As for the disadvantages of traditional education:

In the context of physiotherapy, a major

drawback is the lack of practical application. Complex clinical skills (such as diagnosis, assessment, and treatment planning) are difficult to impart through lectures alone. Furthermore, the curriculum relies on a single, standardized approach that fails to consider individual differences in learning pace or preferred learning styles among students. The assessment of students' academic level and evaluation occurs at the end of the semester, limiting the opportunity for immediate correction of errors. A gap also exists between theory and practice, and students may find it challenging to apply what they have learned to real and diverse clinical cases.

Modern education:

Student-centered, and one of its most important pivotal characteristics is that the student is the focus of the educational process. (Student-Centered Learning). The teaching method is based on active learning, problem-solving, and group work.

The tools used include simulation (Simulation), project-based learning (PBL), case studies, and online platforms. Finally, there is ongoing and varied assessment including presentations, portfolios, and graduation projects.

Among the advantages of modern learning is the enhancement of clinical skills, as it focuses on applying knowledge in scenarios like reality. It also develops critical thinking by encouraging students to analyze, diagnose, and make treatment decisions. Another advantage is collaborative learning, which prepares students to work within a multidisciplinary team. Teamwork. With greater flexibility to adapt to the needs of different learners.

One of the most significant challenges of modern education is its resource demands, requiring advanced simulation labs and qualified instructors. It is also difficult to

manage, demanding greater effort and planning from teachers. Furthermore, the theoretical foundation may be neglected if not carefully applied, and the focus may shift solely to practical application at the expense of the scientific basis.

Artificial intelligence (AI) acts as a bridge between traditional and modern approaches, representing a revolution in medical and health education. It integrates the advantages of the classical approach (such as building a theoretical foundation) with the capabilities of the modern approach (such as practical application and personalization). The following points further illustrate this point. Some of its applications are for physical therapy students.

1. Simulating virtual patients (**Virtual Patients**):

This is an artificial intelligence program that creates interactive patient cases with different personalities, symptoms, and medical histories. Students can interact with these cases, ask questions, and conduct virtual examinations. The benefit of this is that it bridges the gap between theory and practice, allowing students to practice diagnosis and decision-making in a safe environment without risk to real patients. The diversity of cases enables students to handle hundreds of rare and common conditions that they might not encounter during clinical training.

2. Immediate feedback (**Real-time Feedback**):

This is done using sensors (Sensors and computer vision systems are used to analyze student performance while practicing therapeutic skills (such as assessment or manual techniques). The benefit of this is immediate correction, as the system informs the student if the joint angle is incorrect, the amount of pressure is inappropriate, or the sequence of movement is wrong. This creates an objective assessment system because

artificial intelligence eliminates bias in the evaluation and provides accurate measurements.

3. Personalization and adaptation

(Personalized & Adaptive Learning):

AI-powered learning platforms analyze each student's strengths and weaknesses, then provide them with tailored educational content (videos, exercises, questions) to address their knowledge gaps. The benefit of this approach is to enhance individualized learning, as each student embarks on a learning journey specifically designed for them. This results in greater efficiency because the student focuses on what they truly need to learn, saving time and effort.

4. Training in medical analysis (**Medical Image Analysis**):

This is achieved by training students to use artificial intelligence tools to analyze radiology images (X-rays and MRIs are used to identify fractures, ligament injuries, or joint degeneration). The benefit lies in preparing students to use these tools in their future careers, thus enhancing diagnostic accuracy.

5. Virtual Assistant (**AI Tutor**):

And through a chatbot (A chatbot specializing in physical therapy that can answer students' questions around the clock, explain complex concepts, and suggest solutions References. And benefits the student is supported through student learning outside of official lecture times.

A- Artificial intelligence helps students excel in modern education through the following factors:

1- Virtual and Augmented Reality: Simulating the Scientific and Clinical Environment
Virtual and augmented reality technologies

allow VR students to practice clinical skills in a safe, virtual environment, without putting patients at risk. This includes training in complex procedures, such as simulating the treatment of patients with cerebral palsy or spinal cord injuries, where students interact with a virtual patient exhibiting realistic symptoms.

In education, anatomy is considered one of the most difficult subjects for students to understand, and the emergence of interactive anatomy, which uses applications such as - Complete Anatomy- with artificial intelligence support to explore the layers of muscles and nerves using 3D technology, promotes a deeper understanding of the human body.

2- Research and educational level:

Many countries are working to develop and promote research models that elevate the educational standards of their institutions, publishing research in scientific journals and utilizing its content to enhance academic and practical levels. The world is also moving towards e-learning, virtual teaching, interactive teaching, collaborative teaching, and integrating these with virtual and augmented reality. This contributes to improving educational strategies and providing more interactive learning environments, which in turn enhances the quality of education.

3- Data analysis and adaptive learning:

Big data analytics is a powerful tool for supporting physiotherapy curricula. Artificial intelligence helps analyze millions of medical records and research to identify emerging trends in physiotherapy, enabling educational institutions to continuously update their curricula. It is used to understand learning patterns, improve teaching strategies, and tailor curricula to students' needs. According to some studies, big data can help improve

learning outcomes by analyzing student performance and academic level and providing personalized educational recommendations for each student.

Student progress analysis By monitoring students' performance in tests and practical applications, the strengths and weaknesses of each individual can be identified and built upon to develop an approach pattern that suits each student's ability and the time periods for each subject.

Improving school curricula Data analysis helps develop curricula that better suit students' needs, thereby enhancing the quality of education and the academic achievement of the institution.

4- Analysis of individual data:

Artificial intelligence can analyze the performance of students or practitioners during theoretical education and clinical training, identify their strengths and weaknesses, and provide tailored learning content to enhance their educational and practical skills. Adaptive smart platforms, such as systems that use machine learning algorithms, can also be used to guide learners toward specific skills (such as movement assessment or therapy program design).

5-Emotional educational interaction:

Traditional teaching methods have been characterized by fostering direct interaction between teachers and students. Artificial intelligence cannot completely replace this. However, traditional and modern methods can be combined to create a more interactive and integrated learning environment. It is worth noting the ongoing efforts to develop and implement virtual interaction and generative intelligence to enhance the emotional connection between modern systems and students.

6- Personal learning:

Personalized learning in physiotherapy education relies on tailoring curricula and methods to each student's individual needs, enhancing their understanding and practical application, and connecting them to virtual and augmented reality based on each student's abilities, potential, and scientific skills.

According to some studies, artificial intelligence and data analytics are used to deliver educational content that adapts to the student's level and learning style, making the educational process more efficient and effective. The concept of personalized learning can be developed through several factors, including:

-Curriculum allocation Analyzing student performance to provide educational materials specifically designed to meet their individual needs.

Practical training adaptive Use Virtual reality and augmented reality for simulating clinical cases based on the student's level.

Smart assessment Providing interactive, AI-powered tests to identify each student's strengths and weaknesses. The AI breaks down the learning material into thousands of points, tracks the student's understanding of each point, identifies their strengths and weaknesses, and works to improve and raise their level in each area.

Determining the speed of understanding the material Artificial intelligence analyzes the actual time spent solving or processing each problem and the time the student spends building an information table for the adjustment schedule to improve each student's learning plan.

Chatbots: They ask questions, correct them, and provide answers to determine the student's response speed and understanding of the topic.

Thanks to artificial intelligence, access to

information is faster and easier than ever before, and anywhere.

B- Identifying how artificial intelligence contributes to the personalization of education?

1- Identifying individual learning styles:

Artificial intelligence can analyze students' learning behavior, identify their strengths and weaknesses, and assess their comprehension speed. This enables it to provide tailored educational content for each student, based on their level of understanding, academic and methodological development, and ability to follow and interact with information.

- Adapting the pace of learning: Intelligent systems can adjust the pace of teaching to suit each student's ability to understand, preventing boredom or frustration, while also providing motivation and reward.
- Providing ongoing educational support: Students can contact AI systems at any time for help and support, making the learning process more effective.

2- Voice assistants:

These technologies are revolutionizing modern teaching methods in physical therapy, as they are used to provide personalized educational support, improve interaction between students and teachers, and offer precise therapeutic guidance. According to some sources, voice assistants can enhance their learning experience by providing real-time information, answering questions, and guiding students during practical training.

In the field of physiotherapy, voice assistant applications can include the following:

- Guiding students during practical training Providing audio instructions on how to perform therapeutic exercises correctly.
- Performance analysis and feedback Using artificial intelligence to assess student

performance and provide immediate feedback.

3- Providing customized educational content:

Providing information about the latest treatment technologies based on each patient's needs.

-Robotics and automation:

This is revolutionizing physical therapy education, as it is being used to improve practical training, enhance student engagement, and provide more effective learning environments. According to some studies, robots can help deliver personalized education, adapting curricula to each student's needs and thus improving the quality of learning.

1-In the field of physiotherapy, robotic applications can include the following:

- ❖ -Process simulation Using robots to train students to perform therapeutic procedures in virtual environments.
- ❖ -Smart interaction Providing immediate feedback on student performance, which helps them improve their skills quickly.
- ❖ -Continuous training Using automation to provide advanced educational programs helps practitioners keep up with the latest developments in the field.

2-Job opportunities:

Modern physiotherapy education methods evolve alongside technological advancements and innovations in the medical field. There are numerous career paths that physiotherapists can explore, such as:

- ❖ -**Academic teaching** Physiotherapists can work as lecturers in universities or public health colleges, where they contribute to preparing the next generation of professionals.
- ❖ **Scientific research** Job opportunities are available in medical research centers to analyze the impact of new technologies such as artificial intelligence and virtual

reality on physical therapy.

- ❖ **Technological development** Professionals can collaborate with technology companies to develop smart learning platforms based on artificial intelligence and adaptive learning.
- ❖ **-Vocational training** Providing specialized training courses for physical therapists on the latest therapeutic techniques and modern teaching methods.
- ❖ **-The interaction and stimulation system:** The student is reassessed periodically, and certificates are provided at each stage.

And from Disadvantages

gap between Theory And the application where no He considers Differences Individual. With limitations in exposure for clinical cases Various. And loss in Nutrition Returning Instant. This Requires structure Under Technology and training for teachers. May He be expensive. With risk Accreditation excessive on Technology on account Skills Humanity (Like communication tactile and empathy).

As for the advantages

Builds a strong base theory. And organizer Easy Planning for him. Security: He trains on cases Difficult Don risks. As well as Personal where fill gaps knowledge all students. And practical Reflects environment the job the real at the level higher. And efficiency: speeds up practical acquisition Skills Clinical.

In conclusion, we believe that combining the two approaches is a comprehensive educational model for the future, where the classical and modern approaches should not be substitutes for each other, but rather can be integrated with artificial intelligence to create a superior educational model for physical therapy students, all through classical education that provides a solid theoretical

foundation.to(Anatomy, Biomechanics, Neuroscience) through intensive and focused lectures.

Modern education, on the other hand, works to apply knowledge through workshops, case studies, and problem-based learning.

The integrated role of artificial intelligence comes through enabling and breaking down barriers by providing endless simulation, instant feedback, personalizing the learning experience, and preparing the student for technological tools in their field.

With this model, we graduate a physical therapist who is not only proficient in theoretical knowledge, but also clinically skilled, capable of critical thinking, and prepared to deal with the technological developments that will shape the future of the profession.

In summary: From competition to integration, the goal is not to replace the classical with the modern, but to integrate them together using artificial intelligence as a powerful helper.

- The classic foundation building: Theoretical lectures in anatomy, biomechanics and neuroscience remain essential and indispensable.
- Modernity and artificial intelligence for application and mastery: Simulation and artificial intelligence come into play after building these fundamentals, to transform them into practical skills that can be practiced in a safe and dedicated environment.

The result: A scientifically competent physical therapist, clinically skilled, and capable of using the latest technological tools to improve the quality of care for his patients.

Conclusion:

Artificial intelligence is revolutionizing education, opening new horizons for personalized and effective learning. By

addressing challenges and developing appropriate solutions, AI can contribute to building a new generation of creative and innovative learners.

There is a growing interest in developing research and educational content for physiotherapy students using artificial intelligence, where machine learning and virtual reality techniques are combined to improve the quality of training and education. Artificial intelligence bridges the gap between theory and practice in physiotherapy education, enabling students to gain rich clinical experience before entering the real world. However, true success lies in integrating these technologies with human supervision to ensure the graduation of highly competent professionals, both scientifically and humanely. Ultimately, the goal is not to replace physicians, but to empower them with tools that enhance their creativity and their ability to save lives. Therefore, after reviewing the principles of traditional and modern education, it is necessary to find adaptive curricula that are influenced by the principle of cognitive neuroscience, i.e., studying how the brain works during thinking, remembering, learning and making appropriate decisions based on what has been mentioned.

There are many user interface capabilities that make our daily work easier for both teachers and students, such as: creating great slides in PowerPoint presentations that we can recognize in an instant, asking questions in Excel without writing complex formulas, checking spelling, grammar and punctuation, creating images based on queries, and learning quickly based on the tips required for content that we need additional explanation for to make it easier to understand.

We can summarize the comparison between traditional and modern education as follows:

1. Philosophy of Education:

Traditional: It is based on the "pot theory" where the student's mind is viewed as an empty pot that must be filled with information and knowledge by the teacher.

The discourse: It is based on "constructivism," where the student builds his own knowledge through interaction with the environment and experiences, and the teacher is the one who facilitates this process.

2. Skills development:

Traditional: focuses on memorization and recall skills (Knowledge).

The talk focuses on 21st-century skills such as critical thinking. Critical Thinking), Creativity, Collaboration, and Communication

3. Adapting to the learner:

The traditional "one size fits all" (One-size-fits-all), where all students receive the same content in the same way and at the same speed.

Modern Personal Learning (Personalized Learning) takes into account the individual differences, abilities, interests, and speed.

4. Practical example (studying the phenomenon of rain)

Traditionally, the student memorizes the definition of the water cycle from the book and then is tested on it.

The students work on a group project: building a model of a small weather station, using weather simulation applications, discussing the impact of rain on society and agriculture, and giving presentations on their findings.

Which of the two models is better?

It cannot be said that one is better, as each has its advantages and disadvantages. The modern trend tends to combine the strengths of both approaches.

Using technology to deliver engaging and diverse content (one of the advantages of the conversation).

Maintaining direct and human interaction between teacher and student (one of the

advantages of the traditional method).

Combining continuous formative (modern) assessment with summary (traditional) assessment to obtain a comprehensive picture of student progress.

Ultimately, modern education is not just about using tablets and the internet, but rather a radical shift in philosophy, purpose, and method to prepare a student capable of independent learning, adapting to the changes of the times, and solving the problems of the future.

while He provides education electronic flexibility large, remains education traditional to forbid the corner in training Specialists Treatment physicist because of nature The process And skill High For the profession. The mix between Learning Theory in the chapter, and the application practical in The laboratory and experience Clinical Live under Supervision creates Specialist treatment physical versed, And confident, And ready To confront Challenges Clinical in the world The real.

RECEIVED: 31/July/2025 ● ACCEPTED: 26/March/2026 ● TYPE: REVIEW ARTICLE ● FUNDING: There was no funding for the execution of this study project. ● DECLARATION OF CONFLICTING INTERESTS: The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. ● Availability of data and materials data is available from the corresponding author on reasonable request ● Ethics approval and consent to participate: Not required for the methodology applied

References

- Al-Subhi M, Khan F, Shividokonan MF, Basudan R, Shauli L, Nimatullah Z. Knowledge and attitudes of physical therapists towards artificial intelligence applications in healthcare and rehabilitation: A cross-sectional study. *J Med Internet Res*. 20 October 2022; 24(10): e39565.
- Carmen del Rosario Navas Bonilla, Luis Miguel Viñan Carrasco, Johanna Carolina Gaibor Pupiales, Daniel Eduardo Murillo Noriega. The Future of Education: A Systematic Literature Review of Self-Directed Learning with AI. *MDPI journal. Future Internet* 2025, 17(8).
- Gizem Ergezen Sahin Gulay Aras Bayram , Alberto Sanchez Sierra , Simay Akdemir , Dogukan Kurc , Devrim Tarakci , Ayse Nur Tunali . Effects of artificial intelligence based physiotherapy educational approach in developing clinical reasoning skills: a randomized controlled trial. *BMC Med Educ*. 2025 Oct 9.
- Johnny, H. On the Digital Transformation of Health Systems: What is the Role of Human Resource Management and Health Informatics? *International Health Care Journal* (available online). <https://doi.org/10.56226/81> ● Published online: December 12, 2024.
- Klein A. Artificial intelligence surrounds us on all sides. Therefore, this region has designed its own curriculum in artificial intelligence. *Education Week*; 2022. Accessed: May 17, 2023.
- Oğuzhan Mete, Yasemin Ateş Sarı. Attitudes and Literacy of Physiotherapy Students Toward Artificial Intelligence: The Impact of Artificial Intelligence Education . *October 2025. Sağlık Profesyonelleri Araştırma Dergisi*. 7(3):143-152.
- Park Woo, Kwon H. Application of artificial intelligence in middle school technology education in the Republic of Korea. *International Journal of Educational Technology*. 2024; 34(1):109-35.
- Raghavendra U, Acharya Ur, Adili H. Artificial intelligence techniques for automated diagnosis of neurological disorders. *Euronews*. 19 November 2020; 82(1-3): 41-64.
- Scott William Lowe. The role of artificial intelligence in Physical Therapy education 2024, *Bulletin of Faculty of Physical Therapy*.