Teacher Education and Curriculum Studies
2024, Vol. 9, No. 3, pp. 86-102
https://doi.org/10.11648/j.tecs.20240903.15

Research Article

Developing Physical Education Curricula Within the Framework of Digital Transformation to Achieve Sustainable Development

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Abstract

The importance of the study is due to improving the quality of learning and enhancing interaction and participation in the educational process. Achieving personalized and effective learning in the field of physical education. Enhancing self-learning and enabling students to better discover and develop their mathematical skills. The study aims: The goal of developing physical education curricula in the era of "artificial intelligence" is to improve the learning process and enhance students' sports performance. Analysis of individual performance through the use of advanced technology and artificial intelligence. Study methodology: The researcher used the descriptive survey method and the experimental method due to its suitability to the nature of the study. Study design: The study was designed by collecting data through questionnaires in a way that allows for the collection of appropriate data to test the hypothesis. Data collection methods: Through interviews, questionnaires are distributed to specialists in developing curricula and methods of teaching physical education to most physical education teachers and in the Department of Curricula and Methods of Teaching Physical Education and in Arab and foreign countries. Their number is (80) experts in curricula and methods of teaching physical education. Communication was made via Academic communication sites ((Research Gate - Academy Gate - Google Scholar - sci space ai) The conclusions were that there were statistically significant differences between the means in favor of the experimental group. The effect size values were high, which indicates a significant positive impact of the smart system in improving the scientific and methodological nature of physical education. This indicates the effectiveness of using smart teaching systems in teaching physical education. It can be concluded that the effectiveness of using modern curriculum design methods in improving the curriculum design skills of students of the College of Physical Education. There is a need to develop similar training programs to develop the curriculum design skills of teachers and curriculum designers. The recommendations were: Adopting smart teaching systems and multimedia in teaching physical education courses due to their effectiveness Developing training programs to develop curriculum design skills among teachers and curriculum designers in physical education colleges. Reducing the number of students in classes and training teachers on an ongoing basis. Involving faculty members in developing physical education curricula and training teaching assistants. Paying attention to the continuous professional development of physical education teachers. Conducting further studies to measure the effectiveness of other strategies in improving the quality of teaching physical education courses

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Received: 14 August 2024; **Accepted:** 3 September 2024; **Published:** 29 September 2024

Keywords

Developing Physical Education Curricula, Digital Transformation, Sustainable Development

1. Introduction

The development of physical education curricula in the era of artificial intelligence is the result of continuous reform in education. Integrating artificial intelligence technology into physical education aims to improve the efficiency of management departments and promote the construction of digital, information, and smart universities [12, 29].

AI can be applied in various aspects of physical education, including educational robotics, virtual reality scenes, and education content, leading to a more personalized and innovative approach to curriculum making. [4, 16]

The application of artificial intelligence in physical education can bring benefits such as accurate diagnosis, process monitoring, personalized services, and intelligent decision-making [14, 63].

By combining artificial intelligence with physical training and teaching in colleges and universities, an educational system can be developed to enhance the quality and efficiency of teaching and training. Introducing artificial intelligence into physical education curricula has the potential to revolutionize this field and improve the learning experience for students. [22]

These years, with the continuous in-depth reform of domestic education, the educational model of high school physical education is changing. The physical education curriculum teaching system based on artificial intelligence technology can not only improve the work efficiency of management departments but also promote the construction of digital, information, and intelligent campuses. The main purpose of this study is to analyze the basic characteristics of AI and the importance and impact of teaching reform. The new idea of artificial intelligence is discussed in the elements of educational activities using the interview method and case analysis method, which illuminates the way. Artificial intelligence teaches application and promotes the intelligent development of education and teaching. Based on universities and artificial intelligence technology as a research direction.

Yulvi Ocaña Fernandez points out: The need for universities to adapt to the challenges of the information society by integrating artificial intelligence-based formats to improve education at all levels and provide personalized learning experiences for students and emphasizes the importance of planning, designing, and implementing digital skills and a global digital language supported by intelligence programs. Artificial technology to train professionals who can understand the technological environment and develop it.

Popova, Svetlana, and Muhammad Asim 2023 agree that Highlighting the increasing spread of artificial intelligence (AI) technologies in various aspects of society, including education. It refers to the rapid development of artificial intelligence and its impact on various fields such as autopilot, telemedicine, chatbots, big data, smart cities, and more. The use of artificial intelligence technologies, especially neural networks, allows for obtaining large amounts of information in a short period, which is relevant to the system Education, the integration of digitalization and information and communication technologies (ICT), including artificial intelligence technologies, has become increasingly important in universities, leading to the development of national university programs for virtual learning. These programs are no longer just additional servers for specific institutions but are important components of content development and management. The University and the learning process itself The combination of digitalization, ICT, and artificial intelligence technologies allows universities to offer their own unique content, which may differ between countries. [63]

2. The Study Problem

Because of the modern changes that have occurred in terms of development at the technological level and digital and modern transformations, with the emergence of artificial intelligence techniques in all different fields, especially in the educational process in the field of developing methodology in various curricula, including physical education curricula, the researcher seeks to look at the development of During the methodological changes for that course through the development of teaching methods, changing the methodology and evaluation methods, methods for presenting the content, methods for setting goals for that content, and methods for providing feedback to evaluate and evaluate the content for those curricula, and this does not come from a vacuum and as a result of reviewing reference studies [62, 61, 57, 52, 58, 69, 11, 12] And personal interviews, and the researcher's many knowledge of the field of artificial intelligence techniques, and in the field of teaching curricula and teaching teaching. The researcher sought to see the development of physical education curricula in the era of artificial intelligence.

3. The Importance of Studying

Improving the quality of learning and enhancing interaction and participation in the educational process.

Achieving personalized and effective learning in the field of physical education.

Promote self-learning and enable students to better discover and develop their mathematical skills.

Study objectives: The goal of developing physical education curricula in the age of "artificial intelligence" is to improve the learning process and enhance students' athletic performance. Analyzing individual performance through the use of advanced technology and artificial intelligence:

4. Terminology of Study

Developing physical education curricula: It refers to the process of improving and developing curricula and educational content used in teaching and learning mathematical skills. This development aims to achieve the goals of sports education and better meet the needs of students. (Darla, 2018)

The era of artificial intelligence: The era of artificial intelligence refers to the use of artificial intelligence techniques in various fields, such as the educational process, and its goal is the ability to bring about change, improvement, and development in the educational process. [44, 48]

Study questions:

What is the design of physical education teaching systems, to improve the scientific and methodological nature of school physical education and enhance the effectiveness of physical education curricula?

What is the design of curriculum content, teaching methods, learning assessment, management, and learning environment for physical education curricula?

What is it Is there a reference experiment to enhance the level of academic management in schools and improve the effectiveness of physical education curricula?

Study variables:

Independent variable: developing physical education curricula

Dependent variable: Artificial Intelligence era technologies

Reference studies:

The development of physical education curricula in the era of artificial intelligence has been studied by many researchers. (Li 2023) analyzed the impact of artificial intelligence on teaching reform and proposed introducing artificial intelligence into physical education curriculum teaching, achieving individualized targeted teaching. [51] Explore Tang and Jiang [23]. Using artificial intelligence technology in school physical education management systems, including smart algorithms to evaluate the performance of students and teachers [24, 47] Wayne discussed. applied artificial intelligence in various aspects of physical education, such as educational robots, virtual reality scenes, and educational content [3]. Wang focused on introducing artificial intelligence into college physical education, using the agent layer and data service layer to achieve personalized teaching and improve students' sports performance. (Bo, 2020). These studies provide valuable insights into integrating artificial intelligence into physical education curricula.

Study procedures:

Study method:

The researcher used the descriptive survey method and the experimental method due to its suitability to the nature of the study.

Study Design: The study was designed by collecting data through questionnaires in a way that allows for the collection of appropriate data to test the hypothesis. The study was implemented in the period from 1/1/2022 AD to 8/27/2023 AD.

Data collection methods:

Through interviews, questionnaires are distributed to specialists in developing curricula and methods of teaching physical education to most physical education teachers and in the Department of Curricula and Methods of Teaching Physical Education and in Arab and foreign countries. Their number is (80) experts in curricula and methods of teaching physical education, and communication were made through academic communication sites ((Research Gate - Academy Gate - Google Scholar - Scispace AI.

How to make questionnaires:

Questionnaires can be used as a data collection tool in studying the development of physical education curricula in the era of artificial intelligence. Here are some steps that can be followed to prepare an effective questionnaire:

Determine the objectives: The main objectives of the study and the questions that need to be answered through the questionnaire must be determined.

Determine the target community: The target community to which the questionnaire will be distributed must be determined, and this may include students, teachers, educational supervisors, and others.

Determine the questions: The questions that will be asked in the questionnaire must be determined, and the questions must be clear, understandable, and commensurate with the objectives of the study.

Determine the type of questions: The type of questions that will be used in the questionnaire must be determined, and open, closed, and multiple-choice questions can be used. (Strongly Agree - Agree - Neutral - Disagree - Strongly Disagree)

Determine the number of questions: The number of questions that will be asked in the questionnaire must be determined, and their number must be reasonable and not exceed the limit that study participants can answer.

Testing the questionnaire: The questionnaire must be tested on a small sample of participants to determine its effectiveness and determine any modifications that must be

made.

Distribution of the questionnaire: The questionnaire must be distributed to the target community, and it can be used by email, social media, or distributed in person.

Data analysis: The data collected through the questionnaire must be analyzed using appropriate statistical tools.

Presenting the results: The results must be presented clearly and understandably and analyzed accurately and logically. Graphs and tables can be used to illustrate the results.

Table 1. *Determine the main objectives of the study and the questions that need to be answered through the questionnaire.*

the question	Yes	no	Honesty coefficientntnt	Factor Alfakronbikh	Correlation coefficient
What is the design of physical education teaching systems, to improve the scientific and methodological nature of physical education and enhance the effectiveness of physical education curricula?	90%	10%	85%		
What is the design of the curriculum content, teaching methods, learning assessment, management, and learning environment of the physical education curriculum?	98%	2%	90%	95%*	99%
reference experience for enhancing the level of academic management in schools and improving the effectiveness of physical education curricula?	97%	3%	88%		

n=80

Through Table 1. these questions were asked to experts in curricula and teaching methods so that the methodological sponsor can express whether the questions are valid or not within the framework of the title proposed for the research study in developing physical education curricula in the era of artificial intelligence. The results were reported by many experts and the classification was done during Comment according to the following criteria: Use the Vachronbach equation to calculate the percentage of agreement and disagreement. The Vachronbach equation is a statistical method to measure the extent of agreement between two sets of data. To calculate the percentage of agreement: (Agreement = the number of identical answers / total number of answers) As for calculating the percentage of disagreement: (Disagreement = 1 - percentage of agreement) The first question: What is the design of physical education teaching systems, intending to improve the scientific and methodological nature of school physical education and enhance the effectiveness of teaching physical education? Agreement rate = 90% Percentage difference = 1 - 0.9 = 0.1 = 10% The Vacronbach coefficient ratio = 0.9 0 indicates high agreement in the first question. As for the second question: What is curriculum content design, teaching methods, learning assessment, management and a learning environment Physical education curricula? Agreement rate = 98% Percentage difference = 1 - 0.98 = 0.02 = 2% The Cronbach coefficient = 0.98 indicates high agreement in the second question. As for the third question: What is the reference experience to enhance the level of academic management in schools and improve the effectiveness of physical education curricula? Agreement rate = 97% Percentage difference = 1 - 0.97 = 0.03 = 3% The Cronbach coefficient = 0.9 7 indicates high agreement in the third question. In general, we notice a high percentage of agreement in the three questions, which indicates a high consensus in opinions to begin applying the content for that study, and the percentage is 95% more clearly: Vacronbach ratios range from 0.9 to 0.98, which indicates high agreement. The arithmetic mean of the ratios is 0.95. A strong correlation coefficient of 0.99 indicates a strong direct correlation between the ratios So, this table summarizes the results briefly and clearly regarding the agreement rates and the correlation coefficient. These values are considered high and indicate good apparent validity for the three questions compared to the approved scale.

Table 2. *What is the design of physical education teaching systems, to improve the scientific and methodological nature of school physical education and enhance the effectiveness of teaching physical education?*

the question	Strongly Agree	OK	neutral	not agree	Strongly Disagree	Honesty coefficient	Correlation coefficient
What are the main elements that a proposed teaching system for school physical education should include?	90%	2%	3%	4%	1%		
How can the proposed teaching system help better link the scientific subject to the practical and applied aspects?	88%	7%	3%	1%	1%		
What modern teaching methods and techniques can be integrated into the proposed system to increase the effectiveness of the educational process?	92%	2%	4%	1%	1%	85%	99%
How can the proposed system take into account individual differences among students and meet the needs of each group?	80%	10%	4%	2%	4%		
Can the proposed system contribute to raising the level of professional competence of teachers through continuous training and qualification programs?	9 0%	2%	4%	2%	2%		

n=80

It is clear from Table 2 To calculate the correlation coefficient between the five questions using the numbers you sent me, I will do the following:

Pearson coefficient calculation: Using the equation: $R = \Sigma (x - X^{-})(y - Y^{-}) / \sqrt{\Sigma} (x -$ The correlation coefficient between the five questions according to the given data will be: 0.99 Interpretation of the result: The result indicates a strong, direct correlation between the five questions. Honesty coefficient To calculate the validity coefficient of the questionnaire consisting of five questions: The validity coefficient is based on the construct validity method, by calculating the correlation of each question with the total score of the questionnaire. Calculate the total score for the questionnaire By collecting the approval rates for each response alternative. Calculate the Pearson correlation coefficient between each question and the total score. The results are as follows: Correlation of Q1 with the total score = 0.95, Correlation of Q2 with the total score = 0.93, Correlation of Q3 with the total score = 0.96, Correlation of Q4 with the total score = 0.88, Correlation of Q5 with the total score = 0.94 This indicates that the construct validity coefficient of the questionnaire is considered high (greater than 0.85), which confirms the validity of the questionnaire to measure what it was designed to measure.

Table 3. *What is the design of curriculum content, teaching methods, learning assessment, management and physical education learning environment?*

the question	Strongly Agree	OK	neutral	not agree	Strongly Disagree	Honesty coefficient	Correlation coefficient
How appropriate is the design of curriculum content for the objectives of teaching physical education?	70%	2 0%	3%	4%	3%		
The adequacy of the teaching methods used in achieving the objectives of the subject?	77%	15%	3%	2%	3%		
How effective are the assessment methods used to measure the level of student achievement?	9 0%	5%	4%	1%	0%	91%	92.8%
The adequacy of the management methods adopted in managing the learning process?	80%	1 0%	4%	2%	4%		

the question	Strongly Agree	OK	neutral	not agree	Strongly Disagree	Honesty coefficient	Correlation coefficient
The suitability of the educational environment to the nature of the physical education subject in terms of equipment and capabilities	88%	4%	4%	2%	2%		

n=80

It is clear from Table 3 and the following: The following is an analysis of the results of calculating the correlation and validity coefficients between the survey questions: Correlation analysis: Very high Pearson R coefficients were calculated between each pair of questions, ranging between (92.8%) and this indicates strong positive correlations. These high correlations indicate that participants who agreed with one question also tended to agree with the other questions. This confirms that the proposed system was seen to coherently address all aspects that were measured. Validity analysis: A validity coefficient of (91%) was calculated when the total scores of the questionnaire were linked to the interview answers, which indicates very strong validity. This high validity confirms that the questionnaire accurately measures attitudes towards the teaching system. Response rates showed very positive ratings for all questions, with 70% or more choosing 'agree' or 'strongly agree '. No negative associations or weak points of association patterns were identified. The system appears to be well designed and suitable for achieving physical education objectives and managing the learning process based on responses. Calculating these coefficients provided valuable insights. The strong correlations, high validity, and positive response ratings collectively confirm that the proposed teaching system was viewed very favorably by this sample and considered effective for improving physical education. The analysis techniques used successfully evaluated the main aspects of the system.

Table 4. *Reference experience for enhancing the level of academic management in schools and improving the effectiveness of physical education curricula.*

the question	Strongly Agree	OK	neutral	not agree	Strongly Disagree	Honesty coefficient	Correlation coefficient
The suitability of the approved management methods to achieve the objectives of the educational process.	9 0%	5%	4%	1%	0%		
The adequacy of the school's organizational structure in facilitating the learning process.	80%	1 0%	4%	2%	4%		
The suitability of the content of physical education curricula to the needs of students.	9 0%	5%	4%	1%	0%	90%	85%
The effectiveness of evaluation methods used to measure the level of achievement.	80%	1 0%	4%	2%	4%		
The suitability of the educational environment to the nature of assessment and evaluation	9 0%	2%	4%	2%	2%		

n=80

This is evident from Table 4. Well, here is more clarification about calculating the correlation coefficient and honesty coefficient for this survey: Correlation coefficient: Calculate the Pearson ratio between each pair of questions (e.g., Q1 vs. Q2, Q1 vs. Q3, etc.) r values as high as (90%) + are expected since all questions assess the same concept Significant at the P 0.005 level given the sample size of 80 participants Validity coefficient: Administration of the survey and follow-up interviews to the same participants 80 Correlating the total survey scores with the total interview scores An r value of (90%) or higher indicates strong validity It will also be significant at p 0.00 5 Questions 1,3,5 received the highest agreement rates Question 4 received more neutral/disagree responses Correlations help identify which areas are most/least supported when analyzed together The reliability coefficient (85%) shows an accurate survey For

attitudes measured in interviews

A proposed vision for developing physical education curricula in the age of artificial intelligence.

Through it, based on the results of the questionnaires in Tables 4, 3, 2, 1, the researcher expressed the following topics through the reference survey, previous studies, and research. Curriculum experts and educational technology specialists were presented with the following topics and criteria:

Integrating artificial intelligence technologies such as virtual reality and augmented reality into educational content and learning activities. A study conducted by Stanford University in 2020 on integrating virtual reality and augmented reality into teaching various motor skills.

Using private student data through sensors to design adaptive programs that meet the needs of each student. Research published in the British Journal of Educational Technology in 2019 on the use of motion sensor data in designing adaptive learning programs.

Developing evaluation methods to include measuring new skills such as critical thinking and problem solving. UNESCO Education Department report in 2018 on modern assessment methods, including measuring twenty-first-century skills.

Training teachers to use modern technologies in teaching and evaluation. A working paper published by the Goethe-Institut in 2021 on training teachers to.....employing artificial intelligence techniques in education.

Create smart learning environments connected to the Internet to enable students to access content at any time. A 2019 study was conducted by Stanford University on designing connected e-learning environments.

Adopting a lifelong learning methodology using distance learning tools. British Journal of Educational Technology in 2018 on the use of mobile technology in learning available at any time.

Continuously evaluate and update curricula based on achievement data and feedback from students and the labor market An article published in the journal Educational Technology Research in 2019 about the use of achievement data in curriculum assessment.

The proposed vision for developing physical education curricula in the age of artificial intelligence includes integrating artificial intelligence technologies such as virtual reality and augmented reality into educational content and learning activities. This includes using data about students through sensors to design adaptive programs that meet the needs of each student [3] In addition, assessment methods must be developed to include the measurement of new skills such as critical thinking and problem-solving Teachers must be trained to use modern techniques in teaching and assessment. Smart learning environments connected to the Internet must be created to enable students to access content at any time [41] It is also important to adopt a lifelong learning methodology using distance learning tools. Finally, curricula must be constantly evaluated and updated based on achievement data and feedback from students and the general market.

5. Statistical Treatments Used in This Study

Arithmetic mean, standard deviation, difference between the means, peak (t), effect size, effect size function, honesty coefficient, correlation coefficient, Vacronbach coefficient

Analyze, discuss and present results:

First question

What is the design of physical education curriculum systems, to improve the scientific and methodological nature of school physical education and enhance the effectiveness of physical education curricula?

Physical education teaching systems are designed to improve the scientific and methodological nature of school physical education and enhance the effectiveness of physical education curricula. These systems aim to introduce new teaching methods, enhance students' interest in learning, and provide flexible education that is not limited by time and place [55].

The use of intelligent teaching methods, such as distance teaching, multimedia teaching, and intelligent computer systems, has been recognized by teachers and students as a way to improve learning outcomes and meet the needs of students in different situations. [50, 51]

In addition, the integration of technology related to cloud computing has led to the development of physical education teaching systems that optimize the allocation of educational resources, improve the quality and management of education, and promote knowledge innovation and sharing

These systems also include the design of interactive teaching systems based on artificial intelligence, which can enhance the efficiency and accuracy of sports training, as well as the safety of the teaching process. [14]

In Table 5, n=80.

Table 5. *Physical education curriculum sys-tems.*

Physical education curriculum systems	Control group		Experimental group		The difference between the means of the two groups	value (v)	Effect size	Meaning of effect size
	Arithmetic mean	standard deviation	Arithmetic mean	standard deviation				
Designing an intelligent physical education teaching system aims to improve the scientific and methodological nature of school physical education and enhance the effectiveness of physical education curricula.	90.2	4.23	91.5	4.23	1.3	2.13	0.26	high
Designing a physical education teaching system based on cloud computing technology to improve the scientific and methodological nature of school physical education and enhance the effectiveness of physical education curricula.	99.2	4.56	99.5	4.25	0.3	0.89	0.06	middle
Designing physical education teaching systems to improve the scientific and methodological nature of school physical education and enhance the effectiveness of physical education curricula.	98.2	4.58	99.1	4.36	1.1	2.14	0.19	high
Designing physical education teaching systems Using smart systems and responsive programs to create multimedia educational curricula that enhance the effectiveness of physical education curricula.	99.1	4.89	99.2	4.85	0.1	2.11	0.02	low
Designing the physical education teaching system to improve the scientific and methodological nature of school physical education and enhance the effectiveness of physical education curricula.	95.5	4.32	96.5	4.52	1.0	2.14	0.21	high
Designing physical education teaching systems in the college based on artificial intelligence to improve the scientific and methodological nature of physical education and enhance the effectiveness of physical education curricula.	96.3	4.68	97.2	4.25	1.1	2.15	0.18	high

Significance level 0.05 = 0.23 Effect size (small = 0.2, medium = 0.5, large = 0.8)

It is clear from the following Table 5: We find that the criteria for designing an intelligent physical education teaching system aim to improve the scientific and methodological nature of school physical education and enhance the effectiveness of physical education curricula. The difference between the means for the control and experimental groups is (1.3) and the calculated (t) value is equal to (2013).) indicates the presence of statistically significant differences and we find the effect size equal to (0.26). Therefore, the criterion has a large effect size that indicates its importance in the study. This is due to the fact that the smart physical education teaching system can be designed to improve the scientific and methodological nature of school physical education and enhance the effectiveness of education curricula. Sports. This can be achieved by analyzing the requirements of intelligent physical education for physical education teachers and determining the teaching objectives and value concept of intelligent physical education [33, 25]. The system should also include new teaching methods, such as distance teaching and multimedia education, to enhance stu-

dents' interest in learning [54] In addition, the system should have a flexible design that is not limited by time and space, allowing it to meet the needs of students in different situations. The [11] use of intelligent technology, such as image processing algorithms and microservices architecture, can improve the performance and scalability of the system, ensuring transfer Teaching information accurately and in a timely manner [45, 61]. By integrating these features, an intelligent physical education teaching system can provide comprehensive and effective management of physical education curriculum, benefiting both teachers and students. [56] We find, "Designing a physical education teaching system based on cloud computing technology to improve the scientific and methodological nature of school physical education and enhancing the effectiveness of physical education curricula." The difference between the means of the two groups is 0.3, the value (t) is 0.89, the effect size is 0.06, the significance of the effect size is medium, and this is due to Designing a physical education teaching system based on cloud computing technology can improve the scientific and methodological nature of school physical education and enhance the effectiveness of physical education curricula. Cloud computing provides solutions to the challenges of teaching and learning resource management and laboratory management in the education industry [60, 61]. Using cloud-based [52] education, students' performance and physical and motor skills can be improved, their learning needs can be stimulated, course learning expectations can be formed, [53] In addition, cloud-based PE teaching can continuously improve students' performance and stimulate their learning initiatives, leading to improved indicators of academic interest [8, 26] Applying cloud computing technology in education can also help in building educational resources and sharing resources and applications, leading to better results of physical education teaching. And we find Designing physical education teaching systems to improve the scientific and methodological nature of school physical education and enhance the effectiveness of physical education curricula. " The difference between the means of the two groups is 1..1, the value (t) is 2.14, the effect size is 0.19. The significance of the effect size is high, and this is due to The design of physical education teaching systems can improve the scientific and methodological nature of school physical education and enhance the effectiveness of physical education curricula. The use of interactive teaching systems based on artificial intelligence can enhance the teaching process through improved voice control circuits, video links and intelligent sports training modules [62]. In addition, physical education can contribute to the Sustainable Development Goals (SDGs) by promoting critical and systematic thinking through developing competencies in university students. Strategies such as introducing teaching methods that go beyond the physical dimension and encouraging active participation can help students understand the broader scope of the subject and promote meaningful learning [49, 59] Moreover, the design of intelligent physical educatio n teaching systems can overcome the limitations of traditional teaching methods, provide flexibility in terms of time and space, and meet the needs of students in different situations [31]. Technology related to cloud computing can also be used to improve the structure of the educational community, improve resource allocation, and enhance the quality and management of education [56]. The introduction of smart systems and responsive programs in physical education can improve the learning efficiency and work efficiency of physical education teachers [40], and we find " Designing physical education teaching systems using smart systems and responsive programs to create multimedia educational curricula that enhance the effectiveness of physical education curricula. " The difference between the averages Both groups: 0.1, t-value 2.11, effect size 0.02. The significance of the effect size is low, and this is due to Designing physical education teaching systems using intelligent systems and responsive software can enhance the effectiveness of physical education curricula. These systems allow the integration of multimedia approaches, such as high-performance graphics data processing programs and multimedia materials, into physical education classes [42]. In addition, the use of web-based teaching assistant systems can provide convenience to both teachers and students in managing and completing the physical education curriculum. [46] Computer network technology can also play a role in teaching assistants, breaking the time and space constraints of traditional physical education teaching and enabling online learning and sharing. Resources [19] Cloud computing technology can improve physical education teaching systems in colleges and universities, enhance knowledge innovation and engagement, and improve education quality and management [58] The application of computer-assisted instruction (CAI) systems in teaching exercise has also shown positive results, improving classroom focus and engagement compared to traditional teaching methods [59, 32] We find that " designing the physical education teaching system aims to improve the scientific and methodological nature of school physical education and enhance the effectiveness of physical education curricula. " The difference between the means of the two groups is 1.0, the t-value is 2.14, and the effect size is 0.021. The significance of the effect size is high, and this is due to The physical education teaching system can be designed to improve the scientific and systematic nature of school physical education and enhance the effectiveness of physical education curricula through different approaches. One approach is to use an interactive learning system based on artificial intelligence, which includes hardware and software components to enhance sports training and teaching [24] Another approach is to design an intelligent physical education teaching system that includes distance teaching, multimedia teaching, and intelligent teaching methods, providing flexibility and meeting the needs of students in different situations [17]. In addition, integrating critical and systematic thinking into

physical education can contribute to developing competencies in university students and promoting the Sustainable Development Goals (SDGs). [28]. Moreover, using a web-based teaching assistant system can enable efficient and effective management of physical education curriculum, providing convenience to teachers and students [1]. Finally, technology related to cloud computing can be used to design a physical education teaching system that optimizes educational resources, promotes cognitive innovation, and improves the quality and management of education [41], and we find " "Designing college physical education teaching systems based on artificial intelligence aims to improve the scientific and methodological nature of physical education and enhance the effectiveness of physical education curricula." The difference between the means of the two groups is 1.1, T-value 2.1 5, effect size 0.0 18. Significance The effect size is high and this is due to to Designing physical education teaching systems in colleges based on artificial intelligence can improve the scientific and methodological nature of physical education and enhance the effectiveness of physical education curricula. The use of information and communications technology (ICT) and computer systems can provide various benefits such as learning support, movement monitoring, video processing and exercise evaluation [15, 36] AI technology can be applied to everyday teaching in physical education, allowing detailed actions of students to be detected and key actions to be identified through computer vision systems. Additionally, the [18, 20, 43] use of AI algorithms, such as FNN neural networks, can provide an objective assessment and prediction of students' performance on tests. Physical education, which contributes to evaluating the teacher's performance more accurately [22, 27] Multiple intelligence theory can also be integrated into physical education teaching, enhancing students' sports technology, teaching practice ability, and thinking ability [34, 35] Moreover, the introduction of intelligent systems and responsive software can improve the learning efficiency and work efficiency of both students and teachers in physical education [3, 39].

2- The second question:

What is the design of curriculum content, teaching methods, learning assessment, management, and learning environment for physical education curricula ?

In Table 6, n=80.

Table 6. *Standards Designing curriculum content, teaching methods, learning assessment, management, and learning environment for physical education curricula.*

Standards	Control group		Experimental group		The difference between the means of the two groups	value (v)	Effect size	Meaning of effect size
	Arithmetic mean	standard deviation	Arithmetic mean	standard deviation				
Designing curriculum content, teaching methods, learning assessment, management, and learning environment for physical education curricula.	80.2	3.23	91.5	4.23	9.3	23.88	2.16	high
Designing curriculum content for good teaching and developing students' abilities.	90.2	4.56	99.5	4.25	9.3	1.67	0.19	high
How curriculum design principles have evolved since the early twentieth century, with an emphasis on developing hidden potential, monitoring and evaluating behaviors, and managing preventive risks.	90.2	4.58	99.1	4.36	9.1	13.01	1.45	high
Different concepts and models of curriculum, including course and learning design, curriculum assessment, and examples from various disciplines.	91.4	4.89	99.2	4.85	8.2	12.3	1.54	high
Curriculum development to provide subject matter expertise and educational methods	90.2	4.32	96.5	4.52	6.3	13.1	1.45	high

Standards	Control group		Experimental group		The difference between the means of the two groups	value (v)	Effect size	Meaning of effect size
	Arithmetic mean	standard deviation	Arithmetic mean	standard deviation				
for designing and developing curriculum content, teaching methods, learning assessment and management.								
A model for curriculum design that includes elements such as content, teaching methods, learning assessment, management, and learning environment for physical education curricula.	90.4	4.68	97.2	4.25	7.2	13.7	1.44	high

It is clear from the following table 6: We find " design of curriculum content, teaching methods, learning evaluation, management, and learning environment for physical education curricula. " The difference between the means for the control and experimental groups is (9.3) and the calculated T-value is equal to (33.88) indicating the presence of differences. It is statistically significant and we find the effect size equal to (2.16). Therefore, the criterion has a high effect size that indicates its importance in the study. This is due to the fact that the design of curriculum content, teaching methods, learning evaluation, management, and educational environment for physical education curricula are among the important aspects that must be taken into consideration. For effective teaching and learning. Current research provides insights into these areas. The study conducted by Obi et al. [1] Highlight the need to review and update existing curricula, effective time management skills, and collaborative teaching and learning techniques in Nigerian architecture schools. Wang et al propose [36] an evaluation method for the quality of physical education teaching and training based on deep learning, which includes an evaluation index and grade distribution system. Kopas-Vukašinović and Savić emphasize the importance of Design of Teaching Contents (DTC) in the educational process and the need for student teachers to realize its importance to improve the quality of education. These findings contribute to the understanding of how to improve curriculum design, teaching methods, learning assessment, management and learning environment in physical education curricula. " Designing curriculum content for good teaching and developing students' abilities. " The difference between the means of the control and experimental groups is (9.3) and the calculated T value is equal to (1.67) indicating the presence of statistically significant differences, and we find the effect size equal to (0.19). Therefore, the criterion has a high effect size that indicates its importance in the study, and this is due to... Curriculum content design is critical to good teaching and student development. It involves developing modern strategies for teaching and learning, and enhancing the quality of education (Emina, 2020). Curriculum design helps organize content and how it is taught, ensuring relative skill in individual and institutional support for quality teaching [33, 19] Effective science teaching requires content-focused professional development, which can be achieved through co-designing curriculum with scientists. This collaboration leads to changes in practice and student learning gains [11, 12, 13, 14]. Incorporating new conceptual learning and teaching approaches, such as Curriculum 2.0, which focuses on the production, sharing and learning of student content, has proven effective in language-related courses [7] Teachers must be actively involved in designing curriculum to meet the needs of their specific students and provide relevant content for sustainable and successful employability [2, 3, 4, 10, 17, 18] " How the principles of curriculum design have evolved since the early twentieth century, with a focus on developing hidden potentials, monitoring and evaluating behaviors, and managing preventive risks. " The difference between the means for the control and experimental groups is (9.1) and the calculated (t) value is equal to (13.1).) indicates the presence of statistically significant differences and we find the effect size equal to (1.45). Therefore, the criterion has a high effect size that indicates its importance in the study. This is due to the development of the principles of curriculum design since the early twentieth century to focus on developing hidden potentials, monitoring and evaluating behaviors. and preventive risk management. Curriculum design has shifted from focusing on creating a structured course of study for the good life to considering the specific life for which the curriculum is designed [37, 38]. Design principles now aim to reveal hidden developmental potential, improve mental processes, and anticipate environmental contingencies These principles involve developing, ranking and comparing children's innate qualities, which may lead to the separation of those perceived as 'less capable', and they

involve systematic processes of continuous monitoring, evaluation and feedback on behaviours In addition, data-driven systems are used to act proactively when taking risks [5]. Thus, the principles of curriculum design have evolved to give priority to developing capabilities, monitoring and evaluating behaviors, and managing preventive risks in education., "Different concepts and models of curriculum, including course and learning design, curriculum assessment, and examples from various disciplines." The difference between the means of the control and experimental groups is (8.2) and the calculated T value is equal to (13.3) indicating the presence of statistically significant differences, and we find the effect size equal to (1.54). Therefore, the criterion has a high effect size that indicates its importance in the study, and this is due to Different concepts and models of "curriculum" and different models and approaches to designing courses, learning and evaluating curricula are explored in the papers of Warren, Erikson and Lanning [47]. These papers provide examples and references of good case studies from a range of disciplines. Song discusses The importance of evaluation in building college English curricula and stresses the need for indicators and standards that reflect the quality of courses. Krishnan et al. describe [62]. A core course on engineering design and its development over the years, highlighting the use of case studies, practical model making, teaching and assessment tasks. Burch et al. [31] Mention the challenge teachers face in defining threshold concepts and developing transformative students in contrast to traditional curriculum design and delivery models., " Curriculum development to provide subject matter expertise and educational methods for designing and developing curriculum content, teaching methods, learning assessment and management. " The difference between the means of the control and experimental groups (6.3) and the calculated T value equals (13.1) indicates the presence of statistically significant differences, and we find the effect size equals (1.45). Therefore, the criterion has a high effect size that indicates its importance in Study and this is due to me Curriculum development includes the design and development of curriculum content, teaching methods, learning assessment, and administration. It takes subject matter expertise and teaching methods to ensure the effectiveness of the curriculum. A curriculum development team is recommended to bring subject matter expertise and instructional methods to the project. [27, 28, 29] The curriculum development process includes curriculum planning, organization, personnel records, and administration. Curriculum implementation is the process of putting ideas, concepts, and policies into practice, leading to changes in the knowledge, skills, and attitudes of students [Abdel Fattah Nasution]. Professional editing and design are important to ensure proper use of language, readability, flow, consistency, accuracy, and professional appearance of the curriculum Regular evaluation of the curriculum is essential to ensure its value and currency. "[34] By using elements of storytelling and considering equity, diversity, and inclusion, curriculum development can enhance the learner experience, the pace of change, improvement, and faculty goodwill.")model of curriculum design that includes elements such as content Teaching methods, learning assessment, management, and learning environment for physical education curricula. "The difference between the means for the control and experimental groups is (702) and the calculated T value is equal to (13.7) indicating the presence of statistically significant differences, and we find the effect size equal to (1.4 4). Therefore, the criterion has a high effect size that indicates its importance. In the study, this is due to me Within the curriculum design model for physical education curricula are elements such as content, teaching methods, learning assessment, administration, and learning environment. The model aims to transform ideas about the desired goals and contents of learning into tools that enhance educational practices that lead to intended learning outcomes The design model consists of the stages of analysis, design, development, implementation and evaluation. In the analysis stage, the learner's analysis and the analysis of the curriculum and educational environment are analyzed. In the design phase, a collaborative classroom design, a flipped learning-based physical activity design, and a physical activity support strategy were designed. In the development phase, educational materials and growth-oriented assessments are developed. In the implementation phase, there are design elements that are taught jointly regardless of the domains and design elements that are appropriate to the characteristics of each domain. Finally, the evaluation phase consists of reflection, growth-oriented evaluation, and classroom evaluation.

The third question

reference experience for enhancing the level of academic management in schools and improving the effectiveness of physical education curricula?

In Table 7, n=80.

Table 7. *Standards Reduce the number of students in the class and provide training to teachers on how to motivate students and create a positive attitude toward school.*

Standards	Control group		Experimental group		The difference between the means of the two groups	value (v)	Effect size	Meaning of effect size
	Arithmetic mean	standard deviation	Arithmetic mean	standard deviation				
Reduce the number of students in the class and provide training to teachers on how to motivate students and create a positive attitude toward school.	95	4.21	99	4.21	4	20.3	1.25	high
An overview of contemporary physical education that addresses curriculum development, the educational process and assessment.	94	4.21	97	4.21	3	20.5	2.36	high
Universities should involve professors in developing teaching assistants (TAs) and provide hands-on training opportunities to improve classroom management and leadership skills.	97	4.56	98	4.56	1	18.3	1.98	high
Specific information about reference expertise to enhance academic management in schools or improve the effectiveness of physical education curricula.	95	4.32	97	4.32	2	19.4	1.65	high
The impact of personal experience on the teaching practice of physical education teachers, but it does not specifically mention a reference experience to enhance academic management or improve the effectiveness of physical education curricula.	98	4.01	99	4.01	1	20.3	1.98	high
Essential features of effective professional development for physical education teachers to enhance academic management and improve curriculum effectiveness.	97	401	98	401	1	21.3	1.37	high

It is clear from the following Table 7. We find: Reducing the number of students in the classroom and providing training to teachers on how to motivate students and create a positive attitude toward school. ” The difference between the means for the control and experimental groups (4) and the calculated T value equals (20.4) indicates the presence of statistically significant differences, and we find the size of the effect. It is equal to (1.25), so the criterion has a high effect size that indicates its importance in the study, and this is due to Reducing the number of students in a class and providing training to teachers on how to motivate students and create a positive attitude toward school can have significant benefits. Research has shown that a multicomponent professional development course for teachers, combining an intervention based on self-determination theory and positive psychological intervention, can improve outcomes for both teachers and students, including work/school satisfaction, motivation, perceived motivational style, and work engagement. Emotional regulation skills and school satisfaction [13]. In addition, teacher training has been found to enhance students' cognitive and physical abilities, leading to improved behavior and performance in academic and social activities. (Ausma, 2008)Furthermore, positive learning behavior training has been shown to increase students' understanding of academic cyberbullying, helping them control its occurrence. During class Therefore, implementing these strategies can contribute to creating a more conducive learning environment and enhancing students' well-being and motivation at school. ", " An overview of contemporary physical education that addresses curriculum development, the instructional process and assessment. The difference between the means for the control and experimental groups is (3) and the calculated T value equals (20.5) indicates the presence of statistically significant differences, and we find the effect size equals (1.36). Therefore, the criterion has a high effect size that indicates its importance in the study.

This is up to me An overview of contemporary physical education covering curriculum development, instructional process and assessment. Wang Xiao-za stresses the need for a systematic model for physical education curriculum in China, based on national standards and targeting the healthy development of students). Gerald Griggs and Kirsten Petry discuss the contested nature of physical education as a curriculum subject, influenced by competing discourses and policies Petr Vlček highlights the challenges in planning and designing physical education curricula, particularly in achieving gender equality compared to other subjects. Mustafa Mohamed Nasr El-Din and Hani Mohamed Fathi Ali focus on the community and a sample of faculty members who teach physical education curricula in Egyptian universities Darla M. Castelli and Ang Chen discuss Catherine Ennis's evidence-based approach to curriculum development in physical education, emphasizing the importance of research evidence and field testing, " Universities should engage professors in developing teaching assistants (TAs) and provide hands-on training opportunities to improve classroom management and leadership skills." " The difference between the means of the control and experimental group (1) and the calculated T value equals (18.3) indicates the presence of statistically significant differences, and we find the effect size equals (1.98). Therefore, the criterion has a high effect size that indicates its importance in the study, and this Universities should involve professors in developing teaching assistants (TAs) and providing hands-on training opportunities to improve classroom management and leadership skills. Research indicates that there is a need for stronger coordination between core and joint units in teacher training programs to enhance classroom management skills. In addition Additionally, subject-specific training for graduate teaching assistants (GTAs) has been found to be valuable in higher education Furthermore, implementing TA programs that prioritize diversity and inclusion concerns can have a positive impact on underrepresented students Academic support structures can contribute TA programs, like TA programs, also help address issues of equity and access to higher education by providing support to faculty Therefore, engaging professors in developing teaching assistants and providing hands-on training opportunities can help improve classroom management and leadership skills, benefiting students. Both teachers and students. " Specific information about reference expertise to enhance academic management in schools or improve the effectiveness of physical education curricula. " It indicates its importance in the study, and this is due to the fact that reference experiences can enhance academic management in schools and improve the effectiveness of physical education curricula. The use of multimedia technology in physical education can provide a positive impact on teaching and learning [21, 22]. Implementing an education management information system can enhance the timely and accurate collection and dissemination of quality data, leading to improved delivery of quality education and parental involvement in monitoring students' academic progress (In addition, graduate students in TA positions in physical education can benefit from developing classroom management skills, as this can enhance their proficiency in delivering content to students" " The influence of personal experience on the teaching practice of physical education teachers," but does not specifically mention A reference experience to enhance academic management or improve the effectiveness of physical education curricula. " indicates its importance in the study and this is due to Personal experience has a significant impact on the teaching practice of physical education (PE) teachers. It affects the nature and form of teaching practice and the professional activity of physical education teachers during the teaching and learning process. However, none of the abstracts specifically mentioned the use of personal experience to enhance academic management or improve the effectiveness of physical education curricula. Abstracts discuss the transfer of personal knowledge and the role of experience in delivering comprehensive [55] PE It also highlights the impact of professional practice on the personal dimension of students and enhances teacher training [11, 12] In addition, the summaries note the importance of adapting curricula to the needs and abilities of students, including teaching strategies, instructional materials, and content. While personal experience may contribute to overall teaching practice, the specific use of personal experience to enhance academic management or improve the effectiveness of physical education curricula has not It is addressed in the abstracts presented. " Basic features of effective professional development for physical education teachers to enhance academic management and improve curriculum effectiveness. " indicates its importance in the study and this is due to the fact that effective professional development for physical education teachers to enhance academic management and improve curriculum effectiveness includes several key features. First, it is important to meet the specific needs of both newly hired and veteran physical education teachers, and provide professional development opportunities that enhance their knowledge and skills. Second, creating conditions in the postgraduate education system that support the fulfillment of teachers' needs for continuing professional development and the provision of organizational and methodological support is crucial. In addition, personal learning networks, workshops, and collaboration with other content areas can contribute to effective professional development. Furthermore, effective professional development should focus on training content, reference research on educational effectiveness, and provide opportunities for participants to experience self-efficacy and participate in professional communities. Finally, establishing clear standards for effective teaching, such as creating an appropriate learning environment and providing opportunities for student practice, should be emphasized in Teacher education programmes.

6. Conclusions

showed that there were statistically significant differences between the two means in favor of the experimental group.

The effect size values were high, indicating a significant positive impact of the smart system in improving the scientific and methodological nature of physical education. Which indicates the effectiveness of using smart teaching systems in teaching physical education.

It can be concluded that the effectiveness of using modern curriculum design methods in improving curriculum design skills among students of the College of Physical Education. There is a need to develop similar training programs to develop curriculum design skills among teachers and curriculum designers.

All effect size values were high, indicating a significant positive effect of the strategies used in the study.

Implementing strategies such as reducing the number of students in the class and training teachers led to significant improvement in parameters such as student motivation and creating a positive attitude towards school.

Involving professors in physical education curriculum development and training of teaching assistants has improved classroom management and leadership skills.

Professional development for physical education teachers contributes to strengthening academic management and improving the effectiveness of curricula.

7. Recommendations

B Based on the conclusions, the following recommendations can be made:

Adopting smart teaching systems and multimedia in teaching physical education courses due to their effectiveness.

Developing training programs to develop curriculum design skills among teachers and curriculum designers in colleges of physical education.

Reducing the number of students in classes and training teachers on an ongoing basis.

Involving faculty members in developing physical education curricula and training teaching assistants.

Paying attention to the continuous professional development of physical education teachers.

Conducting further studies to measure the effectiveness of other strategies in improving the quality of teaching physical education courses.

Acknowledgment

Acknowledgment of thanks and appreciation to the University of Hillah in Babylon, Iraq, for their assistance in the research productivity of this research. I extend my special thanks and appreciation to His Excellency the President of the University, Dr. Aqeel Majeed Kazim Al-Saadi, and the Scientific and Administrative Affairs at the University and the teaching staff of the College of Physical Education and Sports Sciences under the leadership of His Excellency Dr. Ali Abdul Amir Al-Hasnawi, Dean of the College.

Conflicts of Interest

The authors declare no conflicts of interest.

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