Article

Research on the Compatibility and Implementation Mechanisms of Deep Integration between Physical Education Teaching and Artificial Intelligence

Haili Zhang [1,*]

[1] University of Perpetual Help System DALTA, Manila, Philippines
* Correspondence: Haili Zhang, University of Perpetual Help System DALTA, Manila, Philippines

Abstract: This study study the adaptability of the consolidation between tidings and training instruction in the setting of educational digital transformation. Despite the increase lotion of word in training. Its use in forcible education remains trivial and insufficiently aligned with pedagogical exercise. To accost this emergence, this study make a multidimensional analytic framework encompassing technological, pedagogic, imagination, and stakeholder dimensions. And channel an psychoanalysis base on questionnaire data accumulate from 548 physical education teachers across unlike educational degree and area in China. The findings signal that the grade of integrating continue at a stage, with substantial disparity across part and educational stage. Stilted intelligence is mainly enforce in examination and instructional help, while its purpose in substantiate instructional figure and individualized pedagogy persist limited. Farther psychoanalysis reveals that the key roadblock to deep integrating are not technical constraints, but the misalignment between technical growing and the pedagogic logic of forcible didactics. This is demonstrate in deficient support, fallible connection between engineering and teaching drill, unequal institutional mechanism, and special teacher capacity. This bailiwick thereby project an consolidation-orient implementation logic and accent the conversion from pecker-oriented coating to engraft within the educational system, leave both perceptiveness and entailment for further the sustainable evolution of unreal word in pedagogy.

Keywords: Forcible education; unreal word; deep integration; adaptability; implementation mechanisms

1. Introduction

With the advancement of digital technology, the desegregation of word into pedagogy has become a key instruction for reform [1]. Under the direction of the "wellness-beginning" educational doctrine, as an essential portion of training, forcible breeding is undergo a appendage of digital transmutation. In this circumstance, hence artificial tidings is increasingly introduced into physical education teaching, bid new possibilities for improve instructional efficiency and raise individualise learning.

Still, diligence of hokey word in forcible training persist mostly trivial. In many cases. Intelligent engineering are utilise for data collection, examination, or auxiliary monstrance, rather than being efficaciously integrated into instructional design and teaching summons. As a issue, the potential of contrived intelligence to indorse personalize pedagogy, raise student engagement. And improve learning outcome has not been agnise. More importantly, the application of technology often fails to align with the pedagogical characteristics of physical education, leading to a mismatch between technological functions and teaching needs.

Live report on news in education run to concentre on coating and functional betterment, while devote deficient tending to the issue of alignment in the integration process [2]. In picky, there is a lack of analysis view how, resource. And stakeholder

Received: 04 March 2026
Revised: 24 April 2026
Accepted: 05 May 2026
Published: 09 May 2026

factors interact to shape the effectualness of consolidation. Without addressing these coordination issues, the integration of contrived tidings and forcible breeding is probable to persist at a trivial level.

Learn from the view of adaptability, to address this gap, this sketch examine the integration of news and instruction. It retrace a multidimensional analytic fabric encompassing technical. Pedagogic, resourcefulness, thereby and stakeholder dimensions. And transmit an empiric analysis ground on questionnaire data hoard from forcible education teachers across dissimilar leg and region [1]. By identify key constraints and canvas their underlie mechanics. This study essentially get to propose a taxonomic implementation logic for upgrade thick consolidation and to provide both theoretic and virtual insight for the digital transmutation of physical education.

2. Theoretical Foundations of AI Integration in Physical Education

The integration of forcible education instruction with word is not merely an adjustment of teaching methods or technologies. It increasingly map a highly complex and systematic appendage imply the reconstruction of theoretic fabric and teaching practices. So, the step is to elucidate the compatibility between the two and aim a and implementation mechanism, forfend action. This coming naturally guide to the methodology assume in this report: comport a psychoanalysis from the view of forcible education teaching theory and relevant theory of integrating and compatibility, give an appropriate analytical framework.

2.1. Theoretical Foundations of Physical Education Teaching

2.1.1. Individual Differences in Physical Education and Aptitude-Based Teaching

Teaching scholar harmonise to their aptitude is a -established and profound rule in education. Thereby efficaciously promoting their growth, it involves receipt and prize differences among assimilator to furnish place command tailored to each bookman's needs. In forcible education instruction, scholar read significant mutation in fitness, foundational ability, sports experience, and ascertain motivating. Thus, this feeler is a direct and way to reach eminent-quality forcible education outcomes. It must be recognized that in teaching environments, forcible breeding is restrict by classroom structure and time limitations [3]. This realize it unmanageable to offer personalized steering to every bookman, and student differences are ofttimes plow over the condition.

Feed the advantage of news in both data collection and analysis, it course and efficaciously render a introduction for implementing individualize education in physical education. Sensing devices can objectively and garner sports data. This facilitates the designation and analysis of learners' differences. More importantly, and this approach does not interchange the educational philosophy of personalized command [4].. It habituate way to lurch from experience-ground opinion to datum-driven decision-making, form it an splendid starting point for the recondite desegregation of forcible education with hokey word.

2.1.2. Lifelong Physical Education and Its Educational Implications

The conception of forcible didactics can be and articulate: Shoal training is not about produce bookman' fitness during their school years; its fundamental destination is to crop in students the cognizance of engaging in forcible activity throughout their animation. Therefore, it essentially is indispensable to proceed beyond -term objectives center alone on skill acquisition and forcible fitness improvement. And coordinate the value of physical education and course with bookman' lifelong development. This naturally leads to the end that the effectuality of didactics lead far beyond immediate benefits—it should too measure whether pupil have modernize regular exercise habits; acquired the power for self-directed forcible action, and install a correct outlook toward exercise practices.

The integrating of unreal intelligence technology into breeding has created and rich conditions for realise the concept of action. Foremost, AI expands the and spatial

boundaries of teaching. This allowing students to obtain seasonable and comprehensive exercise guidance and feedback during adulterous periods [5]. Second, the information gather by AI helps student identify convention in their modification, facilitating the detection and declaration of job, thereby enhance their self-management skills. By aligning AI with the destination of physical action, physical didactics can swimmingly transition from "phase grooming" to "sustained exploitation." In contrast, an exuberant focus on -term objectives cave the farseeing-term value of education. Hence, adaptability analysis holds substantial practical grandness.

2.1.3. Physical Literacy as the Core of Physical Education

In class; the possibility of center literacy has emerged as a considerably-defined and important theoretic management in education research. The fundamental function of forcible breeding is not just to center on fitness indicators but to enable educatee to modernize trust in societal life and rent in sports activities over the term. This ability can be stop down into multiple attribute, admit motor skills. Cognitive sympathy, emotional posture. And result. It be the integration of experience, situational inclusion, and and value formation [6].

An interrogatory of the integration of stilted tidings into pedagogy from the view of core literacy highlights both the chance and hazard affiliate with the covering of AI technology [3]. AI can aid students in see sports principles through data feedback, hence thereby raise their learning motivation. Nevertheless, an excessive nidus on data metrics while ignore students' sensations and instructor-pupil emotional interaction risks concentrate didactics to simple tool utilization. Not simply as the value framework for AI integration in forcible training, thereby the concept of sum forcible literacy function but besides allow the base for measure the compatibility of their convergence.

2.2. Theories Related to the Application of Artificial Intelligence in Enhancing Education

2.2.1. Technology Empowerment in Education

Technology empowerment imply leverage technical progress to optimise outgrowth and raise system efficiency; it is not destine to substitute human parturiency [2]. In the subject of education, technology empowerment provides clear and actionable benefits, such as improving teaching efficiency. Raise learn quality; and advance fairness. The integrating of intelligence into forcible education has importantly strengthened teacher' symptomatic observation capabilities and ameliorate classroom management efficiency. Technology empowerment in activities must never be engineering-predominate. If intelligence deviates from instruct objective or disregard instructor' perspicacity, it may disrupt the teaching process and pass to counterproductive resultant. From the position of technology empowerment theory, the thick integration of physical instruction and tidings should aim to heighten instructor' professional competence.

2.2.2. Data-Driven Approaches to Teaching and Learning

Since data-force hypothesis swear on data analysis to leave a scientific and basis for decision, education instruction should document students' behaviour, thereby forcible fitness changes, and and read upshot. However, data are to compile and accurately in teaching settings. The integration of artificial intelligence technology with device and algorithmic psychoanalysis gift physical education instruction with a trenchant information-take characteristic [7].

It can be clearly and excuse that datum-get feeler are by no agency "information-centric." Their sum lie in service as decision-support tools than being the ground for decision-making. This is because education instruction is a complex teaching activity [8]. Teachers' professional judgment, savvy of pupil' aroused nation, thereby and analysis of teaching context are unreplaceable. So, the datum-ram possibility in pedagogy map a process in which teacher grok. Down, incorporate, hence and implement the termination of data analysis.

2.2.3. Human–Machine Collaboration in Teaching and Learning

The purpose of -machine collaboration is to enable world and intelligence systems to bring their office, leverage their posture. Reach a partition of labor. And complement one another [9]. While teacher should concenter on instructional excogitation and engagement, in the context of forcible education instruction, intelligence should cover gamey-frequency, repetitious. And accurate data processing tasks. Through institutional plan and content construction; to guarantee and efficient collaboration between the two, safeguard must be apply.

Evaluating the effectiveness of -machine collaboration from an adaptability perspective expose decipherable measure: The AI system must align with teacher' usage habits, efficaciously handle professional judging. And own teaching control capabilities [6]. With teacher' work, if collaboration imbalance occur, the technology may interpose; compromising physical education quality.

2.3. Theoretical Foundations of AI Integration in Physical Education

2.3.1. A Systems Perspective on AI Integration in Physical Education

From a systems theory perspective, thereby it can be argued that activities are compile of interconnect constituent [7]. Exclusively when these constituent act in coordination, the efficiency of the organisation is optimized. Therefore. The deep integration of education instruction with news is not simply a technical scheme but quite the solution of coordinated interaction among assorted arrangement, such as teaching and imagination systems.

As an entire part of the education teaching system, from a systems theory perspective, and news can be regarded. The alignment between technical part and instructional operation, the adequacy of resource allocation for technology application; and the capability of stakeholder to support system operation forthwith determine the stableness and effectiveness of the arrangement. This chair to the growing of a adaptability analysis framework [10].

2.3.2. Application of Adaptability Theory in Educational Integration

Adaptability theory uprise in the bailiwick of innovation and direction. And its core principle is : the honest the alinement among several agent, the estimable the upshot [9]. To the battleground of training, it was and utilise to examine the compatibility between technology and factor as teaching objectives, instructional content. And characteristic.

The adaptability of incorporate sports education with artificial news widen far beyond technical implementation capabilities. Basically, its success hinges on whether the embrace technologies align with the pedagogic principles, content requirements, and and instruct methodology of forcible education. Modern technology does not guarantee successful integration. Consolidation will bomb if the engineering is disunite from the practical world of sports instruction [11]. Thus, evaluating integration effectiveness should not focus on the engineering itself. Rather, it should value whether a unchanging and matching kinship is build among engineering. Learn drill, hence and the stakeholders.

2.4. Construction of a Theoretical Integration and Analysis Framework

Building upon existent theories, it is wholly and to make an adaptive analysis framework for the integrating of forcible education instruction and contrived news; this represent technical adaptation, adaption, resource adaptation, thereby and stakeholder adaptation [12]. The core objective of this framework is to analyse the compatibility among constituent need in AI integration within education while distinctly aline with its objectives. Technological adjustment evaluate the point of compatibility between AI and the forcible education context; instructional version test the synergy between technology application and teaching goals and contentedness; resource adaptation investigates the conjunction between technical resources and actual teaching needs; and stakeholder adaptation evaluate the integrating of these elements from the perspectives of instructor and administrators. These four dimensions are interconnect and reciprocally reinforcing,

conjointly forming a comprehensive and theoretic foundation for evaluating the depth of AI integration in forcible education and course process as the starting point for subsequent and effectuation framework.

3. Current Status and Analysis of AI Integration in Physical Education

3.1. Research Design and Data Sources

3.1.1. Questionnaire Design

On existing measurement frameworks. Since the questionnaire show indicator across four attribute—adaption. Adjustment, resource adaptation, and stakeholder adaptation—it pass from studies on educational technology integration, sportsman. And the digitalization of education instruction. These fabric have been far polish to ordinate with the virtual realities of education teaching.

Put scores from 1 to 5 on a shell place from "really discrepant" to "very, the questionnaire is designed using a five-point Likert scale.". This approaching accurately mensurate respondents' immanent percept of the compatibility between hokey tidings and education instruction. Specifically. The technical compatibility dimension assesses the alignment between AI system functionalities and the education teaching process. The instructional compatibility dimension appraise the consistency between technology application and teaching objectives, message, thereby and method. The resource compatibility dimension canvas ingredient as education facility, platform support. And safeguard. Meantime, the subject compatibility dimension is appraise through indicant include instructor' digital literacy, usage willingness, thereby and student acceptance.

3.1.2. Briefly Describe the Sample Selection and Recovery Procedures

The survey point education teachers presently hire in master and petty school as comfortably as university across phase and regions. The questionnaire were stagger via an online platform. And a sum of 586 answer were collected [13]. After omit response, 548 valid questionnaire were hold. With an effective response rate of 93.52%. The accumulate sample size and report and accurately reverberate the current condition of artificial intelligence applications in school education. For 63.5% of the answerer, education teachers from elementary and secondary schoolhouse accounted, while those from university constituted 36.5%.; the sample were disperse as espouse: 42.1% from the easterly region, 33.8% from the key region, and 24.1% from the westerly region. The sampling exhibit a balanced dispersion across key variable such as sex, and teach experience, hence and professional rubric, providing a racy innovation for empiric analysis.

3.2. Current Status of AI Integration in Physical Education

3.2.1. Overall Characteristics of the Application Types of Artificial Intelligence

The existing survey data systematically reveal that the diligence of hokey word in school forcible training currently focuses on "screen and education rating, as as teach assistance"—specifically, in country as physical fitness testing, sports data collection; and psychoanalysis. In contrast. The adoption rate of system plan for material-time movement correction in schoolroom and individualise teaching design remains very low. This fundamentally suggest that AI applications in forcible education have largely been limited to outcome-ground appraisal, with their potential for consolidation into the teaching process and documentation for instructional decision-making yet to be full realized.

3.2.2. Teachers' Evaluation of the Effectiveness of Artificial Intelligence Integration

Surveys value the potency of desegregate hokey tidings into education teaching bespeak that 28.6% of teacher consider AI meliorate teaching quality, 47.8% deal it "good," while 23.6% view its shock as "or unimportant." This highlight that the application of AI in forcible education has not yet reach consensus among educator, and with important variations across schooltime. Part, and teaching contexts. Hence conducting adaptive analysis rest [14].

3.3. Specific Analysis of Adaptability in Four Aspects

3.3.1. Conduct a Systematic and Hierarchical Analysis of Technical Compatibility

The current psychoanalysis of technical compatibility disclose a upper-mediate tier of functioning. Instructor recognize the data collection capabilities of AI systems; still. Their evaluations of operational tractableness and adaptability to instruction continue low. This is mainly due to the overly complex operating workflow of subsist thinking organisation, thereby this present hardheaded challenges in classroom instruction [15]. Across educational stage, furthermore, technological compatibility vary. Scheme utilise in university physical pedagogy demo high compatibility equate to those in and secondary schooling. Because universities have advantage in technology integrating and equipment maintenance, this is likely. With the world, this berth adjust that basal and secondary schooling have big student populations and classroom rhythms. Seduce mellow compatibility peculiarly for good teaching.

3.3.2. Teaching Adaptability Analysis

The exist resume lead and systematically uncover that many teachers presently use unreal intelligence technology for action analysis and severalise instructional steering. Yet, virtually half of the teacher perceive technology applications as just adjunct puppet. This have not yet been mix into teaching objective and excogitation [16]. More significantly, instructor expose important divergence in their valuation of two key indicant: whether the engineering thereby facilitate individualise statement and whether it further student engagement. It can be conclude that the value proposition of stilted tidings in the teaching process has not been earn, and its conjunction with the objective of forcible education instruction necessitate advance.

3.3.3. A Rigorous and Systematic Analysis of Resource Compatibility

From the perspective of resource compatibility, it is unmistakable that most schooltime presently possess the canonical hardware infrastructure. However. Information sharing mechanisms and relate systems stay deficient. As a result, nearly one-tierce of teacher describe that systems are antagonistic with one another, stymie data sharing among pedagogy, valuation. And management systems. Disparity thereby are pregnant, with educate regions expose gamy resource compatibility. This emphasize the decision that regional economical development levels and education funding and substantially regulate the integration of tidings into education instruction.

3.3.4. Conduct a Systematic and Hierarchical Analysis of Subject Adaptability

From the position of capable adaption. It is evident that education teachers generally have a cocksure posture towards tidings. Nevertheless, it must be receipt that instructor lack sufficient literacy, technique in proficient procedure. And systematic professional grooming. This bound the covering of AI in education. In line. Students show smashing pursuit in the teaching models enable by AI in physical instruction. Notwithstanding, teacher still take to provide seasonable and appropriate guidance on movement techniques during exercise. So, adjustment is not exclusively a subject of instructor' instructional capabilities; it is evenly to consider bookman' learning styles and cognitive feature.

3.4. Analysis and Evaluation of Overall Adaptation Level

Given that the overall compatibility of the bass desegregation between physical education instruction and tidings presently remain at a "compatibility" stage. It is observable that the existing technologies and resource circumstance are golden [6]. However. Both version and learner version constrain the progress of mystifying integration. Accordingly, a marked event of "technology carry the lead while instruct lags behind" has emerge: although technology quickly desegregate into teaching processes, and teaching models and teachers' competence have not been set consequently. While results are observable, the deficiency of version impedes -term development and rich

integrating. This naturally leaven the question of the cornerstone for subsequent implementation mechanisms.

4. Analysis of Barriers to AI Integration in Physical Education

An analysis across four dimensions course and appropriately pass to the conclusion: the consolidation of education instruction and unreal news presently present a restrained grade of compatibility, with significant edition maintain across each proportion [5]; to discover the key element obstruct integration, it is to essay the reasons for this deficient compatibility from multiple perspectives. Admit reason, development, institutional surround. And stakeholder development.

4.1. Theoretical and Cognitive Barriers

From a perspective, technical possibility fundamentally holds a perspective in a taxonomic manner. Only as a proficient tool to raise teaching efficiency neglect the educational objectives underlying in physical education. As intimately as the aroused dimension of bodily experience during the teaching process, treating intelligence. As a event, AI in forcible didactics tends to focalize on forcible fitness testing, performance statistics, and achievement assessments, diverge from proficient destination and moving farther from the underlying role of sports education—fostering holistic development. This approach pretermit important chance to advertise operation-found learning experiences and aroused emergence [4,13]. With forcible education instruction, over time, such a methodology impede the desegregation of AI and forestall its seamless imbed at the nucleus of teaching drill.

4.2. Technological Barriers

Currently, most unreal intelligence products utilise in physical education instruction demo decided technology-and marketplace-orient characteristics. Result to meaning deficiencies in understanding the context of school physical education. Many ware predictably prioritize truth but neglect to adequately reckon factors such as limited student numbers and restrain teaching spaces. On expert feasibleness and commercial value, additionally, during product upgrades. Developer often sharpen while miss literal-world feedback from teachers in actual statement. This attack leave in complex operating procedures and cumbersome workflows. This increasing teaching burdens and concentrate instructor' willingness to borrow these technology. Over time, this hampers the genuine integration of AI with physical education and prevents the full realization of technological potential into tangible teaching outcomes, making the issue of adaptability strikingly apparent [16].

4.3. Institutional Barriers

Institutional framework and resource allocation are two decisive prerequisites for the desegregation of intelligence with forcible education instruction. In direction and resourcefulness dispersion, current surveys spotlight several challenge: While most schooling have introductory AI-enabled equipment, significant deficiencies exist. Specifically, the regulatory model for AI-power didactics rest, lacking, guidelines tailor to the field's requirements. This elaborate execution. Pose a primary obstruction to integration progress; additionally, resource distribution across different regions and schooltime is uneven. More, resource allocation increasingly is flawed. While overleap data maintenance and professional steering, perpetuate a chronic asymmetry of "emphasizing equipment over serve. Some school prioritise hardware procurement.". As a solvent, AI systems cannot achieve sustainable and levelheaded growing under these conditions [8].

4.4. Teacher-Related Barriers

Physical education teachers work a function in delivering efficacious command. Their competency and power to conform to evolving roles significantly touch the desegregation of intelligence into teaching practices. However, education teachers exhibit a "peaceful acceptation" attitude toward AI applications; take to limited operating

acquisition and a superficial understanding of the engineering. Existing training programs much emphasize expression while overleap the integration of AI with design and evaluation, blockade teacher from employ AI as a teaching resource. Requiring them to transition from traditional use as skill transmitters and classroom managers to becoming hear facilitators and data interpreters, furthermore. The integrating of AI in forcible education inflict gamey requirement on teacher. Unluckily, the lack of exculpated guidepost within current teacher training systems contributes to role confusion during instruction, feign their ability to satisfy core teaching responsibilities.

5. Implementation Mechanisms for AI Integration in Physical Education

The thick desegregation of news into forcible instruction broaden beyond mere technological intervention or reform [16]. It is essential to begin with educational objectives and systematically design stable and sustainable operational mechanisms. Concentrate around the process of "diagnosing---alignment---collaboration---optimisation, thereby this approach will naturally base a comprehensive fabric for incorporate AI into forcible teaching.".

5.1. A Diagnostic System for Aligning Educational Objectives

The premise of the symptomatic mechanism is to found its evaluation on the educational objectives of forcible teaching. To tax the appropriateness of contrived intelligence integration across all teaching components, and therefore. A taxonomic and hierarchical psychoanalysis must be comport. Technical operation should never be the evaluation criterion. On mold whether technical coating encourage pupil' holistic growth, enhance motor learning responses, and further a lifelong allegiance to action. Instead, the focus should be. The adaptive mechanism guide rigorous periodical rating of drill. It utilise a combination of and index to objectively name risk points and orbit for advance during the integration process, thereby enable and appropriate modification to mechanism [10]. For this cause that the integration of contrived intelligence never deviate from the marrow of breeding, it is incisively.

5.2. Seamless Integration Driven by User Needs

Unlined desegregation after get with plow the pragmatic needs of pedagogy, consistently promoting the deep integrating of tidings into sports instruction scenarios. From peaceful recipients of instructional requirement, this coming transform forcible education teachers into alive contributor to scheme design and operable optimization. Ground a teacher participation feedback mechanism is substantive for quick and express teaching experiences to the technology development and subtlety procedure. Additionally, key both common and want in sports teaching enable the creation of sew subsystem that efficaciously touch diverse necessary.. The unseamed integration mechanism reduces the gap between technology development and teaching practice, while substantially heighten the adaptability of technological result [6].

5.3. Multi-Element Synergistic Mechanism

The integration of physical education instruction with artificial intelligence is a process that requires collaborative engagement and coordination among technology developers, school administrators, education teachers. And bookman. No undivided stakeholder can accomplish this integration severally; literal convergence progressively take the ordinate endeavor of all party. Specifically, school administrators must build comprehensive programme, grounds-based policies, and elucidate the responsibilities of each entity [1,5]. Technology developers should optimise product functionalities based on teaching scenarios to touch need. Forcible education teachers must and use technological putz in their education and provide feedback to facilitate system improvements. As the near verbatim and honest evaluator of the integration's effectualness, educatee, as the elementary assimilator. Serve through their learning experiences and outcome. Consequently, -stakeholder quislingism naturally palliate possible challenges throughout the integration process.

5.4. A Human-Machine Collaborative Teaching Mechanism

Human-machine collaboration is a crucial divisor in achieve mysterious integration [12]. In physical education instruction, artificial intelligence should be entrusted with tasks such as data collection and movement analysis, while physical education teachers should focus on setting teaching objectives, creating instructional scenarios, and guiding students' emotional engagement. It is to launch a -machine collaboration framework to foreclose engineering from supercede or lessen the office of teacher. Thereby effectively safeguard the educational use of physical education.

5.5. Dynamic and Continuous Optimization Mechanism

Since bass integration is a process that imply uninterrupted adjustment and civilisation in teaching, it cannot be accomplish. The information hoard by stilted intelligence systems should not exclusively be apply for teach valuation but repulse teaching reform and institutional optimisation [4], and regularly examine integration outcomes, identify issues in a fashion. And pronto adjust constellation and teaching strategies are substantive for accomplish the sustained optimisation of the desegregation of pedagogy with stilted intelligence. This afterwards ensures a more and effectual approach to heighten practices.

6. Safeguard Measures and Future Prospects

6.1. Fundamental Principles for Deep Integration

The cryptical integration of artificial intelligence and physical didactics commandment should not be approached as a strictly technology-take reform, but as an education-orientate translation steer by pedagogical object [10]. Consequently, various principle inherently need to be build.

Educational aim should consume antecedence over advance, guarantee that the coating of hokey tidings consistently assist the marrow goal of student development [12]. Emphasizing the coalition between technical functions and the characteristics of physical education teaching, the integration process should follow an adaptability-tailor logic. A human-auto collaborative attack should be defend. In which intelligence supports quite than exchange instructor' professional office. These precept render the orientation for reconstruct a integration system.

6.2. Mechanisms for Systematic Implementation

On the process of multiple mechanics rather than disjunct interventions; ground on the empiric findings and adaptability analysis, the realisation of recondite integration reckon.

An support mechanism is required to furnish policy guidance and stable governance structures. This basically include refine regulative framework. Elucidate implementation standards, and ensuring prospicient-term coordination among educational, hence and administrative sectors.

In the integration process. A teacher capacity development mechanism meet a fundamental role. Enhancing teacher' digital literacy, data interpretation ability, and and instructional integration competence is essential for transforming news from a prick into an teaching resource [15].

To optimise the apportionment and utilisation of technical base, a resource coordination mechanism should be established. This require not but hardware provision but the consolidation of software platforms, data systems. And support services to secure the performance of teaching environments [15].

An evaluation and feedback mechanics is necessary to indorse continuous improvement. By combining quantitative data analysis with qualitative assessment, this mechanism enables timely identification of problems and iterative optimization of both teaching practices and technological applications.

6.3. Implementation Pathways and Future Directions

Through a and adaptative operation, the consolidation of news and pedagogy should be promoted. Secern scheme must be take based on conditions and degree. Forfend implementation approaches. Uninterrupted monitoring and dynamic adaptation are essential to ensure that desegregation remains aligned with educational objective.

Future enquiry should farther research the dynamic interactions among, pedagogic. And contextual factors, employ research methods as classroom observation and psychoanalysis [8], hence this approaching will conduce to a more comprehensive reason of the -term effects and evolution mechanisms of integrating. This thereby providing and empiric reinforcement for the sustainable development of news in forcible pedagogy.

7. Conclusion

This study focuses on the adaptability of the integration between intelligence and forcible education teaching. Establish on analysis, the current level of consolidation is found to persist at a stagecoach, with patent disparity across educational layer and neighborhood. Although stilted intelligence establish clear advantages in data collection and instructional aid, its lotion is notwithstanding mostly confined to supplementary functions and has not been embed into the core processes of teaching. Farther analysis show that these limitations are not due to technical capacity, but rather to the deficiency of alignment between logic and the principle of education. In special, deficiency in theoretical frameworks, the disconnection between technology development and teaching practice, poor institutional sustenance, and insufficient professional content of instructor conjointly stiffen the advancement of deep desegregation.

From a view, the bass desegregation of contrived word and physical teaching should be empathise as a interconnected process involving multiple constituent than a engineering-aim shift. On the alignment among educational objective, instructional blueprint; resource allocation. And stakeholder capabilities, its effectivity look. In enable news to careen from pecker-orientate covering toward and sustained consolidation within the system. Therefore, the key challenge lies. Beyond the use of technology, development should move and focalize on build integration mechanisms. Promoting the changeover from "tool utilization" to "systemic plant" will be crucial for actualise the value of artificial word in forcible teaching and supporting its -condition, gamey-quality development.

References

1. J. Sargent, *Digital technologies and learning in physical education: pedagogical cases*, 2018.
2. R. Bailey, K. Armour, D. Kirk, M. Jess, I. Pickup, R. Sandford, and B. P. Education, "The educational benefits claimed for physical education and school sport: an academic review," *Research Papers in Education*, vol. 24, no. 1, pp. 1–27, 2009.
3. P. Mishra and M. J. Koehler, "Technological pedagogical content knowledge: A framework for teacher knowledge," *Teachers College Record*, vol. 108, no. 6, pp. 1017–1054, 2006.
4. N. Selwyn, *Education and technology: Key issues and debates*, Bloomsbury Publishing, 2021.
5. D. Kirk, "Educational value and models-based practice in physical education," *Educational Philosophy and Theory*, vol. 45, no. 9, pp. 973–986, 2013.
6. R. Guo, "Analysis of artificial intelligence technology and its application in improving the effectiveness of physical education teaching," *International Journal of Web-Based Learning and Teaching Technologies (IJWLTT)*, vol. 19, no. 1, pp. 1–15, 2024.
7. D. Yang, E. S. Oh, and Y. Wang, "Hybrid physical education teaching and curriculum design based on a voice interactive artificial intelligence educational robot," *Sustainability*, vol. 12, no. 19, p. 8000, 2020.
8. H. S. Lee and J. Lee, "Applying artificial intelligence in physical education and future perspectives," *Sustainability*, vol. 13, no. 1, p. 351, 2021.
9. F. Cao, M. Xiang, K. Chen, and M. Lei, "Intelligent physical education teaching tracking system based on multimedia data analysis and artificial intelligence," *Mobile Information Systems*, vol. 2022, no. 1, p. 7666615, 2022.
10. S. Li, C. Wang, and Y. Wang, "Fuzzy evaluation model for physical education teaching methods in colleges and universities using artificial intelligence," *Scientific Reports*, vol. 14, no. 1, p. 4788, 2024.
11. J. C. Miller, J. P. P. Miranda, and J. C. G. Tolentino, "Artificial intelligence in physical education: A review," *Global Innovations in Physical Education and Health*, pp. 37–60, 2025.
12. N. Genç, "Artificial intelligence in physical education and sports: New horizons with ChatGPT," *Mediterranean Journal of Sport Science*, vol. 6, no. 1-Cumhuriyet'in 100. Yılı Özel Sayısı, pp. 17–32, 2023.

13. Z. Li and H. Wang, "The effectiveness of physical education teaching in college based on artificial intelligence methods," *Journal of Intelligent & Fuzzy Systems*, vol. 40, no. 2, pp. 3301–3311, 2021.
14. B. Cui, W. Jiao, S. Gui, Y. Li, and Q. Fang, "Innovating physical education with artificial intelligence: a potential approach," *Frontiers in Psychology*, vol. 16, p. 1490966, 2025.
15. T. Zhou, X. Wu, Y. Wang, Y. Wang, and S. Zhang, "Application of artificial intelligence in physical education: a systematic review," *Education and Information Technologies*, vol. 29, no. 7, pp. 8203–8220, 2024.
16. B. Zhang, H. Jin, and X. Duan, "Physical education movement and comprehensive health quality intervention under the background of artificial intelligence," *Frontiers in Public Health*, vol. 10, p. 947731, 2022.