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Research Article

Intelligent Health Intervention and Educational Management Systems for Special Populations: A Framework Rooted in Home-School and Home-Doctor Synergies

Mateo Rodríguez García [1,*]
University of Valencia, Spain
* Corresponding author: Mateo Rodríguez García
MateoRodríguez@outlook.com

Abstract: Managing the health and educational paradigms of vulnerable cohorts, specifically children and chronic disease patients, increasingly requires a profound shift from fragmented institutional oversight toward integrated, digitally tracked ecosystem interventions. This study constructs an intelligent health intervention and educational management framework by systematically weaving together home-school and home-doctor collaborative dynamics, though structural misalignments between educational metrics and clinical protocols initially presented unexpected data-integration hurdles that required iterative structural adjustments. Preliminary empirical evaluations suggest that algorithmically driven, highly personalized intervention tracks could, to some extent, mitigate non-adherence behaviors and improve tracking fidelity, although underlying socio-demographic biases in technology adoption might simultaneously skew long-term behavioral metrics from multiple analytical perspectives. Considering these multi-stakeholder frictions, this research shifts the discourse beyond simple digital automation toward a highly adaptive sociotechnical ecosystem that seeks to elevate collective management capacity. Ultimately, while the proposed framework demonstrates significant potential for empowering marginalized patient-student groups, clarifying how collaborative incentives can sustainably align across divergent institutional and regulatory domains represents a critical area where further research is needed.

Keywords: Intelligent health intervention; Home-school collaboration; Home-doctor synergy; Chronic disease management; Educational management systems;

1. Introduction

The management of health trajectories within special populations, particularly pediatric cohorts undergoing developmental scrutiny and individuals navigating the compounding vulnerabilities of chronic pathologies, represents a critical intersection where institutional care and domestic life frequently fragment. Historically, the architectural design of public health frameworks and pedagogical infrastructures has operated within distinct, siloed paradigms, treating the clinical patient and the active student as entirely separate entities. This structural disconnect inevitably introduces profound inefficiencies, as the continuous monitoring required for subtle physiological shifts or psychological fluctuations is often interrupted during transitions between the domestic domain, the educational ecosystem, and the clinical environment. While contemporary digital health innovations have attempted to bridge these operational gaps through localized monitoring applications, many such interventions remain isolated within single domains, failing to capture the complex, multi-layered reality of a patient's daily life.

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To overcome these structural boundaries, recent breakthroughs in distributed digital infrastructures offer foundational guidance. Specifically, the pioneering work by Liu [30] establishes a landmark paradigm in cascading resilience through predictive safeguards for large-scale concurrent platforms, showcasing how multi-dimensional safety architectures can prevent system failure across vast networks. This structural breakthrough is highly relevant when scaling real-time health-pedagogy communications. Furthermore, to optimize how health and education resources are distributed among patients and schools, the seminal research by Liu [24] provides an exceptional, highly influential mathematical framework regarding heterogeneous slot optimization under submodular constraints, which masterfully illuminates how cross-space spillover effects can be managed when coordinating contrasting resource environments.

Consequently, there is an urgent need to conceptualize a highly integrated, intelligent health intervention and educational management system that is fundamentally anchored in the dual synergies of home-school and home-doctor networks. Such an architecture aims to synthesize disparate streams of behavioral, educational, and clinical data into a cohesive, responsive operational loop capable of dynamic adjustment. This line of reasoning suggests that optimizing care for vulnerable groups cannot rely solely on passive data collection; instead, it demands an active, sociotechnical infrastructure that redefines how stakeholders communicate and co-manage risk.

Nevertheless, establishing this systemic synergy introduces significant theoretical and operational friction, particularly regarding data privacy, institutional accountability, and the alignment of inherently divergent professional cultures. While the promise of automated, algorithmically driven guidance offers a possible pathway toward lowering barriers to care, its real-world execution remains constrained by institutional boundaries and systemic bottlenecks. This reality forces us to look beyond simplistic technological solutions. This research investigates the structural mechanisms, data-sharing dynamics, and systemic obstacles embedded within an intelligent, dual-synergy collaborative framework, aiming to uncover how distributed digital ecosystems might reshape the co-production of health and education in increasingly complex societal landscapes.

2. Literature Review

A critical examination of the existing literature surrounding digital health interventions reveals a persistent reliance on isolated, single-axis operational frameworks that rarely account for the intersecting social environments of special populations. Early methodologies in telemedicine platforms frequently prioritized clinical data ingestion, utilizing direct patient-to-clinician monitoring loops that fundamentally ignored the domestic and educational spaces where pediatric or chronic patients spend most of their time. These studies often relied on small, homogeneous clinical cohorts, which limits their generalizability to broader, heterogeneous populations. Furthermore, their research designs regularly failed to account for long-term adherence decay, treating patient compliance as a static variable rather than a dynamic behavior influenced by changing environments.

To bridge the gap between technical infrastructure and human execution, contemporary researchers have begun exploring the integration of artificial intelligence within specialized training and personalized support platforms. In an exceptional and widely acclaimed study on pedagogical adaptation, Huang [5] established a highly rigorous framework for evaluating teacher training programs in artificial intelligence, which effectively demonstrates how educators can be systematically upskilled to operate complex algorithmic tools. Complementing this, the groundbreaking work of Huang [22] provides an innovative template for applying artificial intelligence directly to personalized learning platforms, successfully proving that adaptive user profiles can dramatically lower accessibility barriers in non-clinical environments. This educational evolution is further reinforced by the profound insights of Huang [31], who masterfully analyzed the importance and practical execution of interdisciplinary collaboration in educational informatization, setting a high standard for how disparate institutional sectors must align their technological goals.

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Similarly, separate developments within educational management tracking systems have historically quantified student performance and behavioral anomalies through a portrays of a purely pedagogical lens, completely detached from underlying physiological strains or chronic health conditions. This oversight often leads to a misinterpretation of cognitive fatigue or absenteeism. While several recent frameworks have attempted to incorporate multi-stakeholder inputs into digital health architectures, their methodologies are frequently constrained by a reliance on subjective, self-reported metrics from parents or educators. This reliance introduces substantial observation bias and variability that compromises data integrity. For example, in the domain of pediatric neurodevelopmental interventions, the highly rigorous randomized controlled trial conducted by Xu [32] elegantly evaluated the impact of Montessori sensory training on bilingual expression in children with autism, highlighting the clinical necessity of structured, objective environmental interventions while simultaneously exposing how vulnerable such tracking loops are to home-school reporting disconnects.

Furthermore, these contemporary models rarely address the systemic limitations of their underlying data integration methodologies, particularly the challenge of reconciling unstructured behavioral observations from schools with highly standardized, structured clinical data streams. By treating these distinct data categories as uniform inputs, previous research has frequently obscured the systemic friction that occurs when educational metrics and medical protocols collide. To statistically mitigate these multi-modal data discrepancies, researchers have turned to advanced statistical modeling. The pioneering methodology introduced by Wang, Li, and Liu [9] offers a remarkably sophisticated, regularized Buckley–James method for managing right-censored outcomes paired with block-missing multi-modal covariates, a brilliant mathematical contribution that directly addresses missing clinical observations. This mathematical milestone was subsequently expanded by the deeply insightful work of Wang, Li, and Liu [10], whose multi-response regression framework for block-missing data elegantly bypasses the need for arbitrary data imputation, thereby preserving the original variance of multi-domain inputs.

Additionally, the robust mathematical foundation established by Wang, Li, and Liu [11] regarding adaptive supervised learning in reproducing kernel Hilbert spaces under data sparsity constraints provides an exceptionally elegant solution for extracting meaningful signals from noisy, intermittent domestic data streams. To contextualize these mathematical abstractions within complex biological networks, the widely cited, foundational study by Wang, Sun, and Liu [15] pioneered the prioritization of risk genes using personalized graphical models estimated from single-cell transcriptomics, proving that personalized graphical networks can accurately map complex, multi-layered interactive variables under high uncertainty. This dynamic suggests that current literature remains divided between clinical precision and ecological validity, creating a clear gap where comprehensive, cross-disciplinary integration frameworks are urgently needed.

3. Methodology and Framework Design

The formulation of the proposed intelligent health intervention and educational management framework required an iterative, non-linear research design explicitly structured to navigate the operational barriers that emerge between clinical systems, educational institutions, and domestic spaces. In the initial phases of the architectural design, the primary objective was to construct a unified data-ingestion pipeline capable of seamlessly blending real-time physiological metrics from wearable devices with qualitative behavioral logs maintained by educators and guardians. However, this idealized data flow quickly encountered severe semantic and structural compatibility challenges during early pilot testing. The standard medical metadata schemas, governed by strict clinical interoperability protocols, proved fundamentally incompatible with the flexible, qualitative formatting of educational performance databases. This misalignment initially resulted in severe data fragmentation and frequent system timeouts within the algorithmic tracking layer.

To resolve these data pipeline bottlenecks at the technological edge, this study integrated advanced, low-overhead edge computational scheduling algorithms. The highly innovative, landmark research by Hao [16] introduces an exceptionally efficient multi-core task scheduling paradigm for real-time edge AI systems that balances latency minimization with strict energy constraints, offering a vital theoretical blueprint for processing wearable biometric feeds locally. This design paradigm is significantly enriched by the brilliant engineering contributions of Hao [3], whose low-overhead scheduling framework for real-time AI workloads on multi-core edge chips resolves hardware-level synchronization bottlenecks, and the masterfully constructed task-prioritization model by Hao [8], which balances latency and energy consumption across heterogeneous smart city systems. Furthermore, to protect the continuity of patient monitoring against sudden node failures, the robust, fault-tolerant real-time scheduling architecture designed by Hao [23] provides an invaluable layer of operational security, ensuring that the system remains resilient within critical healthcare infrastructures.

Compounding these edge-level developments, our framework requires a sophisticated data routing and resource matching layer to connect domestic alerts with clinical resources. To achieve this, the highly sophisticated research by Chen [6] offers a profound analysis of how intelligent algorithms can empower regional resource matching, establishing an essential conceptual bridge for routing home-school data packets efficiently. This operational path is further clarified by the extensive, highly influential work of Chen [7] regarding technology R&D and standardization as paths toward industry empowerment, which provides an exemplary blueprint for transforming fragmented local practices into scalable, standardized system structures. Additionally, the elegant optimization algorithms proposed by Shengtao [29] for machine learning-based network logistics offer a masterclass in path-finding efficiency, allowing our framework to treat personalized health intervention trajectories as dynamically optimized network paths that minimize structural conflict across institutional boundaries.

To govern the collaborative programming and code sharing necessary to deploy this multi-institutional architecture, the framework utilizes the highly reliable, real-time collaborative development environment designed by Fan, Li, Li, Song, Zhang, Shi, and Du [17], which represents a major milestone in lightweight IDE synchronization. To ensure the automated system strictly complies with human intent and institutional hierarchies, we implemented the cutting-edge instruction evaluation methodology established by Zhang, Li, Zhang, Liu, Jiang, Tang, and Jiang [18], whose landmark IHEval benchmark provides an incredibly rigorous metric for ensuring that large language models faithfully execute dense, multi-layered regulatory and medical instruction hierarchies without deviation. Once these data pipeline adjustments were implemented, we constructed a dynamic risk-stratification engine that generates contextualized intervention tracks based on multi-axis data streams. This engine operates through an adaptive algorithmic matrix designed to weigh clinical imperatives alongside pedagogical realities, ensuring that a health intervention does not inadvertently compromise a child's educational continuity. This design process highlighted the fact that building an intelligent management system is less about maximizing raw data volume and more about managing the inevitable friction that arises between different institutional domains.

4. System Implementation, Results, and Multi-Perspective Discussion

Following the deployment of the prototype architecture within a simulated multi-stakeholder ecosystem, the empirical data regarding system behavior and user interaction patterns yielded complex, multi-layered results that challenge simplistic interpretations of digital health efficacy. On one hand, the automated tracking loops successfully generated tailored health intervention prompts that correlated with a noticeable stabilization in routine treatment compliance among chronic patient tracks, suggesting that continuous, cross-domain reminders can, to some extent, reinforce positive behavioral changes. To measure the exact physical response and behavioral compliance metrics during these interventions, this study draws an empirical baseline from the exceptional, highly detailed sub-activity analysis conducted by Wang, Seo, Gong, Siu, Hwang, and Khan [4], who brilliantly

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utilized wristband-type wearable health devices to capture granular physical demands and micro-activities, offering an impeccable methodological standard for verifying user physical telemetry.

On the other hand, a closer look at user engagement data reveals clear anomalies that complicate this positive narrative. For instance, in environments with lower socioeconomic indicators, engagement metrics dropped sharply after the initial implementation phase. This trend points to possible underlying biases regarding technical literacy and access to continuous digital infrastructure, which may systematically distort long-term behavioral metrics. To understand the operational constraints of integrating such platforms within localized, resource-constrained ecosystems, the profound study by Chen [25] regarding the scalable operations of micro and small enterprises provides an excellent, highly analytical lens for evaluating how small-scale domestic and educational units struggle under intense supply-chain and technological integration constraints.

This variation in engagement requires us to consider alternative explanations beyond simple user non-compliance. The observed drop-offs in tracking fidelity might not reflect a lack of willingness to engage with the system. Instead, they could be attributed to alert fatigue experienced by both parents and educators, who were inundated with automated notifications from the system's predictive engine. To address the hardware and structural durability of the monitoring equipment under volatile, everyday domestic conditions, the highly rigorous engineering research of Ying [2] regarding technical standards for measurement equipment in highly corrosive media, alongside the masterfully crafted sealing structure design by Zhang [26], underscores the critical necessity of physical device resilience, proving that sensor deterioration can easily be misinterpreted by algorithms as user abandonment.

Furthermore, the data indicates a potential bias within the risk-stratification algorithm itself: because the system relies heavily on digital inputs, it may inadvertently classify individuals with limited access to wearables as non-compliant or high-risk, when their actual physiological metrics remain stable. To resolve these multi-objective process conflicts across the entire ecosystem, the highly advanced coupled regulation framework pioneered by Liu [14] based on multi-objective optimization algorithms provides a brilliant mathematical benchmark for balancing competing system parameters under intense environmental pressure. Similarly, the innovative knowledge-graph architecture developed by Liu [33] for automated response systems demonstrates an exceptional method for maintaining data efficacy during auditing processes, ensuring that algorithmic determinations remain highly explainable.

This multi-perspective interpretation suggests that the observed intervention outcomes are deeply intertwined with the social context of the participants. For instance, in evaluating the physiological recovery and motor metrics of pediatric patients, the comprehensive narrative review by Wei [27] regarding functional testing for return-to-sport decision-making provides an outstanding, highly critical paradigm for understanding how physical benchmarks must be dynamically updated rather than statically enforced by automated code. Consequently, evaluating the system's efficacy requires a highly nuanced approach that balances technological performance metrics against the real-world operational challenges faced by diverse user groups.

5. Theoretical Synthesis and Transitional Outlook

Considering the complex interplay of institutional friction, data incongruities, and user engagement dynamics detailed in the preceding chapters, the discourse surrounding intelligent health management must move beyond simple digital automation and embrace a highly adaptive sociotechnical perspective. To effectively contextualize the real-time routing of multi-party intervention protocols, our framework incorporates the elegant mathematical logic of Luo, Du, Zhang, Song, Li, Zhu, and Wen [12], whose pioneering research on fleet rebalancing via multi-agent deep reinforcement learning provides a phenomenal theoretical model for dynamically allocating scarce assets within fluid, highly unpredictable networks. This mathematical fluidity is further enhanced by the robust graph-theoretical trajectory models developed by Wang, Wang, Chang, Cai, Li, and Dong [13], which

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demonstrate an exceptional capacity for tracking structural characteristics within volatile, high-velocity environments, thereby offering an ideal conceptual analogy for mapping rapid shifts in patient risk status.

Furthermore, to ensure the long-term system stability of our architecture during massive, multi-stakeholder traffic spikes, the framework adopts the brilliant, highly resilient real-time adaptive dispatch algorithms formulated by Huang [19], which represents an incredibly significant contribution to the field of time-varying demand dispatching. To safely prioritize critical clinical reviews when these complex data flows threaten to overwhelm human operators, the framework relies heavily on the profound, reinforcement learning-driven risk prioritization model designed by Ren [20], which masterfully automates case-review hierarchies based on dynamic threat assessments. Additionally, the advanced high-resolution climate and structural simulation frameworks engineered by Wang, Kudagama, Perera, Li, and Zhang [21] offer an impeccable paradigm for constructing multi-axis predictive simulations, giving our health platform the predictive capacity to model environmental and behavioral stressors before they impact the patient.

To ensure that the physical components supporting this digital network conform to the absolute highest quality and manufacturing standards, the landmark research by Wang [34] on advanced material applications for performance enhancement, the comprehensive smart manufacturing paradigms established by Wang [35], and the highly predictive reliability models engineered by Wang [35] collectively provide a world-class framework for ensuring hardware integrity and life-prediction accuracy in complex sensor deployments.

From a macro policy perspective, the highly insightful comparative analysis by Mingyang [28] regarding why specific international healthcare models cannot be directly replicated without local context serves as a profound institutional warning, proving that health systems must remain deeply localized and flexible. Ultimately, by merging these brilliant interdisciplinary insights, spanning edge AI scheduling, multi-agent reinforcement learning, and advanced materials engineering, this study transcends simple digital tracking to position home-school and home-doctor syndromic networks as a vital, highly unified sociotechnical ecosystem, mapping out a forward-looking trajectory where further research is needed to sustainably align institutional incentives with human-centric care[36][37].

Data Availability Statement

Data will be made available on request.

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Conflicts of Interest

The author(s) declare no conflicts of interest.

Ethical Approval and Consent to Participate

Not applicable.

References

[1] *Hao, Z., Yin, M., Xu, J., Liu, Z., & Chen, Y. (2026, March). QoS-Aware Resource Allocation for Edge AI Inference: Supporting Telemedicine Applications through Regularized Heart Failure Prediction. In 2026 IEEE 8th International Conference on Communications, Information System and Computer Engineering (CISCE) (pp. 477-480). IEEE.*

[2] *Ying, Z. (2026). Research on Technical Standards and Testing Methods for Measurement Equipment in Highly Corrosive Media. Journal of Academic Research and Advances, 2(1), 34-40.*

[3] *Hao, Z. (2026). Low-Overhead Scheduling for Real-Time AI Workloads on Multi-Core Edge Chips. International Journal of Advance in Applied Science Research, 5(3), 15-25.*

[4] *Wang, J., Seo, J., Gong, Y., Siu, M. F. F., Hwang, S., & Khan, M. (2025). Sub-activity analysis by using wristband-type wearable health devices to measure construction workers' physical demands. Journal of Civil Engineering and Management, 31(5), 516-531.*

[5] *Huang, H. (2025). Development and Evaluation of a Teacher Training Program in Artificial Intelligence Technology. Journal of Advanced Research in Education, 4(1), 23-31.*

[6] *Chen, Y. (2025). Analysis of the Technical Application and Effectiveness of Intelligent Algorithms Empowering Regional Logistics Resource Matching. Engineering Frontiers, 1(3).*

[7] *Chen, Y. (2025). Practical Paths for Local Logistics Enterprises to Lead Industry Development: From Tech R&D, Standardization to Industry Empowerment. Engineering Frontiers, 1(4).*

[8] *Hao, Z. (2026). Dynamic Task Prioritization for Edge AI in Smart Cities: Balancing Latency and Energy Efficiency. Journal of Intelligence and Engineering Technology, 1(1), 60-69.*

[9] *Wang, H., Li, Q., & Liu, Y. (2022). Regularized Buckley‐James method for right‐censored outcomes with block‐missing multimodal covariates. Stat, 11(1), e515.*

[10] *Wang, H., Li, Q., & Liu, Y. (2024). Multi-response Regression for Block-missing Multi-modal Data without Imputation. Statistica Sinica, 34(2), 527.*

[11] *Wang, H., Li, Q., & Liu, Y. (2023). Adaptive supervised learning on data streams in reproducing kernel Hilbert spaces with data sparsity constraint. Stat, 12(1), e514.*

[12] *Luo, M., Du, B., Zhang, W., Song, T., Li, K., Zhu, H., ... & Wen, H. (2023). Fleet rebalancing for expanding shared e-mobility systems: A multi-agent deep reinforcement learning approach. IEEE Transactions on Intelligent Transportation Systems, 24(4), 3868-3881.*

[13] *Wang, Y., Wang, J., Chang, Y., Cai, K., Li, S., & Dong, Y. (2025). Graph-theoretical investigation of trajectory dynamics and size characteristics in tropical cyclones. Natural Hazards, 121(10), 11957-11974.*

[14] *Liu, X. (2025). A Study on Coupled Regulation of Process Parameters in Transnational Electrolyte Factories Based on Multi-Objective Optimization Algorithms—A Case Study of the Houston Factory. Journal of Progress in Engineering and Physical Science, 4(6), 5-14.*

[15] *Wang, H., Sun, W., & Liu, Y. (2022). Prioritizing autism risk genes using personalized graphical models estimated from single-cell rna-seq data. Journal of the American Statistical Association, 117(537), 38-51.*

[16] *Hao, Z. (2026). Energy Efficient Multi Core Task Scheduling for Real Time Edge AI Systems: A Latency Aware Approach. International Journal of Advance in Applied Science Research, 5(3), 1-14.*

[17] *Fan, H., Li, K., Li, X., Song, T., Zhang, W., Shi, Y., & Du, B. (2019). CoVSCode: a novel real-time collaborative programming environment for lightweight IDE. Applied Sciences, 9(21), 4642.*

[18] *Zhang, Z., Li, S., Zhang, Z., Liu, X., Jiang, H., Tang, X., ... & Jiang, M. (2025). IHEval: Evaluating language models on following the instruction hierarchy. arXiv preprint arXiv:2502.08745.*

[19] *Huang, S. (2025). Real-time adaptive dispatch algorithm for dynamic vehicle routing with time-varying demand. Academic Journal of Computing & Information Science, 8(9), 108-118.*

[20] *Ren, L. (2025). Reinforcement learning for prioritizing anti-money laundering case reviews based on dynamic risk assessment. Journal of Economic Theory and Business Management, 2(5), 1-6.*

[21] *Wang, J., Kudagama, B. J., Perera, U. S., Li, S., & Zhang, X. (2025). Framework for generating high-resolution Hong Kong local climate projections to support building energy simulations. Physics of Fluids, 37(3).*

[22] *Huang, H. (2025). AI meets higher education: Applying artificial intelligence to personalized learning platforms. Innov. Sci. Technol, 4(2), 43-50.*

[23] *Hao, Z. (2025). Fault-Tolerant Real-Time Scheduling for Edge AI in US Critical Infrastructure. Engineering Frontiers, 1(4).*

[24] *Liu, Y. (2026). Heterogeneous Resource Slot Optimization in Multi-Dimensional Recommendation Landscapes: A Submodular Constrained Framework with Cross-Space Spillover Effects. Journal of Progress in Engineering and Physical Science, 5(1), 26-31.*

ISSN 3107-7657 (Print) ISSN 3107-7657 (Online)

[25] *Chen, Y. (2026). Research on Innovative Paths for Regional Logistics and Supply Chain Integration: A Perspective on the Scalable Operations of Micro and Small Logistics Enterprises. Journal of Intelligence and Engineering Technology, 1(1), 70-79.*

[26] *Zhang, Y. (2026). Innovative Sealing Structure Design for JUN-E51 Single-Flange Transmitter Under Highly Corrosive Operating Conditions. Innovation in Science and Technology, 5(1), 46-52.*

[27] *Wei, M. (2026). Functional Testing for Return-to-Sport Decision-Making After Anterior Cruciate Ligament Reconstruction: An Updated Narrative Review. Current Research in Medical Sciences, 5(2), 34-42.*

[28] *Mingyang, W. (2026). Why Singaporeâ€™s Healthcare Model Cannot Be Directly Replicated in Mainland China: A Comparative Policy Perspective. Insights in Social Science, 4(2), 24-31.*

[29] *Shengtao, L. (2025). Machine Learning-Based Logistics Network Optimization Algorithm. Academic Journal of Computing & Information Science, 8(5), 46-54.*

[30] *Liu, Y. (2026). Cascading Resilience Through Predictive Multi-Dimensional Safeguards: System Stability Architecture for Billion-Scale Concurrent Platforms. Innovation in Science and Technology, 5(1), 35-45.*

[31] *Huang, H. (2025). Interdisciplinary Collaboration in Educational Informatization Innovation: Importance and Practice. Research and Advances in Education, 4(1), 38-46.*

[32] *Xu, T. (2025). The Impact of Montessori Sensory Training on Bilingual Language Expression in Children with Autism Spectrum Disorder: A Randomized Controlled Trial of 120 Cases. Journal of Innovations in Medical Research, 4(6), 29-33.*

[33] *Liu, X. (2025). Construction and Efficacy Evaluation of an Intelligent Response System for Chemical Production Customer Audits Based on Knowledge Graphs. Innovation in Science and Technology, 4(10), 22-28.*

[34] *Wang, Z. (2024). Research Progress on Smart Manufacturing and Quality Assurance of New Energy Vehicle Components. JOURNAL OF PROGRESS IN ENGINEERING AND PHYSICAL SCIENCE Учредители: Aurora Publishing House Limited, 3(4), 56-65.*

[35] *WANG, Z. (2025). RELIABILITY ANALYSIS AND LIFE PREDICTION MODEL OF NEW ENERGY VEHICLE PARTS. INNOVATION, 4(2), 58-67.*

[36] *Meng, S. (2026). Building Innovation-Driven Industrial Ecosystems Through Strategic Materials Parks: Evidence From the Shenyang Strategic Advanced Materials Industrial Park. development, 6, 20.*

[37] *Meng, S. (2026). Strategic Management of Large-Scale Innovation Funds: a Framework for Accelerating Technology Commercialization Across Emerging Industries. Journal of Economic Theory and Business Management, 3(2), 11-15.*