"AI+After-School Extension Learning Model" Construction and Application Outlook

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https://doi.org/10.70695/AA1202502A01

Abstract

After-school extension learning involves students extending their learning time beyond the classroom, transferring the learning space into daily life, and turning theoretical knowledge from textbooks into practical activities in real-life contexts to deepen their understanding of what they have learned. Currently, AI technology provides new opportunities for this approach. This article explores the integration of AI into after-school extension learning, analyzing student issues and feedback through technological means. This interaction between teachers and students aims to enhance the depth of teaching and foster innovation in the basic education system.

Keywords After-school Extension Learning; Interactive Teaching; Elementary School Chinese Teaching; AI Technology

1 The Concept of "Student After-School Extension Learning"

In 2017, the Ministry of Education issued the "Guidelines for After-School Services for Primary and Secondary Students" (Teaching Base No. 2 [2017]) [1], which clearly stated that after-school services for students are a significant initiative with both educational value and social functions. This approach promotes the holistic development of students, addresses the challenges of family education, and enhances the public's educational satisfaction and happiness by improving the quality of educational services.

After-school extension learning is a practical platform built on language knowledge. It extends and expands classroom learning, transforming the static learning of "gaining knowledge from textbooks" into dynamic learning of "applying knowledge in practice. [2]" This encourages students to become explorers of knowledge rather than passive recipients, fostering their potential for self-driven learning, creativity, and innovation.

In the age of AI, after-school extension learning has become an indispensable part of the teaching system [3]. The "AI + after-school extension learning" model offers high flexibility and adaptability. It plays a significant role in all aspects of students' learning experience by implementing project-based learning tasks. Digital platforms and social media serve as engines of practice, fully engaging students and seamlessly integrating offline classroom teaching with the rich, extended online learning [4]. This approach creates an all-encompassing, multi-dimensional learning ecosystem, revolutionizing teaching methods. It enables students to effectively utilize their fragmented time in daily life to engage in learning, using portable electronic devices at their own pace to continuously accumulate knowledge and make progress [5].

2 Characteristics of "Student After-School Extension Learning"

After-school extension learning, as a modern educational model, has several distinct characteristics:

Autonomy: This model emphasizes individual initiative and self-drive. Under the teacher's guidance, students can independently explore learning resources that align with their interests and learning pace.

Flexibility: After-school extension learning is less constrained by time and space. Unlike the traditional "classroom-homework" model, it allows students to engage in learning activities at any time and from anywhere.

Depth and Breadth: Extension learning helps students deepen their understanding of knowledge through expanded reading, specialized research, and practical activities. It broadens their knowledge horizons and links subject knowledge to other areas, cultivating interdisciplinary thinking.

Interaction and Collaboration: Using digital platforms and social media tools, students can engage in online discussions and collaboration with teachers and peers after class, helping them develop communication and problem-solving skills.

Real-Time Feedback and Adjustment: With AI technology, real-time evaluation systems provide students with immediate feedback, enabling them to adjust their learning strategies. Teachers can track students' progress and address difficulties, offering targeted guidance and support.

Based on these characteristics, after-school extension learning can effectively improve learning efficiency, foster comprehensive student development, and meet the new demands of education in the information age [6].

3 Model Construction and Practical Application of Student After-School Extension Learning

3.1 Expanding After-School Learning Materials

After-school extension learning aims to create a seamless connection between classroom teaching and extracurricular self-directed learning [7]. The integration of AI technology allows students to flexibly arrange their learning paths according to their needs. Real-time interaction and dynamic feedback enhance teaching management effectiveness, ensuring that teaching activities align with students' actual situations and continuously improve. With the rapid development of information technology and the widespread use of mobile devices, learning resource access methods have undergone profound changes.

Given the change in resource acquisition methods, and considering the characteristics of elementary school students—short attention spans, easily distracted but curious—the design of a task-driven learning model becomes essential. This model is intended to guide students in absorbing relevant knowledge during reading. The textbook is innovatively constructed into an online website model, where various knowledge points and individual pages are seamlessly integrated into the book's structure, forming a logical, layered knowledge system .

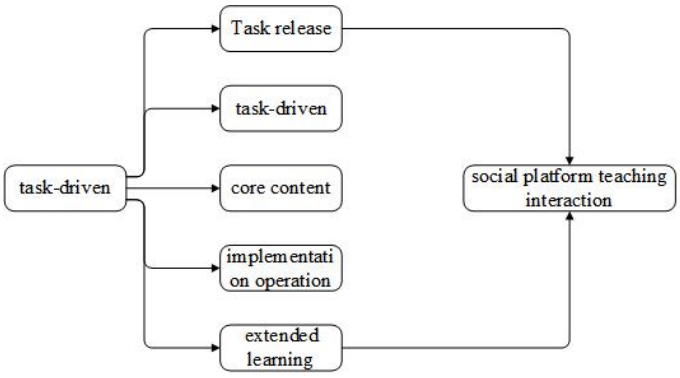

Fig. 1. The basic structure of after-class extended learning based on task-driven approach

3.2 Effective Guidance for Student Learning Activities

In the classroom, teachers are responsible for guiding students to achieve learning objectives. After class, students, based on their own progress and needs, can select different difficulty levels of materials for personalized, deeper extension learning. In this model, teachers need to integrate various relevant applications, incorporating AI technology to return the initiative to students, encouraging them to explore and learn in depth. Online platforms can serve as a core medium for teacher-student interaction, and with the help of AI, become key tools for enhancing and expanding after-school learning. Through mobile devices and social platforms, students can engage in online interactions anytime and anywhere.

Teachers can use AI to release precise and targeted learning tasks, while students collaborate in offline group discussions and complete tasks according to preset goals. During the entire learning cycle, teachers manage platform accounts, use AI tools to guide students in mastering content deeply, and encourage participation in extracurricular learning activities. Specifically as follows:

(1) Build an account for the "Teaching Interaction" platform: When setting up the account, use AI algorithms to optimize the platform architecture and improve the efficiency of system operation, laying a foundation for subsequent functional expansion.

(2) Guide parents to help students register and access the enterprise platform, and update the address book information: Utilize AI identity verification to ensure the security of students' registration information and simplify the access process.

(3) Integrate and select external tools: Connect functional modules such as "Voting and Survey", "Quick Course Academy", "Cloud Tasks", and "AI Intelligent Analysis" to support the effective implementation of learning and enrich the means of teaching interaction.

(4) Independently develop internal applications: Connect the "Teaching Forum" section. With the help of AI-driven natural language processing technology, keep up with the development trend of online education and build a dedicated website discussion area with responsive design.

(5) Regular operation and maintenance of the enterprise platform: Use AI automated operation and maintenance tools to detect the running status of the platform in real time, identify and solve potential problems.

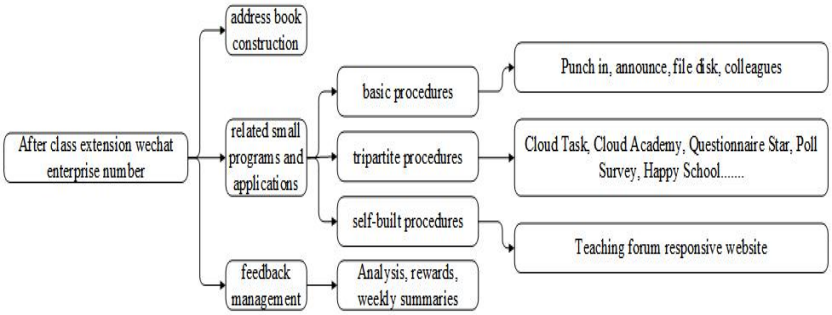

Fig. 2. The operation model of the online platform for extended learning

3.3 Participation in After-School Extension Learning

There are two ways students can participate in after-school extension services:

The first is through a quick and easy connection via WeChat platform. Students can scan the exclusive "Teaching Interaction" QR code, submit a request to join, and after the teacher approves, they will be successfully added. The service will then appear in the student's WeChat "My Enterprise" list.

The second option is to download and install the "Enterprise WeChat App," where students can directly join the "Teaching Interaction" service.

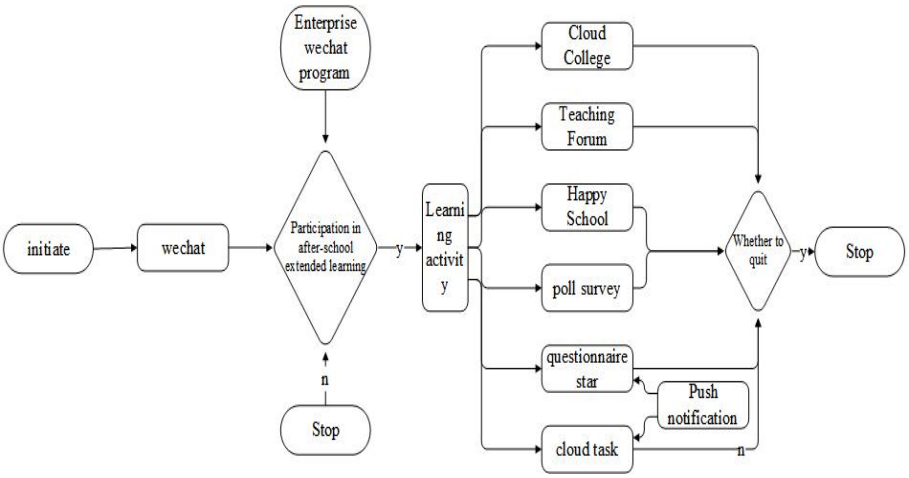

Fig. 3. Flowchart of students' participation in after-class extended learning

Students can flexibly access a series of online educational applications based on their learning progress and needs:

Exploring the Responsive Website: AI recommends related knowledge points based on classroom learning, guiding students to deepen their self-study while offering targeted support.

Task Assignment: AI algorithms assign tasks to students based on past learning data, and through teacher-student online interaction, track students' progress.

Monitoring Learning Progress: Through daily check-ins, the AI monitors students' participation in after-school extension learning and reminds them to consolidate what they have learned.

Online Learning Assessment: Through online learning, exams, and evaluations, AI compiles statistics and assesses learning outcomes.

Interactive Learning Experience: The platform integrates AI retrieval libraries, real-time Q&A, virtual classrooms, quizzes, event participation, voting, and forums to facilitate deep discussions and exchanges in students' spare time.

Consolidating Knowledge: AI recommends suitable learning materials based on students' learning history, allowing them to access content and review missed knowledge.

AI-driven Surveys and Analysis: The platform initiates polls, Q&A, surveys, and forms, automatically collecting and analyzing responses, presenting results visually through charts.

Feedback on Learning Effectiveness: After completing each lesson, students provide feedback on their learning progress and challenges, directly informing teachers for evaluation and optimization.

4 Conclusion

The "AI+After-School Extension Learning" model infuses new energy into basic education reform, playing a unique role in improving student abilities, fostering teacher-student interaction, and enhancing teaching effectiveness. However, challenges remain, including issues related to third-party applications, changes in pricing, and functionality. In the future, it is hoped that relevant organizations and educational professionals will collaborate to continuously optimize the system, address students' individualized needs, and help cultivate innovative talents, driving basic education to new heights.

Acknowledgement

This work was supported without any funding.

Conflicts of Interest

The authors declare no conflicts of interest.

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Biographies

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「AI+課後延時學習」模式的構建與應用展望

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摘要：課後延時學習涉及學生將學習時間延伸到課堂之外，把學習空間轉移到日常生活中，並將教材中的理論知識轉化爲現實生活背景下的實踐活動，以加深對所學知識的理解。目前，人工智能技術爲這壹學習方式帶來了新的機遇。本文探討了將人工智能融入課後延時學習，通過技術手段分析學生的問題和反饋。這種師生之間的互動旨在加深教學的深度，並推動基礎教育體系的創新。

關鍵詞：後延時學習；互動教學；小學語文教學；人工智能技術

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