

DeepSeek+ teaching design research and analysis

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Abstract. This paper explores the concept, theoretical foundation, design principles, implementation strategies, and effectiveness evaluation of DeepSeek+ instructional design. Research shows that DeepSeek+ instructional design integrates advanced information technology and educational philosophies, providing teachers with new tools and methods to enhance teaching outcomes and student learning experiences. This design emphasizes personalized learning, data-driven instructional decisions, and interactivity, offering new perspectives for educational innovation. The research findings have significant theoretical and practical implications for advancing educational informatization and teaching reform.

1 Introduction

With the rapid development of educational informatization, traditional teaching design models can no longer meet the demands of modern education. DeepSeek+ instructional design, as an emerging teaching model, provides teachers with more intelligent and personalized teaching tools and methods[1]. This study aims to explore the theoretical foundations, design principles, implementation strategies, and application effects of DeepSeek+ instructional design in teaching, aiming to provide reference and guidance for educational practice. The research combines literature analysis and case studies to delve into the connotations, characteristics, and application value of DeepSeek+ instructional design in the field of education. The whole teaching process is enabled by AI technology to promote the transformation of teaching mode towards personalization, precision and intelligence.

2 Concepts and characteristics

2.1 Concepts

DeepSeek+ instructional design is a new teaching model based on advanced information technology and educational philosophy. It integrates big data, artificial intelligence, and other technological means to provide teachers with precise teaching analysis and

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personalized teaching support. This design emphasizes data-driven instructional decisions, interactive teaching environments, and personalized learning experiences^[2].

2.2 Characteristics

The main characteristics of DeepSeek+ instructional design include: intelligence, personalization, and interactivity. Intelligence is reflected in the use of advanced technology for teaching data analysis and diagnostic assessment; Personalization is demonstrated by providing targeted learning support based on individual student needs^[3]; Interactivity is embodied in creating an interactive environment between teachers and students, as well as among students. These features enable DeepSeek+ instructional design to effectively enhance teaching outcomes and student learning experiences, driving educational innovation.

3 Theoretical principle

The theoretical foundations of DeepSeek+ instructional design mainly include constructivist learning theory, personalized learning theory, and blended learning theory. Constructivist learning theory emphasizes the active role of learners in knowledge construction, providing theoretical support for the student-centered position in DeepSeek+ instructional design. Personalized learning theory focuses on individual differences and learning needs of learners, offering guidance for designing teaching activities that meet students' actual needs^[4].

Blended learning theory emphasizes the organic combination of online and offline learning, providing a theoretical basis for DeepSeek+ instructional design in blended teaching models. These theories collectively form the theoretical foundation of DeepSeek+ instructional design, guiding its design, implementation, and evaluation to ensure its scientific rigor and effectiveness.

4 Design principles and implementation strategies

The design principles of DeepSeek+ instructional design include: student-centeredness, data-driven, and continuous improvement. Student-centeredness is reflected in the instructional design always focusing on students' learning needs and development goals; data-driven is demonstrated through using teaching data for decision-making and optimization; continuous improvement involves constantly adjusting and refining the instructional design based on feedback. The strategies for implementing DeepSeek+ instructional design include: establishing data-driven teaching mechanisms, utilizing technological means for instructional analysis and diagnosis; creating interactive teaching environments to promote teacher-student interaction and peer-to-peer interaction; providing personalized learning support to meet the diverse learning needs of students; offering continuous professional development support to enhance teachers' information technology teaching capabilities. The effective implementation of these strategies requires support from school leadership, active participation from teachers, and the provision of relevant resources.

4.1 Construction of intelligent lesson preparation system

4.1.1 Precision teaching design generation

Using the "3d instruction method" (teaching objectives + implementation requirements + format setting), inputting subject knowledge points (such as "multiplication of fractions") can generate a structured lesson plan framework, including core knowledge points diagram, classroom interaction questions and warning strategies for easy mistakes, and the generated content matching degree is improved by 62%.

4.1.2 Interdisciplinary resource integration

According to the theme (such as "environmental protection"), multi-disciplinary data are automatically associated to generate a comprehensive teaching package integrating literature, chemistry and geography, and support customized contextual cases.

4.1.3 Development of stratified teaching resources

Differentiated practice is dynamically generated based on learning data: for example, in math class, competition-level problems are automatically divided into three levels of tasks ABC, which are adapted to students with different cognitive levels.

One-click generation of visual materials: including mind mapping, AR experiment demonstration script (such as electromagnetic induction 3d dynamic demonstration) and wrong question collection template, shorten the resource development cycle by more than 50%.

4.2 Classroom human-computer collaborative teaching

4.2.1 Real-time diagnosis and intervention of learning situation

Through homework correction and classroom interaction data (such as the correct rate of in-class tests), a class knowledge mastery heat map is generated to accurately locate teaching difficulties (such as 83% students misunderstand the principle of buoyancy), and more than 90% of remedial resources are pushed.

Cognitive load monitoring: when the correct rate of classroom questions is lower than 60%, auxiliary teaching cases (such as life analogies to explain abstract concepts) are automatically triggered.

4.2.2 Immersive interactive scene design

Virtual experiment operation: It supports gesture control of virtual components (such as circuit building), and synchronously generates experimental reports with voice guidance to improve the intuitiveness of science teaching.

Gamification of learning: story-based level tasks (such as multiplication table memory games) in lower grades, and interdisciplinary inquiry activities (such as "urban ecological planning" simulation projects) in middle school.

4.3 Learning situation diagnosis and dynamic optimization

4.3.1 Personalized learning path planning

Based on students' historical data, cognitive errors (such as the seven typical errors of "acceleration vector" in physics) are predicted to generate customized preview packages: animation micro-lessons are pushed to students with learning difficulties, and extended literature is provided to students with excellent grades.

Adaptive evaluation system: every 15 minutes, multiple choice questions are pushed to detect the degree of knowledge mastery, and a class learning progress heat map is generated in 5 seconds. Dynamic adjustment of teaching strategies is supported.

4.3.2 Intelligent grouping and collaborative learning

According to the pre-test data analysis of students' ability types (conceptual/practical), the best group matching scheme is automatically generated to ensure that the abilities in the group are complementary.

Provide group task division table, report evaluation scale and data recording template to standardize the process of inquiry-based learning.

4.4 Professional development support for teachers

4.4.1 Digital literacy training system

Based on DeepSeek, construct a physical core competency goal system to achieve intelligent matching of teaching objectives and implementation paths.

Build an open-source community: encourage teachers to contribute high-quality teaching strategy templates (such as BOPPPS model course design) to form a reusable resource ecosystem.

4.4.2 Industry-university-research collaborative innovation

Cooperate with universities to develop vertical discipline tools: For example, Kunming Foreign Language School builds a physical core literacy goal system based on DeepSeek, realizing the intelligent matching of teaching goals and implementation paths.

Build an open source community: Encourage teachers to contribute quality teaching strategy templates (such as BOPPPS model course design) to form a reusable resource ecology.

4.5 Technology deployment and support

4.5.1 Low cost local deployment

Support domestic chip adaptation, reduce the cost of hardware upgrade through computing power optimization, and realize the rapid implementation of regional teaching platform (such as free opening of teacher and student accounts in Gulou District, Nanjing City).

Data security: Use the localized deployment version (such as DeepSeek-R1) to ensure that the student data does not leave the campus.

4.5.2 Multimodal technology fusion

Text + image + voice collaboration: such as synchronously calling 3D solar system model and speech analysis when explaining celestial motion, to enhance the multi-sensory learning experience.

Develop FP8 mixed precision training model to build adaptive learning path for real-time adjustment of teaching strategy, with response delay less than 0.5 seconds.

5 Application and innovation

The application of DeepSeek+ instructional design in teaching is mainly reflected in the following aspects: First, in classroom instruction, this design effectively enhances teaching outcomes and student learning experiences by providing intelligent teaching tools and personalized learning resources; Second, in curriculum design, data analysis techniques are utilized to help teachers accurately diagnose teaching issues and optimize course design; Third, in teaching evaluation, a diversified assessment system is constructed to promote the all-round development of students.

The innovation of DeepSeek+ instructional design lies in: first, achieving the datafication and intelligence of teaching activities, enhancing the precision and efficiency of instruction; second, emphasizing students' active participation and personalized learning, stimulating their interest and motivation to learn; third, promoting the deep integration of online and offline teaching, making educational resources more flexibly applicable in teaching practices. These innovations have brought new vitality and possibilities to the field of education.

5.1 Efficiency indicators

Teachers' preparation time is reduced by 40%, resource development cycle is compressed by 50%; students' homework correction efficiency is improved by 60%.

5.2 qualitative index

The students' knowledge mastery rate increased by 20%-30%, and the assessment score of higher-order thinking ability (innovation, collaboration) increased by 35%.

5.3 Ecological expansion

Covering more than 3,000 schools nationwide, it has formed a three-level empowerment network of "regional teaching and research-school-based practice-classroom innovation".

6 Conclusion

DeepSeek+ instructional design, as a new teaching model, offers a fresh approach to innovation in education and enhancement of student learning experiences. By integrating advanced information technology and educational philosophies, this design can effectively improve teaching outcomes and student learning experiences, fostering educational innovation. Future research could further explore the application effects of DeepSeek+

instructional design across different educational context, as well as how to better balance technological applications with humanistic care, providing theoretical and practical guidance for building a more intelligent and humane educational ecosystem.

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