

# The Condition and Path of Effective Realization of Personalized Teaching in Intelligent Age

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**Abstract:** In the teaching situation of large class size and education homogenization, personalized teaching is difficult to achieve effectively. With the gradual penetration of intelligent technology into classroom teaching, the realization of personalized teaching has a new possibility. The effective realization of personalized teaching in the intelligent age needs the organic integration of intelligent technology and personalized teaching. Therefore, both intelligent technology and personalized teaching need to make necessary changes. Intelligent technology needs to deeply sketch students' learning portrait with big data, build personalized teaching resource library on cloud platform, enhance teachers' personalized teaching ability with artificial intelligence, and provide personalized teaching network environment with Internet, etc. Based on the integration of the two, the effective way to realize personalized teaching supported by intelligent technology is to establish differentiated teaching objectives, organize diversified teaching contents, select targeted teaching methods, integrate various learning organization forms and construct accurate teaching evaluation and feedback system.

**Keywords:** Intelligent teaching, Artificial intelligence, Personalized Teaching.

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## 1. Introduction

In the teaching situation of large class size and education homogenization, personalized teaching mainly adopts hierarchical teaching, group learning, individualized tutoring, etc., which makes it difficult to carry out individualized teaching according to students' individualized learning needs in a wide range. With the advent of the intelligent era, intelligent technologies represented by big data, artificial intelligence and the Internet of Things have gradually changed people's way of production and life, and exerted a profound impact on social life. Accordingly, the application of intelligent technology in the field of education continues to deepen, but also changes the traditional form of education, and promotes the reform of learning methods, education resources, education public service platform, learning environment and other aspects. [1] For example, Alt Schools, SummitPublic Schools, Khan Lab School and other educational innovation schools have focused on how to realize personalized teaching through teaching organization form reform, learner analysis, educational resource sharing and other measures.

In order to promote the personalized development of students. [2] An important prerequisite for the realization of personalized teaching in the intelligent age is the organic integration of intelligent technology and personalized teaching. Technology has changed people's way of living, state of living and scale of living, while education's change of technology is reflected in the change of people's ideal style and living condition. At the same time, it also provides an evaluation scale for technology, that is, whether the use of technology promotes the development of people. [3] The integration of technology into the field of education should consider whether the value of technology is unified with the value of education, whether the application of technology is consistent with the practice of education, and so on. Technology and education should ultimately be unified to promote human development. For the organic integration of intelligent technology and personalized teaching, both

intelligent technology and personalized teaching need to make necessary changes. Intelligent technology should actively adapt to personalized teaching, and personalized teaching should make corresponding adjustments in the face of the development trend of the intelligent age, so as to realize the organic integration of intelligent technology and personalized teaching, and support the effective realization of personalized teaching in the intelligent age.

## 2. Results

In the era of intelligence, intelligent technology can be said to constitute the basic environment or platform of human development. Compared with direct experience, understanding the world through intelligent technology is not only a formal change, but also an ontological change in the way of experiencing the world. [4] The main purpose of applying intelligent technology to teaching activities is to promote personalized teaching. Therefore, intelligent technology does not forcibly change the basic rules of personalized teaching, but actively ADAPTS to personalized teaching activities. As a kind of humanized nature, intelligent technology should stand on the standpoint of education from the beginning of design, so as to better serve personalized teaching activities. The teaching system is composed of teaching content, teachers, students, teaching environment and other basic elements. [5] The active adaptation of intelligent technology to personalized teaching activities needs to solve the problems such as fuzzy individual image of students in traditional education context, single teaching resources, limitations of teachers' ability and limitations of teaching environment, so as to provide necessary technical support for the effective realization of personalized teaching.

(a) Cloud platform to establish personalized teaching resource library

The development of teaching activities cannot be separated from the support of teaching resources, and the construction of personalized teaching resources is the basic premise for the effective realization of personalized teaching. The functions of computing and data storage based on cloud platform can

better construct personalized teaching resource library. First, construct comprehensive teaching resource base. With the support of intelligent technology, the sources of teaching resources should be as wide as possible, including micro-course resources, rich media resources, question banks, etc. To be specific, schools can develop digital resources with school-based characteristics according to their own conditions, build generative resources covering all sections and disciplines of basic education by relying on relevant activities such as "One teacher, one excellent course, one lesson, one teacher", and develop school-based maker courses and STEAM education courses with the help of emerging intelligent technologies. [6] Then all resources are integrated to form a comprehensive teaching resource library. Secondly, create a teaching resource platform that meets the needs of personalized teaching. The purpose of constructing teaching resource library is to make full use of teaching resources, so the teaching resource platform built based on cloud platform must meet the needs of personalized teaching and have personalized push function. At the same time, the platform also needs to have the ability to personalize the class schedule. Due to the differences in learners' starting point level, learning ability, interests and other aspects, there are also differences in the ability to digest the course content. In order to meet the individual needs of learners, the teaching resource platform based on the cloud platform can provide students with different types and difficulties of courses, so that students can choose courses according to their actual situation, generate personalized curriculum schedule, so that the curriculum is more in line with each student's personalized learning needs, so as to promote the development of students' personality. In addition, the platform should also have the function of full-channel distribution of learning content, support the synchronization of learning process of different terminals, so that the learning process can break space restrictions, switch on different mobile terminals, and give learners the right to arrange learning activities freely.

(b) Artificial intelligence enhances teachers' personalized teaching ability

Teachers, as the organization and guide of teaching activities, affect the direction of teaching activities, but at the same time, teachers, as individuals, are a kind of "defect" [7]. Artificial intelligence system integrating deep learning convolutional neural network, affective computing and other technologies will effectively make up for the defects of teachers. First of all, in terms of knowledge mastery, faced with the explosive growth of total knowledge, teachers' knowledge storage and updating speed cannot compete with artificial intelligence. Through deep learning, the artificial intelligence system can constantly update the knowledge in the professional field and quickly reach the level of experts in the field, providing knowledge reserve support for teachers. Secondly, in terms of cognitive ability, teachers have certain cognitive limitations, such as neglecting part of background information and being unable to process too much information in the process of brain information processing. Based on panoramic data analysis, the artificial intelligence system can capture the missing points of teachers in the teaching process and restore the teaching process in a panoramic manner. Finally, in terms of emotion management, teachers have obvious deficiencies in emotion detection, emotion regulation, unbiased cognition, etc., while the artificial intelligence system can capture the emotional state of students in the teaching process based on emotional

computing, facial recognition and other technologies, so as to judge the learning state of students. Specifically, the artificial intelligence system can realize automatic marking homework, learning diagnosis, problem solving and other functions. On the one hand, teachers can be freed from repetitive and tedious labor, reduce the mechanical labor of teachers; On the other hand, artificial intelligence will become an integral part of teachers' work in the future. Intelligent work will be completed by man-machine cooperation, [8] to assist teachers in personalized teaching.

(c) The Internet provides personalized teaching network environment

"Internet + Education" has been a hot issue in the field of education since it was put forward. The Internet has strong connectivity, collaboration and interaction, [9] and stores a large number of teaching resources, which can provide a corresponding network environment for personalized teaching practice. First of all, the Internet can make personalized teaching activities break through the limitations of time and space. With the popularization of mobile network, the teaching activities will break the restrictions of time and place. Teachers and students can access the network at any time through mobile terminals, forming a "cloud classroom" to carry out teaching activities and break the restrictions of scene. Second, the Internet has promoted the development of online personalized teaching. The network teaching platform based on the Internet is the main front of online teaching. On the one hand, it provides students with more flexible choices, so that students can choose online learning resources according to their own learning needs and determine the learning progress. On the other hand, it is also helpful for teachers to grasp the learning situation. Through online learning behavior data, they can accurately grasp the learning situation of each student, providing data support for personalized teaching decisions. Finally, the Internet has low requirements for equipment, which is conducive to the promotion of personalized teaching activities. The national informatization process is constantly advancing. Compared with other technologies, the Internet has a higher degree of popularity and lower requirements for user terminal devices. Mobile devices such as smart phones and tablets can become the carriers of teaching activities, which make the audience of teaching activities wider and help to carry out personalized teaching activities better.

### 3. Discussion

Classroom teaching structure is the concrete embodiment of the interrelation and interaction among the four elements of teaching system such as teachers, students, teaching content and teaching media, and its reform is the main focus of educational reform. [10] In order to achieve a better organic integration with intelligent technology, individualized teaching activities should start from the classroom teaching structure to make corresponding changes. Teachers and students are the subjects of teaching activities, and the integration with technology presents the characteristics of "human-technology" embodied, that is, teachers and students improve teaching activities through intelligent technology, but also extend their own perception through intelligent technology. At the same time, teaching content and teaching media affect the quality of teaching activities to varying degrees.

Intelligent technology provides technical support for the effective realization of personalized teaching, and teaching

activities also make corresponding changes to adapt to technology. The basis of the organic integration of the two lies in promoting the consistency of individual development. In practice, the deep integration of intelligent technology and personalized teaching activities ultimately points to promoting the personalized development of students. Therefore, technology-driven education should focus on teaching activities, integrate technology into the basic links of teaching activities, and put forward effective realization path of individualized teaching supported by intelligent technology based on practice level.

(a) Establish differentiated teaching objectives

As the wind vane of teaching activities, teaching objectives affect the direction of teaching activities. At present, most teaching objectives are set for all students, presented to students with the concept of integration, which is the unified standard that all students need to achieve, ignoring the uniqueness of individual students. Under the support of intelligent technology environment, through the mining and analysis of students' learning behavior data, teaching objectives can be adjusted according to different students' learning needs, reflecting their differences, so as to achieve personalized teaching. First, establish teaching objectives according to individual differences of students. Through the portrait of individual learners, the learning interests, cognitive habits and learning ability of individual students can be understood, and the overall learning situation of individual students can be analyzed. Based on the individual learning situation, the teaching objectives can be established to make the teaching objectives close to the individual needs of students. Secondly, adjust the teaching objectives according to the overall tendency. Based on big data records of student groups, students at different levels of the class can be learned about knowledge mastery, emotional attitude development and other aspects in the learning process. The portrait of learners in the learning group is used to analyze the overall development trend, and the teaching objectives are adjusted based on the overall student tendency, so as to improve the coincidence between teaching objectives and the learning needs of the student group. Obviously, intelligent technology has narrowed the distance between teaching objectives and personalized learning needs, thus making teaching objectives more precise.

(b) Organize diverse teaching content

Teaching content is the basis of teaching and has a direct restriction on the teaching process. The choice of teaching methods, means and organizational forms largely depends on the nature and characteristics of teaching content. Therefore, it is necessary to organize diversified teaching content to meet the needs of personalized teaching. On the one hand, intelligent technology expands the choice of teaching content. Compared with the fixed and single textbooks and teaching materials, one of the obvious changes brought by intelligent technology is to expand the selection range of teaching content. Through the Internet, it integrates the situational knowledge required by teaching activities, the strategic knowledge required by learning process, and the skilled knowledge required by practical operation, breaking through the limitation of resource storage form based on discipline. The depth and breadth of teaching resources have been greatly improved, providing more choices for personalized teaching activities. Teachers can start from the actual teaching needs, classify the resources according to their own experience, and establish the corresponding teaching resource

base based on the learning situation, so as to assist teachers to realize personalized teaching. On the other hand, intelligent technology can improve the organizational form of teaching content, strengthen the teaching content organization principle of combining the cognitive order of students with the discipline knowledge order, make the presentation of teaching content more in line with the cognitive order of different students, but also more in line with the discipline logic system, help students to systematically grasp the teaching content.

(c) Choose specific teaching methods

The teaching method is determined by the coordinated application of learning methods and teaching methods. Based on the support of intelligent technology and the improvement of teachers' personalized learning guidance ability, the selection of teaching methods will be more targeted. First, we should choose teaching methods according to the characteristics of different teaching contents. The teaching resource library based on the cloud platform strengthens the connection between teaching content and teaching methods, and provides a strong support for the selection of teaching methods. For situational knowledge, experiential teaching method can be used, for strategic knowledge, participatory teaching method can be tried, and for practical knowledge, practical teaching method can be emphasized, so that the teaching method can be more suitable for the teaching content to play the best effect. Secondly, we should choose teaching methods according to students' individual learning styles. Through the collection and analysis of students' learning behavior data through intelligent technology, students' learning styles can be clearly grasped, and the correlation between students' learning styles and teaching methods can be strengthened. Learning styles mainly include analytical, comprehensive and flexible. The learning style of the students belongs to the analytical type, and they have a high persistent endogenous learning motivation. They tend to use the sequential processing mode of multiple information when learning, and the lecturing method focusing on logical structure is more appropriate; The learning style belongs to the comprehensive students, with strong autonomy. They prefer the multi information synchronous processing mode when learning, and the discovery method based on inquiry guidance is better; Learning style belongs to flexible students, who have strong adaptability in the learning process. Learning interest is an important factor affecting their learning effect. It is more appropriate to choose experiential teaching method and intuitive teaching method based on intuitive perception. In this way, with the support of intelligent technology, teachers choose teaching methods based on the characteristics of teaching content and students' learning style, which improves the fit between teaching methods and teaching content, students, and helps teachers effectively guide students to carry out personalized chemistry lessons, thus promoting the realization of personalized teaching.

(d) Integrate various forms of teaching organization

The intervention of intelligent technology has changed the organizational form of teaching resources, broken through the space-time constraints of classroom teaching, and made a variety of teaching methods integrated in personalized teaching activities. First, strengthen individual teaching. Individual teaching focuses on individual differences, and its characteristics meet the requirements of personalized teaching. However, due to its low efficiency, long time

consuming, slow speed and other shortcomings, it has always been a weak point in classroom teaching. With the support of intelligent technology, teaching efficiency will be further improved. Teachers will have more time to give individual guidance to students, and individual teaching time will be effectively extended. At the same time, students can independently choose teaching resources through student side software, making individual teaching more suitable for students' individual learning needs, and effectively assisting students to carry out personalized learning activities.

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