

The Application of individualized teaching in the era of "intelligent technology + education"

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Abstract: *How to implement teaching according to ability has always been an important issue for educators to pay attention to and study, and in concrete practice, it is difficult to achieve the expected goal of teaching according to ability. In the information age, the use of intelligent technology provides a new opportunity to precisely promote the implementation of teaching according to students' aptitude, and also gives it a new connotation, but how to apply intelligent technology in the actual teaching process is still facing a lot of practical challenges. In order to give full play to the advantages of traditional and modern tailor-made teaching and to improve the accuracy of education and guidance for students' literacy, this study analyzes the advantages and shortcomings of tailor-made teaching in the traditional sense and in the age of information technology, makes suggestions on how to better implement tailor-made teaching in the age of information and intelligence, and provides a direction for the coordinated promotion of the implementation of tailor-made teaching in different parts of the country.*

Keywords: *Tailor-made education, Intelligent technology, Personalized education*

1. Introduction

"Teaching according to one's ability" is an important educational method originating from the ancient great educator Confucius, as well as an important educational and pedagogical idea[1]. The aim is to comply with the law of human cognition and the law of development of education, and to select appropriate teaching methods for targeted teaching in the teaching process according to the differences in cognitive levels, learning abilities and the qualities of different students. Teachers should put forward different tasks and requirements for students with different characteristics and give full play to their strengths and specialties, so as to help students build up their confidence and promote their higher-quality development, thus realizing the cultivation goals. One of the eight basic concepts of education modernization proposed in China Education Modernization 2035 is "paying more attention to teaching students according to their aptitude", reflecting the dual pursuit of "high quality" and "high equity" in education. This reflects the dual pursuit of "high quality" and "high equity" in education."[2].

Our country is now in the second hundred years of struggle to the stage, the need to cultivate a large number of high-quality, innovative, complex talents, and further promote China's education into a high-quality development track as soon as possible, the process of an indispensable key is intelligent modern technology[3]. The current situation is that all regions have increased their investment in building intelligent learning environments and transforming school organization. Currently, various regions have increased the construction of intelligent learning environment and change the shape of the school organization and other aspects of education and teaching investment, is committed to creating a new intelligent education ecosystem, respect for the individuality of each student, cultivate diversified and innovative talents. Zhong Binglin pointed out at the China International Conference on Distance and Continuing Education: "China's education development is changing from the past "external" development to improve quality and optimize the structure of the core of the "connotation" type of development." Based on this background, the online teaching mode represented by the Internet has brought a rare opportunity to improve the quality of education and expand the coverage of high-quality educational resources. Intelligent technology + education in the era of tailor-made education is gradually presenting the scale, precision, multi-dimensional features.

The information and intelligence era has given a new connotation to the teaching of students according to their aptitude, which makes up for the shortcomings of the traditional classroom in teaching students according to their aptitude, but at the same time, it also exposes some new problems. This paper

analyzes and combines these two approaches to provide a new way to implement the new era of teaching according to the abilities of the students.

2. Teaching according to ability, in the traditional sense

2.1. Connotation

A more authoritative domestic pedagogical textbook defines the principle of teaching according to one's ability as follows: "The principle of teaching according to one's ability refers to the need for teachers to start from the actual situation of students and their individual differences, and to carry out differentiated teaching in a targeted manner, so that each student can capitalize on his or her strengths and avoid weaknesses, and obtain the best possible development." [4].

In the traditional classroom, the teacher as a single subject of teaching, mainly using "lecture + discussion" combination of teaching methods, in the classroom, mainly using demonstrations, speeches, performances and debates and other ways of teaching, the teacher will encourage students to communicate with each other through the self-presentation of learning experience, to stimulate students' creative thinking.

2.2. Weaknesses in the traditional sense of tailoring education to the needs of the students

Traditionally, "teaching according to the ability of the student" is teacher-led in the classroom, and requires the teacher to have the ability to recognize the interests and trends of each student's thinking. Since a teacher corresponds to a class size, one of the main obstacles to teaching the majority of students according to their aptitude is the large class size [5].

Large classes make it difficult for teachers to attend to every student, which has a negative impact on the variety and differentiation of teaching methods used by teachers in the classroom. Each student's state of mind and psychological characteristics are different and change with age, which requires teachers to spend a great deal of time focusing on students.

However, in the actual teaching process, teachers are often affected by educational resources and personal energy, to spend time and energy in the preparation of course materials and curriculum arrangements, it is difficult to adopt different teaching methods and strategies according to the needs of each student, it is easy to appear difficult to pay attention to the needs of students' individuality, and in practice, will be more inclined to pay attention to the "intellectual" development of students. In practice, it is more likely to emphasize students' "intellectual" development. Because of the influence of factors such as teaching evaluation, performance and the number of students to be taught, teaching based on individual abilities can only take place with a small group of students [6].

At the student level, the classroom is student-oriented, requiring students to take the initiative to explore externally and study independently internally, which requires students to have a high level of self-management and independent thinking ability. In addition, students are usually required to prepare for certain speeches and debates in the classroom. For students who have not yet formed their learning habits and ways of thinking, this kind of pre-course preparation will increase the pressure and burden of their course learning, and then lose their interest and initiative in learning. For the current system of class selection, there is a phenomenon of insufficient rationalization of class selection among students, which makes students easy to follow the herd mentality, or ignore their own interests and specialties, and blindly select courses based on the past experience of others.

3. Tailored education in the age of information intelligence

Entering the information and intelligence era, each country has begun to think about how to cope with the impact of the changes of the times on the development of society and the cultivation of talents, and has gradually realized the urgency and necessity of using the new generation of information technology to build an intelligent learning environment, change the form of classroom organization, innovate the mode of talent cultivation, and create an intelligent education.

Under the augmentation, enablement and empowerment of intelligent technology, teaching based on materials is gradually showing the characteristics of scaling, precision and multi-dimensionalization. As shown in Figure 1.

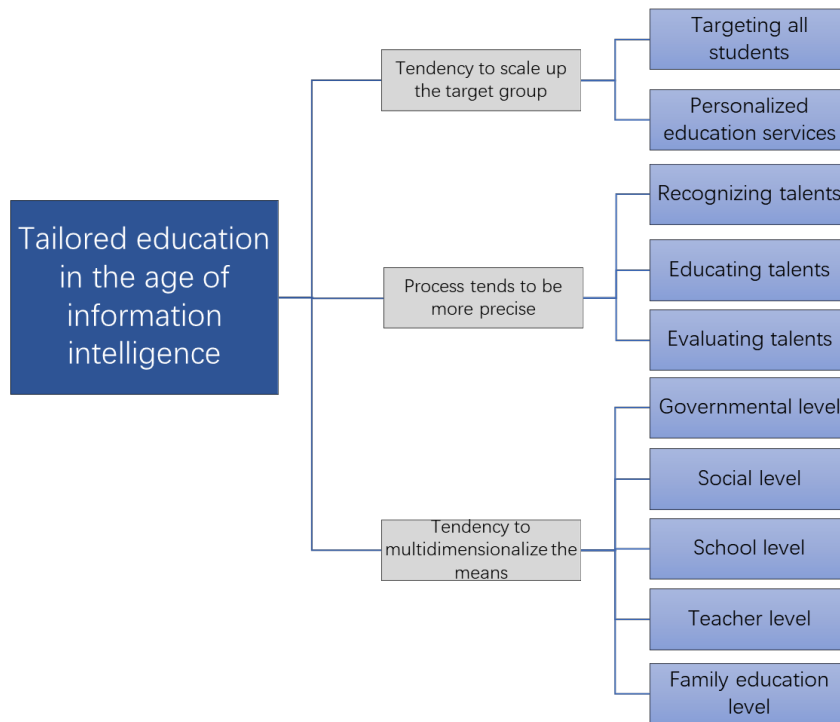


Figure 1: The characteristics of Tailored education in the age of information intelligence

3.1. The tendency to scale up the target group for tailor-made education

The information and intelligence era of tailor-made education requires attention to the personalized development needs of each student, through big data and artificial intelligence technology to provide personalized education services for all students: on the one hand, through technological means to assist in teaching, the teacher does not have to repeat the teaching of knowledge, the student does not have to repeat the exercise[7].

3.2. The process of tailoring education to the needs of the individual tends to be more precise

In the traditional classroom, the main obstacle to the normalization and scaling up of teaching according to ability is that it is difficult for educators to objectively and accurately carry out the work of recognizing, educating and evaluating talents, etc., but in the age of intelligent information, it is possible to improve the accuracy and effectiveness of the key links in the analysis of learning conditions, teaching management, teaching services, accurate evaluation and feedback guidance with the help of intelligent technological means.

3.3. The tendency to multidimensionalize the means of tailoring education to the needs of the child

At the governmental level, the data-enabled platform allows for the introduction of educational policies that are in line with the times, so that schools and students can keep abreast of developments.

At the social level, a large number of open public learning resources have been aggregated through the data platform, which promotes the integration and interoperability of resources and provides more choices for students' personalized development.

At the school level, the results of the data analysis were used to formalize the relevant management systems and to further implement the requirements of the national curriculum standards.

At the teacher level, the data in the intelligent education platform can "diagnose" the problems of students in the process of teaching according to their abilities in a timely manner, and provide assistance to guide teachers to make accurate judgments and optimal decisions, so as to realize the teaching goal of "light burden and high quality, taking into account the needs of all". In addition, we also provide teachers with the opportunity to make accurate judgments and optimal decisions.

At the level of family education, parents can use the intelligent education platform to learn about their children's progress in learning, some of the difficulties they face, and the direction of their interests, and provide timely feedback to schools and teachers, as well as intensify their efforts to cultivate their interests and create a good family atmosphere.

4. Weaknesses in the process of intelligent technology to advance the process of tailoring education to the needs of the students

Intelligent technology in today's world has indeed enriched the means of education, improved efficiency, and promoted the implementation of teaching according to ability, but there are still a lot of problems with AI-assisted teaching according to ability in practice. These problems mainly stem from the intelligent platform developers and users of intelligent education is not enough to understand, not in line with the reality.

4.1. The problems of smart technologies themselves

The current intelligent system has problems such as untimely updating of the knowledge base and errors in related knowledge and theories, which may misdirect the students' learning process. In addition, when the intelligent platform analyzes the results of the answers, it displays the solution of "how to be right" and lacks the analysis of "why to be wrong", and it is very convenient to get the answers to the questions that the students don't know, which to a certain extent inhibits the students' independent thinking and creative ability. This inhibits to some extent the students' ability to think independently and to innovate.

At present, the intelligent means for the construction of student image is mainly based on the data dimensions of the student feedback, but the lack of analyzing the relevant functions of the mind map, to a certain extent, there will be analytical errors.

At present, our country is still a teacher for the class unit students teaching mode, but not necessarily each teacher's way of dealing with the students responsible for the corresponding, and most of the current intelligent means to establish only the student feedback teachers and teachers to guide the students, the lack of teachers teaching image analysis and related guidance effect of feedback, resulting in students to the teacher's understanding of the insufficient. This is the reason why students do not know their teachers well

Lack of unified data collection standards and standardized construction of educational platforms. Due to the development gap between urban and rural areas, the level of information technology varies from place to place, creating a certain degree of information barriers and a digital divide, resulting in the inability to converge and share relevant teaching resources, which is not conducive to the integrated development of education. The following are some examples of this

4.2. Problems in the use of intelligent means by students

Students have a lot of uncertainty and confusion in the process of independent learning, and they can not filter and identify the massive educational resources pushed, which makes the learning process spend more time and cost, but can only get a lot of fragmented knowledge, and the mastery of knowledge only stays at the level of "understanding", but not at the level of "comprehension", which does not promote their own learning, and too much use of intelligent means will easily make students dependent, weakening their independent learning ability. The mastery of knowledge only stays at the level of "knowing", but not at the level of "understanding", which does not promote the effect of their own learning, and the excessive use of intelligent means tends to make students dependent and weaken the ability of students to learn on their own.

4.3. Problems in the use of smart technology tools by teachers

Due to the lack of actual teaching experience, new teachers may rely too much on the intelligent system to help students and make judgment, which may lead to problems such as over-training or imprecise practice, thus increasing the learning burden of students[8]. The old teachers have not mastered the intelligent platform enough, and their data literacy is not good enough. Older teachers, however, do not have a good grasp of the intelligent platform and are not well educated in data literacy, so they are not only prone to inappropriate and unskilled operation of the technology, but are also "confused" about

the integration and application of the platform.

5. Directions for improvement related to helping to tailor education to the needs of the child

5.1. For the intelligent platform itself

For the intelligent platform itself, we can improve it in several ways as shown in Figure 2.

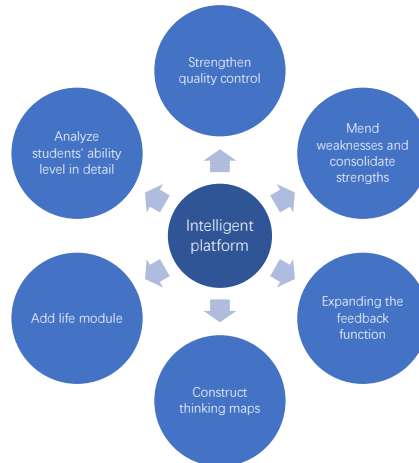


Figure 2: Improve intelligent platform

Strengthening the quality control of educational products. A team of specialized teachers has been set up to conduct regular reviews of the content and to complete the revision, supplementation and improvement of the curriculum content in the system, so that the content can reflect the new concepts of the new era and keep abreast of the times.

Increase the function of education products to analyze students' ability level in detail. Currently, the number of indicators on the knowledge mastery analysis map of educational products for students' answers is relatively small, and it is impossible to accurately locate students' weak points. Therefore, it is possible to add learning result evaluation indexes to position students' knowledge level and comprehensive literacy in a multi-level and comprehensive way.

Expanding the feedback function of the causes of errors and the function of supplementing related knowledge. The feedback function for the causes of errors helps students to correct their wrong thinking and develop correct thinking patterns.

Constructing students' own thinking maps. For the same problem, different students may have different understanding and thinking about the problem. Therefore, the intelligent platform can add a function for students to draw their own mind maps, which can not only deepen students' understanding of knowledge, but also enable teachers to understand the differences between different students through students' feedback knowledge maps, so as to carry out point-to-point precise and personalized teaching.

Add a life module to the intelligent platform. Students can observe life and share their knowledge in the chapter feedback of the relevant knowledge points on the platform, which will help other students to understand knowledge more deeply and at the same time facilitate teachers to improve the design of the subsequent courses. So that students can not only "into the textbook", but also further "out of the textbook", the knowledge and life practice connected to enhance the interest of learning.

Mending weaknesses and consolidating strengths. The implementation of tailor-made education requires not only supplementing shortcomings, but also strengthening students' own strengths, as Dewey once pointed out that in education "the main waste is the waste of human life". If students only make up for their weaknesses without emphasizing the cultivation of their strengths, it is a waste of life potential. Therefore, in the application of the platform, there should be not only the topic of making up for the weak points, but also the practice of fixing the advantages, which will help to cultivate comprehensive and individualized people, and cultivate talents for overcoming the "choke point" problem. By striking a balance between the "barrel theory" and the "anti-barrel theory", each student's barrel will be able to continuously improve its water storage capacity and have its own strengths and characteristics[9].

5.2. How to make better use of intelligent technology tools

Promote the implementation of the "in-class + out-of-class" learning mode. At the end of the class, we will consolidate the results of the exercises to understand the effect of the class. Cross-fertilization of students, teachers and schools with the intelligent platform. The three parties and the education platform will cooperate with each other to jointly identify and solve deficiencies in the process of education and teaching practice, and better implement the requirement of tailoring education to the needs of the students.

(1) Integrating students with intelligent platforms.

Students can assess their interests and thinking level through the intelligent platform, and draw their own "portrait" through intelligent technology to understand their interests and ability base. By watching the teaching videos of the corresponding courses on the platform, students can avoid choosing courses blindly due to unclear self-knowledge. Students register through the platform on the premise of hiding the number of specific enrollments, which can to a certain extent reduce the "arbitrariness" of selecting courses based on the herd mentality.

(2) Combining teachers and intelligent platforms.

In order to implement the requirement of "teaching students according to their aptitude", first of all, teachers should have the ability of "recognizing talents", adjusting teaching strategies in time according to the different characteristics of students, and making differentiated education and teaching. Teachers can open a teacher training platform, so that experienced teachers can share classroom cases on the platform, exchange teaching methods with each other, and promote the improvement of teachers' teaching level. In addition, at present, the main obstacle to the implementation of tailor-made teaching is the large class size, it is difficult to take into account the characteristics of each student in the daily teaching process, so we can use the intelligent testing platform to understand the interests of each student in advance, which will help the selection of classes to go to the classroom system of teaching and learning to be carried out in an orderly and effective manner. The platform can accurately push the practice questions according to the knowledge mastery level of the students' feedback, which not only ensures that the students with strong learning ability can get effective practice, but also enables the students with poor mastery to further understand and consolidate their knowledge. The most critical thing is that the platform can be added to the teacher's teaching process of image analysis, and with the synthesis of the relevant teaching effect to establish a link, to help students can be targeted in the intelligent platform for the improvement of the relevant mode of thinking. The functions of most of the current intelligent informatization platforms are shown in Figure 3, and the improved intelligent informatization platform is shown in Figure 4.

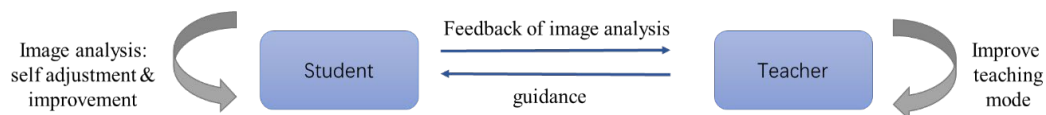


Figure 3: The current intelligent informatization platform

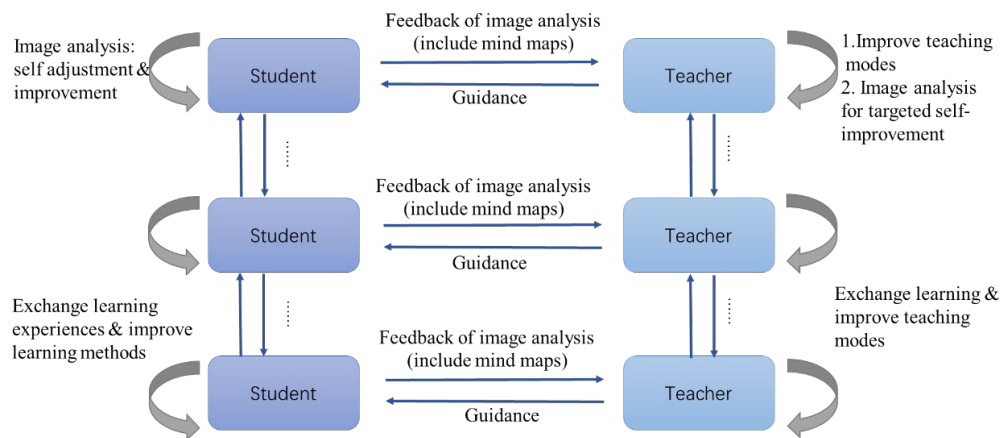


Figure 4: The improved intelligent informatization platform

(3) Combining schools and smart platforms.

Online course selection by students improves the efficiency of schools in counting the total number

of courses offered, and the orderly implementation of class selection avoids the waste of educational and teaching resources. At the same time, some courses can be taught online, on the one hand, easing the burden on educational facilities, on the other hand, giving a certain amount of space for subsequent adjustment of students' selection.

Education is a process of waiting for flowers to blossom. It takes time for a person's strengths, potentials and advantages to be revealed, and the excavation of potentials and cultivation of advantages further affects personalized development. Intelligent education platform can provide data support to schools, teachers and students through big data analysis, which provides the basis for teachers to judge the development status of students and adjust the cultivation program in time.

6. Conclusions

In this era, the construction of Internet-based education informatization is the focus of China's strategic development, education products are still constantly updated, we must keep a good quality, otherwise students will fall into the test of education products. At the same time, we should continue to promote the deep integration of technology and education teaching, the implementation of "quality equity" as an inherent requirement, and jointly help build a strong education country. Through the joint efforts of many parties at all levels, we can achieve a high level of synergy, so that the function of the whole is greater than the sum of its parts, and we can jointly promote all-round education, so that we can realize at an early date the ultimate goal of tailoring education to students' talents as mentioned by General Secretary, which is that "everyone can be successful, and everyone can develop his or her talents to the fullest extent".

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