Analysis on Implementation Paths of Digital Empowerment of the Teaching Links

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Abstract. At present, the development of digital technology continues to promote the transformation of education and teaching. The digital empowerment of teaching models prompts teachers to comprehensively transform into student-centered teaching concepts. All aspects of teaching are designed around students. The digital construction of teaching resources provides a basis for personalized teaching for students. Through digital empowerment of various teaching links such as teacher teaching process organization, student learning methods, and academic evaluation methods, we can truly realize personalized training of students and teach students in accordance with their aptitude.

Keywords: Digital empowerment; Personalization; Teaching students in Accordance with their aptitude

1. Introduction

In recent years, cutting-edge technologies such as big data, artificial intelligence, and ChatGPT have revolutionized various fields such as society and economy with new concepts and models. Education cannot stay away from technological changes, and technologies such as big data also provide technical conditions and theoretical basis to personalized education for students [1]. The report of the 20th National Congress of the Communist Party of China pointed out that it is necessary to promote the digitalization of education and build a learning society and a learning country with lifelong learning for all people [2]. On February 13, 2023, the World Digital Education with the theme of "Digital Transformation and the Future of Education" The conference was held in Beijing to discuss the future development of digital education and received great attention. Digital technology has increasingly become a leading force driving changes in all aspects of teaching. In the digital era, we must reflect on the knowledge-centered and teaching-centered issues that exist in the current teaching process [3], make full use of digital technology, and promote education and In-depth integration of cutting-edge technology applications, exploring and researching the digital transformation of teaching models, exploring and researching new forms of smart teaching, so as to realize the digitalization of education and teaching and improve teaching effects [4,5]. Digital empowerment is carried out in the construction and utilization of teaching resources, the design and organization of classroom teaching, student learning methods, teaching evaluation, etc., and ultimately achieves precise teaching, so that students can be truly personalized and trained with their aptitude.

2. Transformation to Student-centered Teaching Philosophy

The teaching concept is the guiding ideology for teaching models and teaching practices. In the current era of digital technology, education can be fully empowered by digitalization to provide learners higher quality, more choices, more convenient and more flexible educational services in order to satisfy students High-quality, personalized learning needs, and it’s inevitable requirements for development. Therefore, the digital empowerment of teaching requires that the teaching concept must be shifted to student-centered. That is, transform the traditional teaching concept material-centered, teacher-centered, and classroom-centered to student development-centered, student learning-centered, and learning effect-centered.

The student-centered teaching philosophy particularly respect students' individual differences, and aim at meeting students' individual needs, and promoting students' learning and development. The constructivism also regards students as the main body of learning. Teachers help students build their own knowledge system through online and offline hybrid learning models with the support of intelligent technology [6]. Students should be regarded as the main beneficiaries and participants of education and teaching reform, teaching reform and research should be carried out around the student. Students should not be separated from the teaching reform, and the theme of the classroom should truly return to the students themselves. Through the reconstruction of the relationship between teachers and students in the classroom, students as the main body and teachers as the leader in teaching can be really realized. Teachers act as organizers, guides and promoters of learning, rather than presenters and instillers of knowledge. The content setting of course, teaching activity organization, teaching evaluation, etc. should put students in the main position, not only guiding students to construct their own knowledge system, but also focusing on cultivating students' abilities.

3. Construction and Application of Digital Teaching Resources

The digital construction and application of teaching resources is the basis for students' learning, teachers' smart classrooms, and teaching evaluation. It is necessary to digitize the teaching objectives and course resources in order to teach and evaluate based on digital technology.

Digital empowerment of course objectives: digital expression of the knowledge, ability structure, and literacy goals that students need to acquire through the course. There are overall course goals and course unit goals. The description of the goals is further quantified, and the characteristics of the learning goals are analyzed. The goals Interrelationship analysis, analysis and formulation of common goals and student personalized goals facilitate the identification and tracking of the information management system, and later evaluation of course goal achievement can be displayed in a visual manner for easy analysis and viewing. The digitization of course objectives provides an optimized basis for the structural design of subsequent course content, and provides a framework for process data collection and integrated analysis of teacher teaching and student learning.

The digital empowerment of teaching resources is actually a comprehensive review and structural optimization of course content, using a combination of "introduction + self-construction" and "point + surface". On the one hand, it makes full use of and introduces high-quality MOOC courses and other resources, and integrates these resources organically integrated into course teaching according to the needs of teaching design. On the other hand, teachers focus on the accumulation and organization of digital resources in daily teaching. And teachers can carry out targeted and personalized construction of course resources, according to the key and difficult points encountered by students in learning. Such as course content video resource construction, digital courseware production, course practice video recording, resource library construction, and question bank construction. With the help of technologies such as virtual reality, we can realize the visual presentation of knowledge and realize dynamic reasoning and explanation, such as digital resources such as AR, VR, animation demonstration production, virtual simulation plug-ins, etc., to enrich the presentation types of resources and strengthen the display methods of resources. The third aspect, the integration of course resources from "point" to "face". The fragmented knowledge can be integrated into a knowledge system by using intelligent technology. And resource tags can be generated with the help of machine recognition, language understanding, knowledge map and other technologies description, to support the screening of teaching resources, realizes personalized learning service recommendations for students, accurate push of learning resources, accurate query of learning resources, self-service Q&A on learning questions, etc., saving students' learning time and cost, and helping students learn. At the same time, the content correlation of various resources is formed, and discrete knowledge points are connected in series to form a knowledge system. Contents such as the application of knowledge in engineering practice and different disciplines are introduced, so that students can know the source and application of the knowledge.

4. Digital Empowerment of Teaching Process Organization

The consensuses in the digital era are to emphasize the differences among learners, pay attention to personalized learning and teach students in accordance with their aptitude. Teaching students in accordance with their aptitude is an education and teaching model based on the "process view". It is an education implemented by teachers according to the personality characteristics and cognitive differences of different students, putting forward appropriate development goals and adopting different teaching methods and strategies during the teaching process [7]. The development and application of intelligent technology makes it possible to carry out personalized and differentiated teaching for students, can reduce the burden of teachers' teaching organization and students' learning, and can effectively solve the current inability of accurate teaching of large-class in college mathematics, college physics, college computer and other courses. Teaching issues and improving classroom teaching effectiveness.

Before class: Use intelligent analysis technology to obtain personalized information such as student sources, majors, relevant course results, past course learning status, etc., to create academic portraits for students, and accurately grasp each student's academic status and learning needs. We can grasp the knowledge structure that students have formed, and through systematic judgment, to push appropriate learning resources for students before class and provide targeted tutoring. Students also can carry out preview and self-study selectively based on the analyzed data and their own circumstances. Students can participate in the teacher's lesson preparation process and provide the feedback of the difficulty of knowledge points and teaching needs from the perspective of the learner to teacher. Teachers and students fully communicate before class to prepare for the classroom teaching design and process.

In class: Theoretical and practical knowledge will be visualized through virtual simulation and virtual reality in order to achieve immersive teaching that combines virtuality and reality, and strengthen students' emotional and rational cognition during the teaching implementation of case introduction, teacher teaching, student discussion, and intensive training, etc. The combination of online and offline will facilitate the retrieval and expansion of students' learning resources, facilitate the recording of classroom learning date, and facilitate carry out targeted guidance and feedback to ensure learning effects. We can fully combine lecture teaching with flipped classroom, group cooperative and exploration and other forms to guide students to cooperate and explore learning around problems or project themes, and cultivate students' innovative consciousness and ability.

After class: Through the combination of the system and the teacher's judgment, according to the collection and analysis of pre-class and in-class data, we can get the students’ learning conditions. Hierarchical classification is carried out in homework and practice arrangements to ensure students' curriculum master basic knowledge, meet students' needs to explore the cutting-edge subjects, and help students discover their own interests and hobbies. To a certain extent, it can also reduce the total amount of students' homework, prevent students from mechanically reviewing the knowledge they have mastered, and allow students to focus their after-school training on the cultivation of innovative abilities.

5. Digital Empowerment of Learning Method

With the development of cognitive neuroscience and other disciplines, we can initially understand the process of learning contains encoding (processing of information), storage, and retrieval from the cognitive mechanisms of the human brain, psychology, philosophy, etc. Today's Constructivism Learning Theory also emphasizes the subjectivity of learners. In the teaching process, through the four key elements such as situations and guidance of teachers, students' enthusiasm and initiative are stimulated. That allow students to play their role as learning subjects and help students construct their own systematic learning system.

As the learning subjects, students should focus on cultivating their ability to acquire knowledge and lifelong learning in the digital age. Now, ubiquitous learning is the new normal of learning, and learning combined with digital technology has become a new way to acquire knowledge. Through

resource retrieval, intelligent resource recommendation, etc., students will have more convenient ways and methods to obtain learning resources, and with greater choice and more individuality. Students' learning process and knowledge point learning sequence will be assisted by corresponding course knowledge maps and other methods, there will be personalized learning paths to break the barriers to knowledge acquisition in self-study. Students' learning status will be systematically recorded, counted, and analyzed, and information technology will use data to make judgments on students' learning status based on quantitative evaluation standards set by teachers. Real-time feedback and personalized feedback. Teachers also provide targeted coaching and non-quantitative evaluation to students based on learning data. Students must receive feedback data in a timely manner, grasp their own learning dynamics, find obstacles that affect learning, and adjust learning improvement plans in a timely manner. Students should be adept in using tools such as mind maps and knowledge maps to fully explore their own strengths and hobbies based on the application of basic knowledge, and construct their own knowledge system, expand their learning knowledge, and become the builder of an interdisciplinary knowledge system. Develop your own ability to learn independently and for life-long learning.

6. Digital Empowerment of Assessment Format

Through digital empowerment of the entire process and link of process evaluation and summative evaluation, it is possible to collect and analyze data on all students and the entire student learning process, to provide students with timely and targeted academic evaluation feedback, and promote students' academic performance.

In terms of evaluation data collection, through the construction of an information platform and the integration with the classroom environment, data on students' personality and the entire learning process are collected and analyzed, such as the student's origin, major, training plan, course knowledge structure sequence, etc., as well as the large amount of data that generated before, during, and after class during learning. Using big data technology, etc. to conduct analysis, mine the relationship between data and students' learning effects from multiple perspectives and directions, and carry out comprehensive and accurate analysis of students evaluate.

In terms of evaluation method, the evaluation is carried out by combining the teacher and the information system. The teacher sets a quantifiable evaluation index system, and the system automatically determines the completion, which reduces the burden of teacher's time and energy in objective question evaluation, same assignment evaluation, etc. Through this way, it can allow teachers to focus on qualitative evaluation of students, evaluation of learning attitudes, habits, students' innovative thinking and abilities, etc.

In terms of the form and timeliness of evaluation feedback, the information system integrates the collected evaluation data and conducts automatic analysis based on the set evaluation standards. In terms of presentation, visual charts, knowledge structure grid diagrams, competency grid diagrams, and quality can be used displayed in the form of a grid chart, and it is convenient for teachers and students to intuitively view students' learning status. At the same time, the application of information technology can provide real-time feedback on students' classroom behavior, practice situations, answers, test results, test scores, etc. All those allow teachers and students to grasp individual learning situations in a timely manner. Teachers can carry out targeted counseling based on the evaluation results, and students can adjust his own learning process.

7. Conclusions

The wave of the digital age is rolling in, traditional ways of teaching and learning will be challenged by the development of the digital age. As the two most important subjects of teaching, both teachers and students should adopt appropriate strategies to actively cope with the changes brought about by digital technology in the way of "teaching" and "learning". This paper preliminarily analyzes the empowerment path of digital technology in the construction of teaching resources, teachers' teaching methods, students' learning methods and students' evaluation, in the

future, we need to carry out more in-depth research on the digital empowerment of the whole process of teaching, in order to truly realize the wisdom of teaching, to achieve the personalized training of students, to achieve individualized teaching.

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