

The Changes We Need: Contribution of Personalized Learning in the Development of New Theoretical Model for Education

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ABSTRACT

Purpose: The main purpose of this study is to explore how may the contribution of the personalized learning assessed as basis for the development of the new theoretical model in universities in Guangdong, China.

Method: The study utilized a mixed-method approach to research using Explanatory Sequential Design (Two-Phase). In this type of research, the researcher collects an initial quantitative data collection, and analyzes the data to build up on a second, qualitative phase. This procedure helps explain the quantitative results through a qualitative dimension.

Result and Conclusion: The study found that the level of presentation of personalized learning practices among Chinese university students is not ideal. Classroom instructors are not sufficiently prepared to implement personalized learning among students, and university administrators also lack adequate preparation for motivating and leading the development and implementation of personalized learning. However, Chinese university students, teachers, and administrators all hold a positive attitude towards personalized learning. They recognize the significance of personalized learning for student development and the reforms in education for the new era. They would actively promote relevant practices. The study synthesized the perceptions of students, teachers, and administrators and developed a new theoretical model to enhance the universities' practices of personalized learning.

Research implications: The study highlights the importance of bridging the gap between positive attitudes towards personalized learning and the actual implementation of these practices, emphasizing the need for strategic interventions and support mechanisms to ensure successful integration into university settings.

Originality/ Value: The study focused on the Chinese university context, its identification of implementation gaps, its recognition of positive attitudes towards personalized learning despite challenges, and its development of a new theoretical model to enhance personalized learning practices. These aspects contribute to the advancement of knowledge and understanding in the field of personalized learning within the context of Chinese higher education.

Keywords: personalized learning, creativity, classroom implementation, Chinese universities

INTRODUCTION

Personalized learning (PL) is an educational and learning approach designed to tailor the educational experience to each student's unique needs, interests, learning styles, and progress. This approach places students at the center of their learning process in order to better meet their academic and developmental

needs. Personalized learning is about giving students some control over their learning (Huang et al., 2022), differentiating instruction for each learner, and providing real-time individualized feedback to teachers and learners, which be all effortlessly blended throughout the learning activity.

Personalized learning has existed for hundreds of years in the form of apprenticeship and mentoring. As educational technologies began to mature in the last half of the previous century, personalized learning took the form of intelligent tutoring systems. In this century, big data and learning analytics are poised to transform personalized learning once again. Learning has been characterized as a stable and persistent change in what a person knows and can do (Spector, 2019). Personalized learning can be an efficient approach that can increase motivation, engagement and understanding (Shute et al., 2017), maximizing learner satisfaction, learning efficiency, and learning effectiveness.

This study has important implications for people interested in vocational education and the government to understand the needs of private vocational schools. This study will provide a theoretical basis for the innovation of quantitative analysis results and provide panel data for future research.

Few studies have been conducted to determine the characteristics that influence personalized learning, bringing to attention of the researcher the relevance of the issue for university students and advancements in personalized learning strategies. The study adds to the advancement of knowledge by providing theoretical and empirical contributions. The general problem of the study is: How may the contribution of the personalized learning assessed as basis for the development of the new theoretical model in universities in Guangdong, China. The research should develop a theoretical model to promote personalized learning practices. Specifically, the study sought answers to the following questions:

1. How may the extent of demonstration of students' personalized learning be described in terms of:

- 1.1 Creativity and Innovation
- 1.2 Communication and Collaboration
- 1.3 Research and Information Fluency
- 1.4 Critical Thinking and Problem Solving
- 1.5 Digital Citizenship
- 1.6 Technology Operations

2. How may the preparedness of the classroom teachers in developing personalized learning among the students be described in terms of:

- 2.1 Facilitate and Inspire Student Learning Creativity
- 2.2 Design and Develop Digital-Age Learning Experiences and Assessments
- 2.3 Model Digital-Age Work and Learning
- 2.4 Promote and Model Digital Citizenship and Responsibility
- 2.5 Engage in Professional Growth and Leadership

3. How may the preparedness of the administrators in the development and implementation of personalized learning be described in terms of:
 - 3.1 Visionary Leadership
 - 3.2 Digital-Age Learning Culture
 - 3.3 Excellence in Professional Practice
 - 3.4 Systematic Improvement
4. What are the students, teachers, and administrators' perception of the University practices of personalized learning?
5. How do students, teachers, and administrators recognize the contribution of personalized learning in education?
6. What theoretical model may be developed to enhance the practices of personalized learning of the universities?

RESEARCH METHOD

The study utilized a mixed-method approach to research using Explanatory Sequential Design (Two-Phase). In this type of research, the researcher collects an initial quantitative data collection, and analyzes the data to build up on a second, qualitative phase. This procedure helps explain the quantitative results through a qualitative dimension. The quantitative part of the research is a triangulation of the collection of data from the students, teachers and administrators. The students would be asked to assess the extent for demonstration of students' personalized learning. The teachers would be asked to evaluate its preparedness of the classroom in developing personalized learning among the students. The administrators would be asked about their preparedness in inspiring and leading development and implementation of personalized learning. The qualitative part of the research is in the form of descriptive design. The research would apply interview to the students, teachers, and administrators to support the result of the quantitative part of the research. Respondents would be asked about their practices and recognition of the contribution of personalized learning. Data gathered from the quantitative and qualitative would be analyzed and interpreted. A thematic approach would be used in the analysis of data gathered from the interview. A survey and interview method would be used to gather data. The questionnaire for the survey method would be adopted from the manual developed by International Society for Technology (ISTE). The questions for interview would be developed by the researcher to further explain the data gathered from the questionnaire.

The research was carried out among Chinese university students from Guangdong province. Guangdong, a coastal province of southeast China, borders Hong Kong and Macau. Its capital, Guangzhou, sits within its industrial Pearl River Delta region. This sprawling port is home to the octagonal Sun Yat-sen Memorial Hall, commemorating the founder of modern China. The country's commerce metropolis of Guangdong was chosen as the study's population. Five (5) prominent universities were chosen at random from the population.

In this study, quantitative analysis involved calculating weighted means from questionnaire data. Respondents used a Likert scale to assess the extent of their demonstration and preparedness. For students, 3.50-4.00 indicated a great extent, 2.50-3.49 somewhat, 1.50-2.49 very little, and 1.00-1.49 not at all. Instructors' preparedness and administrators' preparedness were similarly assessed. Qualitative analysis focused on exploring perceptions of personalized learning's contribution to education reform. Interviews were conducted using a semi-structured approach, allowing flexibility in questions. Researchers ensured

interviewee comfort, recorded interviews, and transcribed them. Data were coded at three levels, starting with open-ended coding, followed by keywords, and digital encoding to protect interviewee privacy.

RESULTS AND DISCUSSION

This study would use a mixture of quantitative and qualitative research to explore how may the personalized learning practices of the students, teachers and administrators in the university are recognized that would promote the changes need in education.

The Extent of Demonstration of Students' Personalized Learning

As shown in Table 1, the descriptive analysis of the survey questionnaire on students show that students' personalized learning is somewhat demonstrated in creativity and innovation ($\bar{x}=2.94$, $\sigma=.69$), communication and collaboration ($\bar{x}=2.94$, $\sigma=.72$), research and information fluency ($\bar{x}=2.98$, $\sigma=.71$), critical thinking and problem-solving ($\bar{x}=2.95$, $\sigma=.72$), digital citizenship ($\bar{x}=2.94$, $\sigma=.73$), and technological capability ($\bar{x}=2.99$, $\sigma=.75$). Among these, research and information fluency and technological capability are important demonstration for personalized learning for students. The general variances are 0.69~0.75, indicates that the degree of variance of the data is close enough to determine the homogeneity of the responses. Chinese university students' personalized learning performance in creativity and innovation, communication and collaboration, research and information fluency, critical thinking and problem solving, digital citizenship and technology capability was somewhat. It may be due to the overly rigid and extensive curriculum content that students lack the time and space for independent exploration, creative thinking, and in-depth research. Traditional teaching methods tend to focus solely on lecturing, lacking interaction, hands-on experience, and exploration, which makes it difficult to nurture students' innovative thinking and problem-solving skills. The lack of practical projects and case studies in the curriculum hinders the development of students' ability to apply knowledge in practical contexts. Additionally, large lecture classes struggle to create conducive atmosphere for interaction and collaboration, thereby limiting students' opportunities for communication and cooperation. These reasons are interwoven and affect the degree of personalized learning display of Chinese college students in innovation, communication, problem solving and other aspects.

TABLE 1. THE EXTENT OF DEMONSTRATION OF STUDENTS' PERSONALIZED LEARNING

Factors	Mean	SD	DI
1. Creativity and Innovation	2.94	0.69	Somewhat
2. Communication and Collaboration	2.94	0.72	Somewhat
3. Research and Information Fluency	2.98	0.71	Somewhat
4. Critical Thinking and Problem-Solving	2.95	0.72	Somewhat
5. Digital Citizenship	2.94	0.73	Somewhat
6. Technology capability	2.99	0.75	Somewhat
OVERALL	2.96	0.72	Somewhat

SD-Standard Deviation; DI-Descriptive Interpretation

Table 1 indicates that students exhibit a moderate level of personalized learning across all evaluated factors. The overall mean of 2.96 and standard deviation of 0.72 suggest consistent moderate engagement in personalized learning activities among the students.

All six factors have similar mean scores: Creativity and Innovation, Communication and Collaboration, and

Digital Citizenship each have a mean of 2.94, while Research and Information Fluency is slightly higher at 2.98. Critical Thinking and Problem-Solving has a mean of 2.95, and Technology Capability leads with a mean of 2.99. The overall mean score across all factors is 2.96, indicating that students, on average, demonstrate a moderate level of engagement and proficiency in these areas. The descriptive interpretation for all factors is “Somewhat,” suggesting that while students show some level of personalized learning, it is not fully developed.

The standard deviations (SD) for the factors range from 0.69 to 0.75, with an overall SD of 0.72. This indicates that there is a consistent degree of variability in how students demonstrate personalized learning across the different factors. The slight variation in SD values reflects minor differences in the dispersion of students’ performance, but overall, the extent of this variability is relatively uniform.

The findings of the present study are consistent with Liu (2011, 2018) who proposed that personalized education carried out by institutions of higher learning is a profound understanding of the true meaning of education, an appeal to the popularization of higher education, and an inevitable requirement for cultivating students’ innovation ability and realizing educational equity. The possible reasons are that the students’ autonomous learning and self-driven ability are insufficient or there are differences in students’ abilities. Zhang (2022) also mentioned that universities need to overcome the problem of the lack of individual consciousness of students to develop personalized learning to meet the urgent demand of society for innovative talents. Fullan and Langworthy (2013) pointed out in Deep learning that the implementation of students’ personalized learning needs more time and technical support from teachers. With time and resource constraints, teachers are often unable to communicate with each student individually, which is also a possible reason. Yang (2021) points out that today’s students tend to believe that the results of search engines are the most accurate and reliable while ignoring other more professional and authoritative information resources such as academic databases and library catalogs. Moreover, the lack of design and implementation of effective research and information resources makes it difficult for students to obtain adequate research and information support. Feng et al. (2019) noted that digital citizenship is becoming increasingly important in university education. However, there are also challenges in monitoring and tracking digital citizenship education, such as a lack of effective data collection and analysis tools and inadequate teacher training. Prior studies by Jiang et al. (2018) also mentioned that many of today’s personalized learning tools are based mainly on course content and teachers’ teaching goals, ignoring students’ individual differences and learning needs.

The Preparedness of the Classroom Teachers in Developing Personalized Learning among the Students

As shown in Table 2, the descriptive analysis of the survey questionnaire on classroom teachers indicate that teachers are probably prepared to develop personalized learning in facilitate and inspire student learning creativity($\bar{x}=2.87$, $\sigma=.94$), design and develop digital-age learning($\bar{x}=2.81$, $\sigma=.91$), model digital-age work and learning($\bar{x}=2.86$, $\sigma=.95$), promote and model digital citizenship and responsibility($\bar{x}=2.86$, $\sigma=.95$), engage in professional growth and leadership($\bar{x}=2.86$, $\sigma=.92$) aspects in the classroom. They are most prepared in facilitate and inspire student learning creativity. The relatively low level of variance in the data, which are 0.91~0.95, it is possible to evaluate the homogeneity of the responses. Chinese university classroom teachers are moderately prepared for developing personalized learning among the students in facilitate and inspire student learning creativity, model digital-age work and learning, promote and model digital citizenship and responsibility and engaging in professional growth and leadership. This may be due to the reliance on traditional teaching methods, which leads to a lack of understanding and familiarity with modern instructional techniques that enhance creativity and digital literacy and the shortage of resources, workshops, and training programs that can foster classroom creativity and digital skills. These factors collectively result in insufficient preparedness among university classroom instructors in effectively

promoting creativity, integrating digital tools, and meeting the demands of the digital age in teaching practices.

TABLE 2. THE PREPAREDNESS OF THE CLASSROOM TEACHERS IN DEVELOPING PERSONALIZED LEARNING AMONG THE STUDENTS

Factors	Mean	SD	DI
1. Facilitate and Inspire Student Learning Creativity	2.87	0.94	Moderately Prepared
2. Design and Develop Digital-Age Learning Experiences and Assessments	2.81	0.91	Moderately Prepared
3. Model Digital-Age Work and Learning	2.86	0.95	Moderately Prepared
4. Promote and Model Digital Citizenship and Responsibility	2.86	0.95	Moderately Prepared
5. Engage in Professional Growth and Leadership	2.86	0.92	Moderately Prepared
OVERALL	2.85	0.93	Moderately Prepared

SD-Standard Deviation; DI-Descriptive Interpretation

Table 1 indicates that classroom teachers generally demonstrate a moderate level of preparedness in fostering personalized learning for students, with an overall mean score of 2.85 and a standard deviation of 0.93. This reflects a consistent but moderate readiness to integrate creativity, digital-age learning, digital citizenship, and professional growth into their teaching practices.

The mean scores for the factors are relatively close, with Facilitate and Inspire Student Learning Creativity at 2.87, Design and Develop Digital-Age Learning Experiences and Assessments at 2.81, Model Digital-Age Work and Learning and Promote and Model Digital Citizenship and Responsibility both at 2.86, and Engage in Professional Growth and Leadership also at 2.86. The overall mean score is 2.85, indicating that teachers are “Moderately Prepared” to develop personalized learning among students. This overall mean suggests a balanced, moderate level of readiness across the different aspects of personalized learning facilitation.

The standard deviations (SD) for the factors range from 0.91 to 0.95, with an overall SD of 0.93. These values indicate a moderate level of variability in teachers’ preparedness across the assessed factors. The SD reflects the degree to which individual responses deviate from the mean, suggesting that while most teachers have a similar level of preparedness, there is some variation among them.

Zhong et al. (2022) proposed that the ultimate purpose of course learning is to cultivate students’ problem-solving and innovative thinking abilities. The best way to form these thinking abilities is to connect with life so that students can truly experience the actual social scenes of life, positively understand the value and role of knowledge, and completely experience the process of knowledge exploration, application, and solving practical problems. Zhang and Mou (2018) found that some teachers performed moderately and were able to design and develop digital age learning experiences and assessments in their teaching. Liu and Dai (2019) stated that the primary goal of “Internet + education” is to respect the individual needs of students, optimize the co-construction and sharing of resources, improve the efficiency of education and teaching, pay attention to the data of education process, and strengthen education management and evaluation. Liu et al. (2019) found that although some university teachers have basic digital technology knowledge and skills, their knowledge and abilities in digital ethics, privacy protection, and information literacy still need to be improved. Yang and Ren (2021) found that personalized education systems and policies differ in the degree of support for digital citizenship and responsibility. Some universities have taken positive steps to develop policies and guidance documents to encourage teachers to integrate the concepts of digital citizenship and responsibility in education and to provide corresponding training and resources to support them. Zhang et al.

(2018) indicated that the surge of big data in education has transformed the current learning environment from digital to data-oriented, and teachers’ teaching has also changed from the original empirical hypothesis to data-guided teaching. This requires teachers to participate more in professional growth and leadership to meet the educational requirements of the new era.

The preparedness of the administrators in the development and implementation of personalized learning

As shown in Table 3, the descriptive analysis of the survey questionnaire on administrators indicate that university administrators are probably prepared in visionary leadership (\bar{x} =2.84, σ =.89), digital-age learning culture (\bar{x} =2.86, σ =.90), excellence in professional practice (\bar{x} =2.87, σ =.90), systematic improvement (\bar{x} =2.93, σ =1.01) aspects for motivating and leading the development and implementation of personalized learning. Due to the low degree of variance in the data, the overall data variance is 0.89~1.01, it is possible to evaluate the homogeneity of the responses. Chinese university administrators have made moderately prepared in terms of visionary leadership, digital-age learning culture, excellences in professional practice, systematic improvement to the development and implementation of personalized learning. This might be influenced by the lack of profound foresight among certain university administrators regarding the future of education development, which makes it challenging to formulate and drive innovative educational policies and personalized learning strategies. The absence of a thorough understanding of the latest developments and best practices in the education field leads to a deficiency in effective guidance and strategies for university administrators in spearheading personalized learning. Additionally, the inability to establish an effective improvement system prevents the integration of personalized learning into the institution’s long-term planning and development strategies.

TABLE 3. THE PREPAREDNESS OF THE ADMINISTRATORS IN THE DEVELOPMENT AND IMPLEMENTATION OF PERSONALIZED LEARNING

Factors	Mean	SD	DI
1. Visionary Leadership	2.84	0.89	Moderately Prepared
2. Digital-Age Learning Culture	2.86	0.90	Moderately Prepared
3. Excellence in Professional Practice	2.87	0.90	Moderately Prepared
4. Systematic Improvement	2.93	1.01	Moderately Prepared
OVERALL	2.88	0.93	Moderately Prepared

SD-Standard Deviation; DI-Descriptive Interpretation

Table 3 suggests that administrators show a consistent but moderate level of preparedness across all factors related to personalized learning. The overall mean of 2.88 and standard deviation of 0.93 indicate a balanced level of readiness in fostering visionary leadership, cultivating a digital-age learning culture, ensuring excellence in professional practice, and driving systematic improvement in personalized learning initiatives.

Visionary Leadership has a mean score of 2.84 with a standard deviation of 0.89, indicating that administrators are moderately prepared in this area, with a relatively consistent performance around the average score. Digital-Age Learning Culture has a mean score of 2.86 and an SD of 0.90, also reflecting a moderate level of preparedness and a similar consistency. Excellence in Professional Practice shows a mean of 2.87 and an SD of 0.90, suggesting moderate preparedness and slight variation in performance. Systematic Improvement has the highest mean score at 2.93 but also has the highest variability with an SD of 1.01, indicating moderate preparedness but greater diversity in the responses.

The overall mean score across these factors is 2.88, signifying that administrators are generally “Moderately

Prepared” to develop and implement personalized learning strategies. The overall standard deviation is 0.93, reflecting a moderate level of variability in preparedness among administrators.

Yang and Ren (2021) propose that the implementation and preparation of personalized learning is a complex process that requires university administrators to prepare and lead at multiple levels to jointly promote the intelligence of education. Zhao et al. (2017) discussed that the construction of a personalized learning environment centered on user needs by university administrators is e-learning, which is the transformation and innovation of universities in the digital age. University administrators need to be prepared to deal with and adapt to the learning culture of the digital age. Wang (2017) advocates that in the context of the digital age, university administrators need to develop policies and plans to cultivate students’ digital literacy. Liu and Pan (2018) stated that in the era of “Internet +”, new media technologies have promoted the reform of education and teaching. Zhang et al. (2017) pointed out that the core point of reforming school education in the era of big data is to promote major changes in the school’s organizational forms and management models to support the development of personalized learning.

The Students, Teachers, and Administrators’ Perception of the University Practices of Personalized Learning

The study has found that students, teachers, and administrators have a supportive perception of the University practices of personalized learning. Students generally acknowledge that personalized learning can stimulate creativity and innovation, improve communication, collaboration, critical thinking, and problem-solving skills. It frees them from the constraints of traditional classrooms, provides a more flexible learning environment, and enhances learning outcomes and motivation. Teachers believe that personalized learning can offer tailored learning resources and approaches based on students’ interests and learning needs. They recognize that each student has unique learning styles and needs, and personalized teaching styles can flexibly adjust teaching strategies and methods to better accommodate learning differences and styles. Administrators realize that contemporary students live in a digital environment with different ways of accessing and processing information. Personalized learning practices can cultivate students’ information literacy, technological skills, and collaboration abilities required in the digital age, enabling them to adapt to future career demands and societal developments. Through personalized learning practices, a more flexible, open, and diverse educational system can be built, enhancing teaching quality and student satisfaction.

Tang et al. (2019) mentioned in the article that education modernization requires education to provide students with high-quality personalized learning, enable learners to take the initiative to learn according to their own needs and way, find a suitable environment and partners to learn, get the most suitable teachers to help them, and gradually form critical thinking skills and problem-solving skills.

The Student, Teacher, and Administrator Perceptions with the Contribution of Personalized Learning in Education

The study has found that students believe personalized learning contributes to education in multiple ways. It has a positive impact on stimulating learning motivation, improving learning effectiveness, cultivating independent learning ability and communication skills, promoting educational equity, and facilitating personal development. It is recognized as an important direction for educational reform and is expected to bring more opportunities and possibilities for students’ learning and development. Classroom teachers recognize the importance of personalized learning in educational improvement. They acknowledge the importance of personalized learning in improving teaching effectiveness and student performance. At the same time, they are also aware of the need to continuously improve their professional development to meet the requirements of personalized learning. Administrators consider that personalized learning as a positive contribution to increasing student satisfaction, academic outcomes, and employability competitiveness. They also recognize that personalized learning can drive innovation and improvement in teaching and

improve equity in education. And, they are supported and promoted the application and development of personalized learning in the education system.

The Theoretical Model to Enhance the Practices of Personalized Learning of the Universities

According to the reasons and the results of qualitative analysis, this study puts forward a new theoretical model suitable for the development of personalized learning in Chinese universities. The participants of the model include students, teachers, and administrators, and the three perspectives mutually promote and influence the development of personalized learning. Through interest matching, students can learn in their areas of interest, thereby enhancing their motivation and sense of engagement in learning. Involve students in the development of self-directed learning plans to develop appropriate learning objectives and schedules to better manage learning time and resources. Personalized feedback can help students find their learning weaknesses and progress, so as to better adjust their learning strategies.

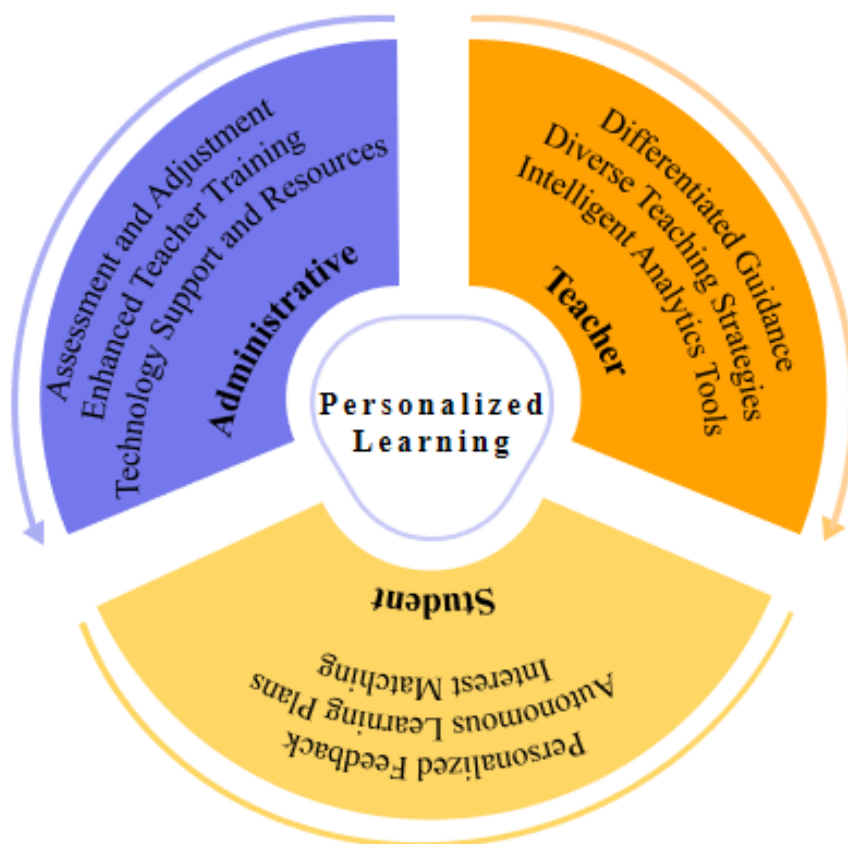


Figure 1. The Development of Personalized Learning Theoretical Model

Thus, it can promote college students' personalized learning practice better. Teachers utilize intelligent analytics tools to analyze student learning data to better understand each student's learning, progress, and needs. Adopt a variety of teaching strategies to attract students' interest, increase their engagement and motivation to learn. Provide differentiated instruction and adjust the difficulty and depth of the content in a timely manner to ensure that each student can progress at an appropriate level. Administrators are increasing the availability of technology tools and resources, such as educational software, intelligent analytics tools, and personalized learning platforms, to help teachers better implement personalized instruction. Strengthen organizational training to help teachers master the methods of using technology tools and implementing personalized learning. Teaching results are evaluated through teaching data and personalized feedback from students, and continuous adjustments and improvements are made to ensure the effectiveness of personalized learning.

CONCLUSIONS

The study has found that the level of presentation of personalized learning practices among Chinese university students is not ideal. Classroom instructors are not sufficiently prepared to implement personalized learning among students, and university administrators also lack adequate preparation for motivating and leading the development and implementation of personalized learning. However, Chinese university students, teachers, and administrators all hold a positive attitude towards personalized learning. They recognize the significance of personalized learning for student development and the reforms in education for the new era. They would actively promote relevant practices. The study synthesized the perceptions of students, teachers, and administrators and developed a new theoretical model to enhance the universities' practices of personalized learning.

RECOMMENDATIONS

To advance personalized learning in universities and educational institutions, a multifaceted approach is essential. Firstly, clear strategies must be formulated, integrating personalized learning into the institution's core objectives, with defined goals and alignment with the educational vision. Faculty development is crucial, with training courses on personalized learning concepts, technological tools, and diverse teaching methods. Investment in intelligent technology, like learning management systems, is key to support personalized learning, with user-friendly platforms. Flexible curricula should be designed, allowing students to learn at their pace and according to their interests. Promoting student autonomy through guidance and self-directed learning is central, and continuous assessment is vital for improvement.

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