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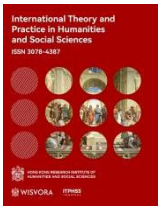

Artificial Intelligence Enabling Special Education Teacher Development: Building Support Systems and Practical Paths

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Abstract

The intelligent era paves the way for integrating special education with artificial intelligence.Special education teachers are the main implementers of special education, and providing them with appropriate and adequate support is a key part of promoting and ensuring the quality of special education. The research method of this study is based on the social-ecological system theory, exploring the status quo and application logic of AI-enabled special education teachers. The purpose of the study is to construct a "macro-medium-micro"teacher support system in the context of artificial intelligence and to propose a practical path. The conclusion of the study shows that the special education teacher support system based on the social-ecological system theory can provide a new way of thinking and a reference suggestion for effectively improving the teaching quality and learning effect of special education.

1.Introduction

The term "Artificial Intelligence" was first introduced at the Dartmouth Symposium in 1956, and its connotation is defined as a machine simulating the intelligence of a human being. over the past 70 years, AI has developed and progressed. With the support of increasingly advanced technology, AI technology has gradually penetrated into people's lives, with virtual assistants, video games, and purchase predictions updating people's understanding and experience of AI, especially in recent years, when the extraordinary performance of AI technology in the "man-machine wars" has led people to realize that the third wave of AI is coming! The third wave of artificial intelligence is coming. The development of the country cannot be separated from the promotion of education, China's policy has clearly put forward the use of artificial intelligence technology to carry out "intelligent education", in order to promote artificial intelligence to support the development of the education industry more efficiently, the Ministry of Education promulgated the "Education Informatization 2.0 Action Plan" in 2018, these initiatives are enough to prove that These initiatives are sufficient proof that the prologue of the "AI+Education" model has already begun（Chen et al., 2022）.

Artificial intelligence education is the new field that emerges from the combination of artificial intelligence and learning science, with learning science added to data, computing power and algorithmic modeling - the three elements of artificial intelligence. The four elements build a four-layer framework for AI education, including a cloud platform, a big data layer, an algorithm layer, and an application layer, which are responsible for computing, data collection and aggregation, algorithm use, and practical applications, respectively, to support AI education(Qian, 2022).Typical application representatives of artificial intelligence education mainly include intelligent teaching systems and educational robots, both of which embody the role of the four elements at the technical level. In the context of special education, the advantages of AI are mainly reflected in its individualization, differentiation and self-optimization capabilities, which provide solid support for the customized education of people with disabilities, and at the same time bring unprecedented development potential to the field of special education. The integration of artificial intelligence technologies, such as adaptive learning, virtual assistants and expert systems, provides learners with technical support to achieve personalized education. In addition, the model of "Artificial Intelligence + Special Education" has gradually gained great attention from experts, scholars and special educators(Hu & Wang, 2021).

Considering the current progress of artificial intelligence, its application in special education has already been well-established, and its advancement plays a crucial role in constructing a support system for special education teachers.The deep integration of special education teachers' support system support and artificial intelligence can help strengthen special education teachers' understanding and application of intelligent technology, promote the innovation and optimization of curriculum and special education management mode, and thus improve the efficiency and quality of special education teaching. Moreover, it can break the limitations of geography and resources, provide high-quality educational resources for special education schools in remote areas or resource-poor schools in China, and promote educational equity.

2.Literature Review

2.1 Definition and Classification of Special Education Targets

Since there are many different categories of special education clients, and different categories of special education clients do not expect the same technical support from AI, we will first sort out the categorization of special education clients.

The Individuals with Disabilities Education Promotion Act (IDEA) of the United States categorizes the objects of special education into 13 different categories according to the types of learners' disabilities, such as learning disabilities, speech disabilities, hearing impairments, visual impairments, mental retardation and autism, etc. In the Special Education Act of Korea, the objects of special education are categorized into 13 different categories. In Korea, the Special Education Act divides the targets of special education into 10 categories such as visual impairment, hearing impairment, physical impairment, learning disability and autism(Seo et al., 1991). In China, the categorization of special education objects in relevant authoritative documents is not consistent. The Constitution of the People's Republic of China (2004) categorizes special education recipients into four categories: blind, deaf, mute, and others with disabilities, and the Compulsory Education Law of the People's Republic of China (2006) categorizes special education recipients into three categories: visually impaired, hearing and speech impaired, and intellectually disabled. The Law of the People's Republic of China on the Protection of Persons with Disabilities (2008) categorizes the targets of special education into eight categories, including persons with visual disabilities, hearing disabilities, speech disabilities,

physical disabilities, intellectual disabilities, mental disabilities, multiple disabilities and other disabilities.

Since the 1950s, special education has shifted from focusing on the individual deficiencies of children with special needs to emphasizing the improvement of the environment and the provision of support, and the concept of "support" has been put forward and applied to guide the research and practice of special education or integrated education. In the 10th edition of Mental Retardation: Definitions, Classifications, and Support Systems, published by the American Association on Intellectual and Developmental Disabilities (AADD) in 2002, "supports" are defined as resources and strategies designed to enhance individual functioning and to promote the individual's development, education, interests, and well-being(Luckasson et al., 2002). Since then, researchers have conceptualized "support" as a psychological construct, constructed models and intensities of support, and proposed specific steps and domains for establishing support, laying a theoretical foundation for the construction of support systems.

2.2 Artificial intelligence empowers special education teacher development

Promoting the high-quality development of special education is an important measure for realizing the modernization of special education in China, and it is also a vivid embodiment of the strategic goal of building a strong education nation in the field of special education. The successful experience of foreign special education shows that a perfect special education support system is the prerequisite and foundation for the development of special education, and plays an important role in improving the quality of special education. The quality of special education is most likely to be improved when special education teachers can get good human and material support. Artificial intelligence can effectively address three major challenges in the field of special education: to provide compensatory education for students with special needs; to change the traditional education model to meet the needs of regular education; and to provide adaptive education that promotes individualized growth. Currently, AI has made significant technological advances in the education of persons with disabilities such as visual impairment, hearing impairment, autism, speech and language impairment and physical impairment(Drigas & Ioannidou, 2013).

In terms of intelligent recognition and diagnosis, the facial expression, emotion, eye movement, brain structure and other information of special education subjects can be intelligently recognized and intelligently diagnosed by intelligent interactive robots, intelligent eye-tracking devices, intelligent scanners and other intelligent devices using deep learning, artificial neural network algorithms and other technologies(Marino & Vasquez, 2024). Educational robots, on the other hand, have successfully assumed the important role of assistants in educational activities. As a typical application of artificial intelligence, speech recognition and bionic technology in education, educational robots can collect and organize teaching materials for special education teachers and assist them in completing their teaching tasks; they can also help to record the rehabilitation of different special education objects and provide more intelligent information for the screening, diagnosis, intervention and development process of special education students. It can also help record the rehabilitation conditions of different special education students, provide more intelligent and precise support for the whole process of screening, diagnosis, intervention and development of special education students, and help special education students better adapt to the survival and development in the digital age (Roll & Wylie, 2016).

The current rapid development of the big model of artificial intelligence, the gradual integration of artificial intelligence technology and education and teaching, and the continuous innovation and optimization of the traditional education model have posed new challenges to the

intelligent education literacy of special education teachers. Special education teachers who carry out artificial intelligence education and teaching need multi-level and multi-source support. The more support special education teachers receive in their organizations, the more caring they are and the more willing they are to use AI education to conduct teaching to better suit the needs of different special education audiences (Yang et al., 2024). Special education teachers' perception of support not only affects their educational and teaching practice behaviors, but also reduces special education teachers' negative emotions and burnout, and enhances their sense of professional accomplishment and well-being.

Participation in training opportunities, provision of AI teaching assistants, collaboration with AI professionals, relevant curriculum adjustments, rationalization of class sizes, and provision of AI teaching materials are common expectations of support available to special education teachers in special education settings in various countries (Shalini & Shipra, 2020). Chinese special education teachers have also raised the need for support such as improving the teaching environment, improving the treatment of special education teachers, support from colleagues, support from principals, support from students' parents, guidance from experts, and strengthening ties with special schools (Nedungad et al., 2024). However, the overall relevant research is not rich and focuses on the investigation of special education teachers' support needs, and the proposed support elements are relatively single, fragmented, and one-sided, failing to adequately respond to the specific support needed by special education teachers in the context of AI, and the limitations of the traditional teaching support approach in terms of personalization, timeliness, and data integration have led to a lack of current comprehensive support systems with the background of artificial intelligence with a Comprehensive Special Education Teacher Support System.

In view of this, this study intends to construct a support system for special education teachers in the context of artificial intelligence, based on the social-ecological system theory from the perspective of artificial intelligence, and on the basis of fully respecting the subjective status of special education teachers, focusing on the interaction relationship between various internal and external support elements, with a view to helping special education teachers to better implement education and teaching and to promote the quality improvement of special education.

3.Theoretical Basis for Constructing a Support System for Special Education Teachers

Social-ecological system theory is a system theory used to depict and analyze the relationship between people and other beings and the interaction between people and other beings. C.H. Zastrow further developed U. Bronfenbrenner's ecosystem theory and constructed a “macro-meso-micro” system model to describe the relationship between people and the environment. C.H. Zastrow further developed U. Bronfenbrenner's ecosystem theory and constructed a “macro-meso” system model to describe the relationship between people and the environment(McGinnis, M.D & Ostrom, 2014). Among them, the micro system refers to individuals, focusing on the subjective factors of individuals and emphasizing the improvement of their own functions; the meso system refers to small-scale groups, such as families, occupational groups, and other social groups; and the macro system is a larger system than small-scale groups, focusing on the system, culture, and political and economic policies, etc. The theoretical model not only focuses on the “micro system”, but also on the “meso system”. The theoretical model not only focuses on the construction of “macro-meso-micro” systems, but also emphasizes the interactions between systems. The teacher support system that this study intends to construct

refers to the universally connected, interacting, and dynamically balanced organism formed by fully mobilizing various internal and external support elements in order to promote better teaching and learning by special education teachers. Under the guidance of the social-ecological system theory, the promotion of special education teachers' educational and teaching practice should focus on individual teachers, the ecological environment, and the interrelationship between the two. Effective implementation of education and teaching requires not only the teacher's own initiative, but also the important role of the ecological environment composed of society, school, administrators, colleagues, experts, students and other external elements, and the results of the special education teacher's teaching should be regarded as the results of the interaction between the individual teacher and the environment. This reveals that when constructing a teacher support system, we need to consider teachers' internal self-support, external environmental support, and the interaction of internal and external support.

Thus, according to C.H. Zastrow's model of social-ecological system theory, we construct a three-layer teacher support system, namely, macro, meso, and micro, in order to stratify and unify the various support elements for teachers. Specifically, the macro system contains two subsystems: policy support and cultural support; the meso system contains two subsystems: school support and expert support; and the micro support system is the teacher self-support system. The subsystems in each layer of support system work together synergistically, and the three layers of support system interact with each other to provide support for the education and teaching of special education teachers, as shown in Figure 1.

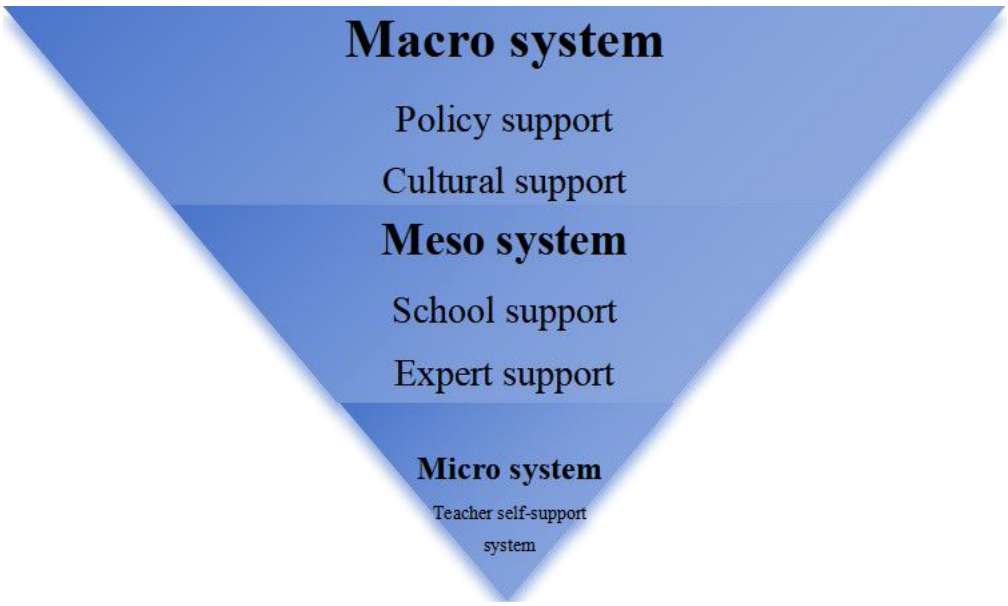

Figure 1:Special education teacher support system

4. Interpretation of Constructing a Support System and Practical Pathways for Special Education Teachers Based on Artificial Intelligence

4.1 Macro special education teacher support system

The government bears an important responsibility in promoting the development of special education, and the introduction of artificial intelligence technology opens up a new development path for special education. The government should take the initiative to help the in-depth

application of AI technology in the field of special education, especially the development and promotion of intelligent teaching systems (Gupta et al., 2023). By formulating supportive policies, improving the regionalized management model and providing necessary resources, the government can effectively promote the use of AI by special education teachers to achieve personalized management and teaching of special education targets, thus enhancing the quality and efficiency of special education.

4.1.1 Policy support

Relevant policies play an important role in guiding and promoting educational practices. At present, China lacks a policy framework specifically for the in-depth application of AI in the field of special education. In the 14th Five-Year Plan of Action for the Development and Enhancement of Special Education, there are references to utilizing new technologies such as AI to promote the construction of digital campuses and classrooms for special education, as well as the interoperability and sharing of student data. However, these initiatives only involve the construction of learning spaces and student data, and their contents are not comprehensive and systematic enough to form a complete policy framework. In the context of the digital transformation of education, it is especially necessary and urgent to develop a comprehensive, systematic and forward-looking policy framework to keep pace with the development of AI technology. The United States is an early release of relevant policy documents. 2020, the U.S. federal government promulgated the 2020 National Artificial Intelligence Initiative Act.It is explicitly proposed to provide support for AI educational equity for students with disabilities and other disadvantaged groups at the K12 level, in an effort to promote universal access to AI so that all educated students are able to adapt to future societal and economic changes caused by AI systems(Yang et al., 2024). And, the bill also proposes that there will be ongoing support for relevant AI research and development needed for educational equity for special education students through grants, cooperative agreements, testbeds, and access to data and computational resources(Lillywhite & Wolbring, 2024).

Overall, the policy documents released by the U.S. on AI to advance the development of special education do have a high reference value. However, since the relevant AI policy documents in the United States are not specifically oriented to special education, the relevant policy framework is actually not complete and systematic enough, and the national conditions of the United States and China are different, Chinese governments at all levels should formulate and introduce the relevant policy documents for special education teacher support in the context of AI according to the actual situation, so as to provide guarantees for the development of special education, including the treatment of teachers, the professional development mechanism, and the professional staffing. and professional staffing, etc. Formulate relevant policies to build a platform for teachers to develop special education empowered by AI, increase the content related to AI education in the pre-service training and post-service training of special education teachers, and standardize the objects, contents, levels and organizational and implementation units of post-service training for special education teachers. By continuously increasing the policy support for AI-enabled special education development, it promotes the all-round change of AI on special education and facilitates the digital transformation and development of special education.

4.1.2 Cultural support

Strengthen the cultural cultivation of AI talents and focus on the innovative design of special education products. In order to cultivate more AI talents, the UK's National Strategy for Artificial Intelligence released in 2021.In it, it is pointed out that attention should be paid to the cultivation

of high-end talents in artificial intelligence, and specific initiatives have been put forward to strengthen collaborative education between the industry and universities, fund more than 46 million pounds of special funds to the Alan Turing Institute, offer 2,500 new master's degree conversion courses on the subject of artificial intelligence and data science, and set up 1,000 government-funded scholarships, among other specific initiatives. Combined with the above typical practices, to address the shortage of AI talents, the overall approach can be to promote the cultivation of local talents and the introduction of international talents. Actively promote the cooperation and innovation between industry, academia, research and application of "AI+special" education, so as to cultivate more AI professionals who are familiar with special education.

The Chinese government can learn from the relevant policies of the United Kingdom to increase the research and application of AI technology in special education and provide cultural support. The government encourages research institutes, enterprises and schools to jointly develop intelligent teaching systems based on AI technology through special funding inputs and science and technology award programs. The intelligent teaching system should be based on the cognitive characteristics of special students, combined with the dynamic data analysis capability of AI technology, to establish an intelligent platform capable of individualized teaching. For example, the system can record and analyze the learning dynamics of special students in real time, including the learning level, the suitability of learning content and the learning progress. Based on these data, the intelligent teaching system can customize the learning plan for each student, adjust the teaching content and difficulty, and dynamically match the learning objectives and current abilities. Taking autistic children as an example, studies have shown that some autistic children perform better than words in recognizing images. By dynamically recording and storing this data, the Intelligent Teaching System can generate a detailed ability assessment report to provide special education teachers with teaching references. This function not only improves the accuracy of education, but also effectively reduces the repetitive tasks of special education teachers in academic instruction, giving them more time to focus on interaction with students and individualized tutoring (Sajja et al, 2024; Gallup et al., 2025).

At the same time, the Government can join hands with the education sector and technology development organizations to provide special training for special education teachers to improve their ability to operate and apply intelligent teaching systems. This will not only enhance teachers' confidence in the use of technology, but also promote the deep integration of AI technology and teaching practice.

4.2 Medium view special education teacher support system

School support. The school is the main venue for special education teachers to carry out education and teaching and develop their professional competence. The school leadership team centered on the principal should provide material support and guarantee for special education teachers by building a supportive school intelligent educational environment and normative environment. In terms of the ideological environment, the school leadership team should take the initiative to care about the work of special education AI in the school and support special education teachers to use AI to carry out education and teaching. In terms of system construction, the school leadership team should build a school artificial intelligence education work network, form a standardized artificial intelligence education management and operation system, carry out scientific planning for the overall development of education, determine the specific work content for special education teachers to implement teaching in conjunction with intelligent education, and establish a realizable upward channel and a scientific online intelligent assessment mechanism for special education teachers.

In addition, the classroom is the most important workplace for teachers to carry out integrated education teaching, and schools can optimize the work environment for teachers to carry out AI-enabled special education teaching through the adjustment of the physical environment of the classroom to be artificially intelligent, the equipping of auxiliary devices and technologies, and the provision of teaching resources in terms of material support. Technologies such as virtual reality and augmented reality are used to assist special education teachers in teaching abstract knowledge. New technologies such as artificial intelligence, cloud computing, big data, "Internet+", and blockchain can also be used to assist teachers in organizing and analyzing student profile data (Hu & Wang, 2021). In the educational process, AI-assisted technology can help special education teachers to be able to complete basic individualized education work when they are distracted to ensure the length and effectiveness of education.

Expert Support. Expert support is an important way to bridge the gap between special education teachers' lack of educational competence, including support from a team of superior teachers and support from AI professionals. Artificial intelligence has a positive effect on promoting the specialization of the special education teacher team, the excellent teacher team shares the working experience of the integration of artificial intelligence and special education teaching, and the teacher team carries out collegial support and help among themselves to promote the common development of education and teaching. The AI professionalism support is more needed by special education teachers, and AI professionals are supporters, collaborators, coordinators and resource providers for special education teachers to implement AI education. Consulting services and professional advice are provided to special education teachers through expert meetings and other means, which are mainly manifested in the provision of professional training opportunities, in-school professional support and management through AI experts' itinerant guidance and other means.

Therefore, at the meso level, we can increase the input of artificial intelligence in terms of school support and expert support, in order to solve the teaching pressure of special education teachers, as well as to more accurately and effectively "tailor the teaching to the needs of the special education target".

4.3 Micro special education teacher support system

Special education teachers are both recipients of external support and creators of self-support. The micro special education teacher support system is the teacher's self-support system. The enhancement of special education teachers' intelligent literacy is conducive to triggering changes in special education students' learning styles, stimulating students' learning potential, and cultivating students' practical abilities for better independent survival and integration into society. Individual factors such as special education teachers' attitudes toward artificial intelligence, knowledge, abilities, qualities, and mental health level will support their educational teaching and professional development. Based on previous research on special education teachers' educational literacy in AI (Lampos et al., 2021;Shalini & Shipra, 2020), this study constructs a self-support system for special education teachers in the context of AI from four dimensions of special education teachers' professional attitudes, professional knowledge, professional skills, and ability to acquire support regarding AI and divides it around these four dimensions three dimensions to construct its framework, as shown in Table 1.

Table 1: Constructing a self-support system for special education teachers

First level	Secondary	Tertiary	descriptions

dimension	dimensions	dimensions	
Intelligent Professional Attitude	Awareness and skills	Awareness and recognition	Understand the value of Artificial Intelligence (AI) in the field of integrated education and the opportunities and challenges it brings to teaching and learning, proactively learn and use AI tools, and actively engage in intelligent integrated education practices
		Knowledge and skills	Familiarity with and flexibility in the use of AI and digital tools to enhance teaching effectiveness
		digital literacy	Acquire basic digital skills, operate computers, internet browsing, data processing, etc., critically evaluate select effective instructional information and apply it.
Intelligent Expertise	academic quality	subject knowledge	Acquire expertise in integrating intelligent education education to deepen and broaden subject-specific skills.
		Subject Integration	Combining subject knowledge, intelligent technologies, and tools to achieve deep integration of related disciplines in order to generate new educational models and practices.
	intelligent application	Instructional Design	To creatively design the content of the teaching programme, as well as the learning arrangements inside and outside the classroom, taking into account the characteristics of smart technologies, as well as the individual circumstances of special students, to promote their integration.
		Pedagogical implementation	To optimise the teaching process by using intelligent technology and digital technology resources, to organise and manage teaching activities, to identify the learning characteristics and differences of special students, and to carry out targeted instruction.
		academic evaluation	Use AI tools to analyse and present the learning and academic situation objectively, efficiently and in a personalised manner.
	professional development	Teaching Reflection	Use technology to achieve personal education and teaching practical love your reflection and improvement, selective adoption and evaluation of intelligent teaching resources, critical analysis of the advantages and

			disadvantages of technology for special education, to avoid blindness and over-reliance.
		Teaching Training	To realise collaborative training with the help of technology, actively participate in cross-regional teaching and research activities, learn and share experiences together, and continuously innovate.
		lifelong learning	To maintain curiosity, keep learning new technologies and theories, adapt to the changes in the pedagogical environment of the new era, and continuously improve their professional competence.
Intelligent Expertise	teacher ethics	professionalism	Taking Advantage of Smart Technology to Promote Personalised Teaching and Help Special Needs Students Integrate into Society.
		Ethics and Privacy	Be fully aware of the importance of privacy protection of individuals, special students, and parents when using smart technology for teaching and learning, and ensure the ethical use of technology.
	Comprehensive education	Intelligent Moral Education (IME)	Reasonable and responsible use of smart technologies and tools to personalise, diversify and target moral education to the realities of special needs students.
Intelligent access to support capabilities	Reflection and development	Innovation and creativity	The ability to use technological tools for innovative thinking, new approaches to problem solving, and the creation of new content.
		Communication and collaboration	Communicate and collaborate effectively in a digital environment, using technology platforms for teamwork and classroom management.
		collaborative education	Using AI for innovative moral education, mental health education, home-school-society collaborative education

5. Reflections and Discussions

5.1 Privacy protection in the process of artificial intelligence application

The application process of artificial intelligence special education products can not be separated from the support of big data, and the development of special education requires a comprehensive understanding of the special education object, which means that it is necessary to collect and analyze the students' personal basic information, biometric information, behavioral data information, academic performance, health, and many other data contents. However, AI still inevitably faces ethical and moral issues such as data theft, data leakage, data loss, and algorithmic bias when collecting and processing data information (Knox, 2020). In real life,

privacy leakage has also been heard of in the process of using AI technology, so it is important for the government, technology developers, teachers, and parents to prevent privacy leakage of special education subjects during human-computer interaction.

For instance China's *Code of Ethics for a New Generation of Artificial Intelligence* outlines six fundamental ethical principles: enhancing human well-being, promoting fairness and justice, protecting privacy and security, ensuring controllability and trust, reinforcing responsibility, and fostering ethical literacy. Additionally, it provides specific operational guidelines across various domains,including management, research and development, supply, and application.Unfortunately, this specification is not mandatory, and in the specific content, it simply mentions that vulnerable groups and special groups should be fully respected and helped, without specifying how to operate. In contrast, the Ethical Guidelines for Trustworthy Artificial Intelligence issued by the EU places more emphasis on the protection of vulnerable groups such as children and people with disabilities, and gives a series of specific initiatives. The main ones include: AI systems should respect the human rights and fundamental freedoms of all people, including children and people with disabilities, in their design, deployment and use; AI developers should ensure that algorithms are designed without bias, such as through the use of sufficiently inclusive datasets that are representative of different populations; AI systems should take into account the abilities, skills and requirements of different categories of users, and ensure that they are accessible to people with disabilities; and, in the context of data handling, the Adequate protection should be provided for the personal data of vulnerable groups such as persons with disabilities and children; AI systems and their decisions should be interpreted in a way that is adaptable to stakeholders and ensures that AI promotes the well-being and rights of vulnerable groups such as children and persons with disabilities, among others.

In order to safeguard the legitimate rights and interests of special education students, it is necessary to properly deal with relevant ethical and moral issues when managing AI special education products. First of all, it is recommended to clarify the duties and rights, supervision and accountability, and penalization initiatives for the development, operation and use of AI special education products through AI legislation, so as to safeguard the legitimate rights and interests of the relevant subjects of special education through the law. Supervision of the whole process of AI special education products should be increased. The human rights and fundamental freedoms of special education students should be fully respected and protected at the very beginning of the design process, avoiding algorithmic bias and ensuring the accessibility and barrier-free use of the system. Personal data of special education students should be well protected. Students' privacy and data security should be protected by increasing algorithmic transparency. It should also do a good job of identifying and preventing potential risks in the process of collecting, processing and using sensitive information of special education students. Finally, efforts should be made to improve the interpretability of decision-making for AI special education products to ensure that AI special education products do not adversely affect special education students, and that they contribute to the well-being of special education students and their overall healthy growth.

5.2 Reflections on the Role of Teachers in the Application of Artificial Intelligence

The advancement of artificial intelligence in special education has introduced richer educational resources and cutting-edge teaching technologies. By utilizing student data, tailored individualized education programs can be developed to better meet the unique needs of learners. As this technology evolves, it has sparked widespread discussions about the potential impact on the role of special education teachers. Will advancements in artificial intelligence ultimately render special education teachers obsolete? While AI has indeed brought changes to their roles, it

has not replaced them. Instead, these developments have shifted certain responsibilities, prompting teachers to adapt to new methods and integrate technology into their teaching practices.

With the deepening of artificial intelligence technology in teaching activities, the learning system will generate a large amount of unstructured data on students' learning behaviors (Lillywhite & Wolbring, 2021), so special education teachers need to have the ability to analyze data. At the same time, AI technology is only an important reference for teaching plans in special education, and it does not necessarily fully guarantee 100% suitability for children, so special education teachers need to evaluate and modify the plans. In addition, the assistance of artificial intelligence in teaching makes the responsibility of special education teachers to guide the values and beliefs of special children be strengthened, which is a teacher's duty that cannot be replaced by artificial intelligence (Qian, 2022).Understanding and addressing students' psychological and emotional needs remain beyond the capabilities of artificial intelligence. Likewise, special education teachers' support in managing students' psychological challenges cannot be substituted by technology. Thus, while the role of special education teachers may evolve alongside technological advancements, their significance remains irreplaceable.

6. Conclusion

In the era of digital transformation in education, the seamless integration of artificial intelligence with special education has emerged as an unavoidable trend shaping contemporary development. As artificial intelligence technology continues to advance, its distinct value and immense potential to support and enhance the growth of special education teachers are becoming progressively evident.From the perspective of artificial intelligence and based on Zastrow's social ecosystem theory model, this paper constructs a three-level teacher support system of “macro - meso – micro”. The macro system includes two subsystems of policy support and cultural support. The middle view system includes two subsystems: school support and expert support. The micro-support system is the teacher self-support system. The subsystems in each layer support system cooperate with each other, and the three-layer support system interacts with each other to provide support for the education and teaching of special education teachers.

To fully harness the technical advantages of artificial intelligence and enhance the professional growth of special education teachers, this paper addresses key challenges associated with its application in the field of special education. It aims to draw the attention of researchers and experts from related disciplines, encouraging their active involvement in exploring practical strategies for advancing the development of special education teachers through artificial intelligence. By fostering collaboration and innovation, this effort seeks to maximize the potential of AI in shaping the future of special education.

Future research also needs to carry out more exploration and innovation in the classification analysis of special education students' needs, technology integration, functional compounding, educational practice and policy support. Through the joint efforts of all sectors of society to bring more hope and possibility to the development of special education.

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