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Pathways to Educating Young International University Students through Student Management in the Digital and Intelligent Era

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Abstract: The application of artificial intelligence (AI) to the management of young international university students offers new approaches to improving administrative efficiency, supporting cultural adaptation, and delivering ideological and political education. Big data analytics, behavior recognition, and sentiment analysis enable real-time monitoring of academic performance, emotional well-being, and cultural adjustment, thereby supporting personalized assistance. AI can identify students' needs and help teachers and student counselors provide timely guidance, integrate ideological and political education with cultural education, improve the precision of student management, and strengthen students' sense of belonging and identification. However, its application faces challenges involving privacy protection, cross-cultural suitability, and changes in educational thinking. Integrating technology with educational principles is therefore central to advancing the educational role of student management. AI should support educational administration rather than replace educators, ensuring that educational objectives remain paramount.

Keywords: Artificial Intelligence, International University Student Management, Personalized Education, Ideological and Political Education.

1. Introduction

With globalization and the introduction of the Belt and Road Initiative, Chinese higher education has become increasingly internationalized, attracting large numbers of young international university students [1]. According to Ministry of Education data, the number of foreign students enrolled in China exceeded 500,000 in 2024, reflecting both the global influence of Chinese education and the diversity of international students' needs. Differences in cultural background, language proficiency, and educational approaches create new challenges for managing this student population [2]. Traditional administrative and transaction-oriented approaches can no longer meet these complex needs. In particular, ideological and political education often lacks individualized attention and overlooks students' cultural adjustment and emotional needs.

In addition to reviewing the literature, this study conducted in-depth interviews with frontline international student counselors and young international students studying in China. It examines the practical usefulness and limitations of AI tools in actual management settings from the perspectives of both practitioners and service recipients. The interviews indicate that international students frequently encounter misunderstandings of institutional rules, language barriers, cross-cultural communication difficulties, and academic and psychological pressure. Against this background, AI offers a new way to address these problems. By monitoring and analyzing data on learning, behavior, and emotions, AI can identify students' needs and difficulties and provide personalized services [3]. With AI support, administrators can quickly recognize academic and cultural difficulties and tailor their responses to individual circumstances, facilitating the acceptance of ideological and political education and promoting cultural integration. This approach emphasizes students' experiences and participation rather than the traditional top-down management model. AI can strengthen international students' sense of belonging and identification while helping universities fulfill their educational responsibilities through everyday student management [4].

2. The Value of Artificial Intelligence in Managing Young International University Students

2.1. The Role of AI in Recognizing Student Behavior

The management of young international university students has long relied on manual monitoring by teachers and student counselors. Face-to-face conversations and handwritten records are commonly used to track academic and behavioral performance, making the process inefficient and liable to overlook individual circumstances [5]. An international student counselor described a typical case during an interview: an African first-year undergraduate, unfamiliar with the university's leave procedures, informed a course instructor verbally of an illness but failed to submit formal documentation. The student was consequently recorded as absent, and the counselor learned of the difficulty only after receiving feedback from the instructor. Such problems, rooted in cultural and institutional differences, can be difficult to detect; relying solely on retrospective human reporting may delay action. Using big data analytics and behavior recognition, AI can monitor academic performance, classroom participation, attendance, and social activities in real time and provide immediate information. By recording and analyzing student behavior data, AI platforms can identify potential academic decline or psychological stress and issue alerts, helping administrators make informed judgments and intervene appropriately [6]. An advantage of AI is its potential to intervene before problems fully emerge, offering personalized assistance with psychological and

cultural adjustment. This approach can improve the timeliness and relevance of interventions and place greater emphasis on students' holistic development.

2.2. Sentiment Analysis and Cross-Cultural Adaptation

When adjusting to a new cultural environment, young international university students often face language barriers, unfamiliar learning approaches, loneliness, and anxiety [7]. A Russian doctoral student interviewed for this study explained that, although the student could read a supervisor's written feedback in Chinese, it was difficult to understand the intended revisions behind expressions such as "refine the argument further" and "strengthen the logic." Beneath the surface language lay differences in academic culture. AI, particularly natural language processing (NLP), can analyze emotion-related data to identify signs of anxiety and loneliness. Integrating data from teacher–student interactions can help AI detect emotional changes, identify psychological difficulties, and offer administrators suggestions for personalized intervention. Voice assistants and intelligent question-answering bots can identify emotional cues in students' speech and automatically prompt administrators to attend to potential concerns, enabling timely responses to emotional needs [8]. An international student counselor also reported using AI to process multilingual messages, rapidly identify requests, and recognize possible emotional concerns. For example, when a Russian student sent a scholarship inquiry mixing Russian and English, AI-assisted translation helped the counselor identify anxiety about losing financial support because of insufficient grades beneath the surface request. Sentiment analysis can therefore help teachers and counselors adopt a more sensitive and individualized tone in management and guidance.

2.3. Cross-Cultural Adaptation and Personalized Education

Young international university students come from diverse cultural backgrounds and encounter difficulties involving language, habits, and ways of thinking when adapting to a new environment. AI's capacity for cross-cultural adaptation can help address these challenges. Educational interventions tailored to students' cultural backgrounds and individual needs can improve their understanding of China's educational system and cultural environment. A Cameroonian master's student recalled being unfamiliar with the course registration system upon first arriving in China. During undergraduate study in the student's home country, teachers had generally arranged courses centrally, whereas Chinese universities required students to register online and submit materials independently, initially leaving the student at a loss. Some international students also misunderstand procedural requirements when communicating with teachers, interpreting institutional documentation requirements as personal distrust. Through contextual recognition and personalized feedback, AI can provide multilingual support and present educational content in accessible ways, reducing adjustment difficulties. The student also used AI to translate formal emails to teachers, compensating for limited written Chinese, but noted that AI-generated text could be excessively formal and fail to reflect the student's own voice. As AI learns about students' familiarity with the environment, it can adjust educational approaches to differences in responses associated with individual and cultural factors, making educational content more responsive to each student's needs and promoting greater equity.

2.4. Value Guidance and the Implicit Integration of Ideological and Political Education

Traditional ideological and political education generally relies on one-way knowledge transmission, which may struggle to generate emotional resonance. AI offers an alternative: multilingual functions and contextual analysis can embed core socialist values and principles of public morality in students' everyday learning and life. NLP and sentiment analysis can provide academic guidance while also influencing students' values and worldviews indirectly. The interviews show that some international students actively use AI to learn about interaction norms on Chinese campuses. A Kenyan master's student, for example, used AI to understand expectations such as responding promptly to teachers' messages in teacher–student group chats, thereby reducing cross-cultural misunderstandings. With AI assistance, student behavior and interactions can serve as a bridge to ideological and political education. This shifts the emphasis from explicit instruction toward implicit education, integrating value guidance into everyday communication and strengthening students' identification with China's mainstream values.

2.5. AI as a Means of Integrating Student Management and Education

AI can improve the efficiency of student management while bringing administrative work into closer alignment with educational objectives. Comprehensive monitoring of learning data, behavior, and emotional changes provides precise information that can help administrators identify students' needs and difficulties promptly. This technology enables teachers, counselors, and other educators to deliver personalized management and targeted interventions, connecting educational principles with technological applications. International student counselors noted that, once AI handled repetitive inquiries about visas, campus facilities, and administrative procedures, they could devote more time to emotionally demanding work such as psychological support and mediation of cultural conflicts. Dynamic monitoring and immediate feedback can move management beyond the traditional constraint of intervention only after problems arise, supporting continuity in both education and administration and improving their combined educational contribution. AI-supported management can thus enhance efficiency while strengthening personalized education and human care.

3. Developing AI-Supported Pathways for Education through International Student Management

3.1. Establishing Intelligent Management Processes

Establishing intelligent processes is important for managing young international university students. Traditional approaches based on manual records and human intervention cannot provide a comprehensive understanding of students' academic, everyday, and emotional needs. The rapid development of AI has introduced intelligent management as an alternative. Supported by big data platforms and

algorithms, universities can analyze academic performance, behavioral data, and cultural adjustment throughout the management process. AI can monitor learning progress, attendance, and assignment quality in real time, allowing early identification of potential academic or cultural adjustment problems. This technology can increase administrative efficiency while providing personalized support for learning and daily life. When students encounter difficulties, AI can issue alerts and prompt staff to respond. Advanced techniques such as deep learning and data mining can predict needs and psychological conditions more precisely, improving educational interventions and their efficiency and accuracy. Drawing on interview evidence, these processes should be organized around "front-end inquiry support, back-end alerts, and human oversight." AI can explain procedures, check document formats, and provide multilingual explanations. However, institution-specific matters such as scholarship assessment and visa processing must be referred for human review; AI should not issue final decisions independently.

3.2. Building a Collaborative Educational Mechanism across Multiple Roles

The management of young international university students cannot be undertaken by a single role; it requires cooperation among different departments and professionals. Traditional arrangements can create information silos that undermine efficiency. AI can help overcome these barriers by supporting information sharing and interdepartmental collaboration. An AI platform can integrate information from student counselors, teachers, psychological counselors, and other personnel and communicate updates on behavior, academic performance, and emotional well-being in real time, supporting coordinated decision-making. Teachers can access classroom performance and emotional feedback, while counselors can review social participation and psychological conditions to provide targeted guidance. An interview case illustrates the practical value of collaboration: an international student considered withdrawing after academic setbacks. AI offered only generic advice; the crisis was resolved through face-to-face collaboration among a student counselor, a psychological counselor, and course teachers, who discussed family pressures and adjusted the study plan. AI support can help these professionals coordinate their work so that every student receives comprehensive attention and assistance throughout their development. Information sharing can also create an effective feedback mechanism, enabling each administrator to respond promptly to changes and provide sustained support and intervention.

3.3. Continuous Monitoring and Feedback on Educational Outcomes

Traditional educational administration often suffers from delayed feedback and inadequate follow-up, making timely intervention especially difficult for young international university students. As this population grows and academic expectations rise, students continue to face language barriers and psychological pressure during cross-cultural adjustment. AI can help address these limitations by supporting sustained intervention and feedback. Based on learning, emotional, and social information, AI systems can continually update behavioral and emotional records to reflect changes in cognition, conduct, and feelings. Teachers and counselors can use real-time data to adjust teaching strategies and guidance, enabling more finely tailored educational administration. Importantly, the interviews indicate that AI can record observable behavior but cannot fully capture students' subjective experiences of cultural adjustment. Outcome monitoring must therefore combine algorithmic outputs with face-to-face communication. AI-supported feedback can transform educational intervention from a one-off, static activity into a dynamic process extending throughout students' development, ensuring continuing attention and support.

3.4. Behavior Recognition and Monitoring of Psychological Conditions

Behavior recognition and psychological monitoring are important means of improving precision in international student management. Reliance on teachers' individual experience and observations can make latent problems, particularly psychological difficulties, hard to identify. Through data collection and sentiment analysis, AI can detect changes in emotions, psychological pressure, and cultural adjustment. Real-time analysis of classroom participation, social activities, and emotion-related data enables AI platforms to alert teachers and counselors to emotional changes. Such alerts can help staff understand psychological needs promptly and intervene before difficulties deteriorate. Intelligent emotion recognition can therefore support timely responses to psychological adjustment and emotional needs, helping international students develop a sense of identification and inclusion within ideological and political education.

3.5. Cross-Cultural Adjustment and Personalized Education

A central task of international student management is to help students overcome cultural adjustment barriers and adapt to unfamiliar academic and social environments. AI, especially NLP and contextual analysis, can provide personalized educational assistance based on students' cultural backgrounds and specific needs. Teaching approaches can be adjusted to learning habits, social practices, and emotional conditions, responding to students from different cultures. Multilingual support and personalized feedback can help students find appropriate ways to express themselves and communicate across linguistic and cultural differences, improving their understanding of and integration into Chinese society and culture. AI can also support identification with China's mainstream values, facilitate cross-cultural identification and communication, and embed value guidance more deeply within education.

4. Challenges and Responses in Applying AI to International Student Management

4.1. Privacy and Data Security

As AI becomes more widely used in international student management, substantial amounts of personal information, academic records, and mental health data are collected and processed in real time. This creates significant challenges for privacy and data security. Although integrated analysis of behavioral and emotional data can provide precise support for administrators, it also brings risks of data breaches, misuse, and privacy infringement. In cross-cultural settings, international students' personal information may be subject to

the laws and regulations of different countries. Universities must therefore follow strict data protection policies when planning and implementing AI systems. The interviews reveal considerable caution among international students about the collection of learning and emotional data, directly related to differences in national understandings of personal information protection. Alongside encryption and other technical safeguards, teachers, counselors, and other users need privacy awareness so that sensitive information is accessible and usable only by authorized personnel. Transparent data-use policies that explain how students' information is used are essential to AI-supported university administration.

4.2. Technological and Cultural Suitability

AI applications face challenges of cultural suitability. International students come from diverse backgrounds, and systems that fail to accommodate cultural differences may generate misunderstandings and ineffective management. Many AI systems are designed around a single cultural model, which can bias emotion recognition. Sentiment analysis may, for example, rely too heavily on Western patterns of emotional expression and inadequately represent East Asian or other cultural practices. Interview accounts corroborate this risk: similar emotions and behaviors may carry entirely different meanings across cultural contexts, and models trained without culturally diverse samples can misclassify them. AI development should therefore account for students' cultural diversity and accommodate different modes of emotional expression and communication. To prevent language-related misunderstandings, systems also require careful adjustment to context and cultural practices so that they convey cultural meanings and educational values appropriately. Universities must prepare for these adaptation requirements and provide AI development teams with cultural awareness training to improve contextual recognition and feedback.

4.3. Integrating Educational Principles with Technological Applications

The purpose of AI in educational administration should be to serve educational principles rather than displace them. Its strengths lie in efficiency and precision, but its primary role is to help educators achieve educational objectives rather than direct teaching. Excessive reliance on technology can diminish human care. In ideological and political education, AI cannot replace educators' emotional guidance or role in shaping values. While offering personalized teaching suggestions and improving management processes, AI must preserve educators' central position. Emotional support and individual attention from teachers and counselors remain essential to student development. Educational principles and technology should be integrated so that AI strengthens teacher–student interaction and educational outcomes rather than mechanizing education. Its introduction should help educators provide intellectual and psychological guidance and foster value identification, without weakening their role.

4.4. Aligning Cross-Cultural Understanding with Educational Objectives

Cross-cultural adaptation remains a challenge for AI. A key research question is how its use in international student management can improve efficiency while responding appropriately to culturally diverse needs. Systems should provide personalized services that account for differences in emotions, learning approaches, and cultural backgrounds. Multilingual functions and sentiment analysis can offer detailed assistance with cultural adjustment, helping international students integrate into China's educational environment. Interviews suggest that AI can explain institutional rules and customs at a surface level but struggles to understand the feelings underlying cultural conflicts. For example, when students interpret procedural constraints as interpersonal distrust, AI can explain the regulations, but teachers' empathetic communication is still needed to overcome psychological barriers. Culturally adapted AI can help identify students' cultural expectations and emotional changes and support teachers and counselors. Cross-cultural education involves not only language exchange but also recognition of values and emotional needs. AI can contribute to cultural adjustment and ideological and political education in this respect.

4.5. Balancing Educational Ethics and Technological Development

The educational ethical issues raised by AI in international student management should not be underestimated. Technological development must be coordinated with educational ethics so that AI does not unduly displace teachers' human care and intellectual guidance. Although data analytics and behavior recognition can increase administrative efficiency, their ultimate purpose is to educate students more effectively; they should not operate independently of fundamental educational goals. Excessive dependence on AI can make management impersonal. In ideological and political education, AI should complement educators' emotional guidance and individual care, ensuring that students receive adequate support in cultural identification and value formation. Educational ethics requires attention to differences in personality, emotions, and cultural background while benefiting from AI, so that technological applications remain aligned with education's fundamental purpose.

5. Conclusion

The introduction of AI creates unprecedented opportunities for managing young international university students, with substantial potential to improve administrative efficiency, educational quality, and ideological and political education. Precise behavior recognition, sentiment analysis, and individualized guidance can strengthen management, while everyday teaching and example can advance educational objectives and help students adapt to academic and cultural environments. In-depth interviews with frontline counselors and international students indicate that AI has practical value in multilingual translation, routine inquiries, and risk alerts. However, in complex psychological difficulties, cultural conflicts, and major academic decisions, technology can only play a supporting role; empathetic human communication remains indispensable. Practical challenges persist, particularly in privacy protection, cultural adaptation, and changes in educational thinking. Universities must determine how to respect students' privacy while ensuring effectiveness and security. AI must also remain grounded in educational principles, because excessive technological reliance can weaken emotional care and personalized education. Only through close integration with universities' educational

principles and management practices can AI fulfill its educational role and support a shift from transaction-oriented administration toward education through management. Future research should examine how technological innovation can address privacy challenges and cultural adaptation, explore AI's contribution across a wider range of educational settings, and connect technological development closely with educational objectives to advance modernization and personalization.

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