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Innovative Directions and Practical Exploration of Employment Guidance for Higher Vocational Students in the Context of Artificial Intelligence

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Abstract: Against the backdrop of the rapid development of artificial intelligence (AI), employment guidance for students in higher vocational colleges is facing new challenges as well as opportunities. AI brings multiple core values to employment guidance, such as alleviating information asymmetry, enabling personalized career planning, and enhancing service efficiency. Accordingly, employment guidance for higher vocational students is demonstrating new development directions, including precision-oriented employment services, individualized career planning, the construction of intelligent employment guidance platforms, and innovation in human-machine collaborative guidance models. This paper aims to conduct an in-depth exploration of these innovative directions and, combined with practical experience, provide referenceable ideas and methods for employment guidance for higher vocational students in the AI era, thereby supporting their achievement of high-quality employment.

Keywords: AI context; higher vocational students; employment guidance; innovative directions; practical exploration

Introduction

With the rapid advancement of artificial intelligence technologies, AI has been widely integrated into various sectors of society, profoundly reshaping the structure and demands of the labor market. As an important arena for cultivating application-oriented talents, higher vocational education has witnessed an increasing emphasis on the role of employment guidance for its students. Traditional employment guidance models

have become insufficient to meet the requirements of today's complex and dynamic employment environment, while the integration of AI technologies has created new opportunities and possibilities for employment guidance in higher vocational institutions. How to leverage the advantages of AI to innovate employment guidance models and improve the quality and effectiveness of guidance has become a pressing issue for educators in higher vocational education. This paper discusses the innovative directions and practical



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exploration of employment guidance for higher vocational students in the context of AI.

1. Core Values of AI Empowerment in Employment Guidance for Higher Vocational Students

1.1 Addressing Information Asymmetry

In the context of employment guidance for higher vocational education, information asymmetry has long been a prominent and persistent issue. From the enterprise perspective, employers often lack a comprehensive and in-depth understanding of higher vocational students' professional skill proficiency, practical operational abilities, and overall professional qualities, making it difficult to accurately identify candidates who truly match job requirements during recruitment. From the student perspective, access to information about enterprises' real working environments, specific job requirements, and career development pathways is limited. As a result, students may blindly follow trends or hesitate when making career choices. Leveraging its powerful capabilities in data collection and analysis, AI technology has become a key tool for addressing this challenge. It can extensively integrate diverse employment-related information resources, including enterprises' recruitment needs and job skill standards, as well as students' academic performance, skill certifications, and practical experience.

1.2 Enabling Personalized Career Planning

Each student is a unique individual with distinct interests, abilities, and career aspirations. Traditional career planning approaches often adopt a "one-size-fits-all" model, which fails to meet students' diverse needs. AI technology provides strong support for personalized career planning. By analyzing multidimensional student data—such as learning behaviors, social activities, and psychological assessment results—AI can develop a deep understanding of students' personal characteristics, career inclinations, and development potential. Based on these analyses, intelligent models can be applied to tailor individualized career planning schemes for each student, clearly defining goals and action plans for different stages of development ^[1].

1.3 Enhancing the Efficiency of Employment Services

Traditional employment services in higher vocational

institutions rely heavily on manual operations, which are not only inefficient but also limited in coverage, making it difficult to meet the employment needs of a large student population. The integration of AI technology offers new opportunities to enhance the efficiency of employment services. Intelligent customer service systems can respond to students' inquiries at any time, providing fast and accurate answers to questions related to employment policies and job-seeking skills, thereby delivering continuous, round-the-clock support. In the resume screening process, AI can quickly identify candidates who meet enterprise-defined criteria from a large pool of resumes, significantly improving recruitment efficiency.

2. Innovative Directions of Employment Guidance for Higher Vocational Students in the AI Context

2.1 Precision-Oriented Employment Services

(1) Construction of Student Digital Profiles

By collecting multidimensional data generated by students during their studies—such as academic performance, acquisition of skill certificates, participation in practical activities, involvement in student organizations, and psychological assessment results—AI-based data mining and analysis techniques can be employed to integrate these fragmented data into comprehensive and multidimensional digital profiles. Such profiles can accurately depict students' knowledge reserves, competency levels, interests, and career inclinations. Based on these digital profiles, employment guidance personnel can gain an in-depth understanding of each student's unique characteristics, providing a solid foundation for delivering personalized employment guidance and services. This approach enhances the relevance and effectiveness of employment guidance and avoids the traditional "one-size-fits-all" guidance model.

(2) Realization of Precise Person–Job Matching

On the one hand, AI can conduct in-depth analyses of enterprises' recruitment positions, including skill requirements, job responsibilities, and career development pathways. On the other hand, by integrating students' digital profiles, intelligent algorithms can be applied to achieve bidirectional matching between students and job positions. Through such precise matching, students who are highly

compatible with enterprises' job requirements can be rapidly identified, while students are simultaneously recommended positions that best align with their personal development. This not only improves recruitment efficiency and reduces enterprises' hiring costs, but also enables students to secure positions that better match their abilities and career expectations, thereby enhancing employment satisfaction and career stability.

(3) Dynamic Early Warning and Intervention

With the support of AI-based real-time monitoring of students' job-seeking processes and labor market dynamics, the system can promptly issue early warnings when abnormal situations arise—such as students failing to obtain interview opportunities over extended periods or having low interview success rates—or when significant changes occur in the employment market, including sharp declines in industry demand or the emergence of new occupations. Based on these alerts, employment guidance personnel can quickly implement targeted interventions, such as providing job-seeking skills training, adjusting career planning recommendations, or introducing new employment channels. Through dynamic early warning and intervention mechanisms, issues encountered by students during the job search process can be addressed in a timely manner, helping them successfully achieve their employment goals.

2.2 Personalized Career Planning

(1) Personalized Career Assessment

Traditional assessment methods are relatively single-dimensional and insufficient to comprehensively reflect students' complex and diverse career inclinations. With the support of big data and advanced algorithms, AI integrates data generated by students across multiple contexts, including learning, practice, and social interactions. For example, it can analyze students' strengths and weaknesses in professional coursework, as well as their demonstrated leadership and teamwork abilities in extracurricular and student organization activities. Through in-depth data mining, multidimensional career competency models can be constructed, thereby providing students with personalized assessment reports covering career interests, vocational personality traits, and occupational competencies. These reports clearly identify suitable career fields and job types, enabling students to develop a deeper and more comprehensive understanding

of themselves and laying a solid foundation for subsequent career planning.

(2) Dynamic Adjustment of Career Planning

Leveraging its real-time data monitoring and analysis capabilities, AI continuously tracks labor market dynamics, such as industry development trends and changes in job demand. At the same time, it monitors students' developmental trajectories, including improvements in academic performance, acquisition of new skills, and shifts in career perceptions. When discrepancies arise between students' current career plans and actual conditions, or when significant changes occur in the employment market, AI promptly issues alerts. Based on these prompts, employment guidance personnel work collaboratively with students to flexibly adjust career plans, ensuring that planning remains aligned with students' developmental needs and labor market conditions. This dynamic approach helps students maintain a clear career development direction amid ongoing change.

(3) Guidance for Career Competency Enhancement

Based on the results of personalized career assessments, AI can accurately identify the competencies that students need to strengthen for specific occupational fields. For instance, if a student is suited to technical positions, AI can analyze deficiencies in areas such as professional skills and problem-solving abilities and recommend targeted learning resources, including online courses and practical projects. Moreover, AI can dynamically adjust guidance strategies in accordance with students' learning progress and competency development. By simulating workplace scenarios and providing case-based analyses, AI assists students in applying acquired knowledge to real-world contexts, gradually enhancing their professional competencies, strengthening their competitiveness in the labor market, and enabling them to better adapt to future career development requirements ^[2].

2.3 Construction of Intelligent Employment Guidance Platforms

(1) Integrated Platform Development

The platform should integrate multiple resources by bringing together university employment guidance departments, enterprise recruitment systems, labor market information, and third-party career assessment tools into a unified system. Through standardized interfaces and data protocols, information silos can

be eliminated, enabling data circulation and sharing. Within a single platform, students can access one-stop employment services, including career assessment, job information search, resume submission, and interview scheduling. At the same time, the integrated platform provides employment guidance instructors with convenient management tools, facilitating the tracking of students' employment progress and the delivery of personalized guidance. This integrated design not only improves the efficiency of employment guidance work but also offers students a more seamless and efficient service experience, supporting their smooth transition into the workforce.

(2) Development of Intelligent Interaction Functions

By leveraging natural language processing and speech recognition technologies, the platform can offer intelligent customer service functions. Students may consult the platform at any time—via text or voice—on issues related to employment policies, job-seeking skills, and career planning, and the platform can promptly deliver accurate and detailed responses. In addition, virtual interview simulation functions can be developed, using AI to replicate real interview scenarios and provide real-time feedback and suggestions based on students' responses. This enables students to familiarize themselves with interview procedures in advance and enhance their interview performance. Intelligent interaction functions make communication between the platform and students more convenient and efficient, increasing user engagement and frequency of use.

(3) Data Analysis and Decision Support

The platform collects large volumes of data generated during students' employment processes, including job-seeking behaviors, job preferences, and interview outcomes. Big data analytics techniques are applied to conduct in-depth mining and analysis of these data. Such analyses can reveal students' employment preferences, key employment challenges, as well as trends and patterns in the labor market. Based on the analytical results, the platform can provide decision support for institutional employment guidance departments, such as adjusting employment guidance strategies, optimizing curriculum design, and strengthening collaboration with enterprises. At the same time, it can offer students personalized employment recommendations, helping them better

seize job opportunities, make informed and rational career decisions, and ultimately improve employment quality and success rates.

2.4 Innovation in Human–Machine Collaborative Guidance Models

(1) Clarifying the Division of Responsibilities Between Humans and AI

With its strong capabilities in data processing and analysis, AI primarily undertakes tasks involving large volumes of employment information, such as accurately filtering job positions that meet students' qualifications, analyzing labor market trends, and providing basic career assessments and planning recommendations. AI can rapidly and comprehensively complete these repetitive and highly structured tasks, offering students preliminary guidance on employment directions. In contrast, employment guidance professionals focus on leveraging their strengths in humanistic care and professional insight by engaging in in-depth communication with students to understand their career expectations, concerns, and uncertainties, while providing emotional support and personalized guidance.

(2) Establishing Human–Machine Collaboration Mechanisms

On the one hand, smooth information interaction channels should be established to enable AI to promptly transmit analytical results and data to guidance professionals, while allowing professionals to convey students' latest conditions and needs to AI, thereby achieving real-time information sharing and bidirectional flow. On the other hand, standardized workflows and collaboration protocols should be developed to clearly define specific steps and operational procedures for human–machine collaboration in different employment guidance scenarios. For example, in the career planning stage, AI may first generate a preliminary plan, which is then discussed and refined through in-depth consultations between guidance professionals and students. In the employment recommendation stage, AI initially screens job positions, after which professionals conduct manual reviews and make targeted recommendations, ensuring orderly and efficient human–machine collaboration.

(3) Enhancing the Technological Competence of Guidance Personnel

Institutions should organize regular technical training

programs covering topics such as fundamental AI knowledge, data analysis methods, and the operation of intelligent employment guidance platforms, enabling guidance personnel to become familiar with AI principles and functional features and to master skills for applying AI tools in employment guidance. Guidance professionals should also be encouraged to pursue self-directed learning and exploration, stay informed about cutting-edge technological developments in the field, and continuously enhance their capacity for technology application. In addition, experience-sharing sessions on human-machine collaborative practice can be organized to allow staff to exchange insights and lessons learned during collaborative guidance processes, collectively improving their ability to address practical challenges and ultimately work more effectively with AI to deliver higher-quality employment guidance services for students.

3. Practical Exploration of Employment Guidance for Higher Vocational Students in the AI Context

Amid the wave of AI-enabled employment guidance for higher vocational education, the Tianjin Geothermal Exploration, Development and Design Institute—an integrated, full-industry-chain research institution in China’s geothermal sector—provides an innovative model for practical exploration in employment guidance for higher vocational students. By leveraging AI technologies, the institute has established a dual-track service system of “geothermal industry + employment.”

On the one hand, through AI-driven data analysis, the institute conducts in-depth mining of job demand in the geothermal industry and assesses the matching degree between these demands and the skill profiles of higher vocational students. This enables the precise recommendation of positions in subdivided fields such as geothermal resource exploration, drilling and completion technologies, and geothermal system monitoring, thereby realizing intelligent person-job matching. On the other hand, the institute has developed immersive employment experience scenarios. By utilizing VR/AR technologies, it simulates authentic work environments such as geothermal drilling platform operations and geothermal

re injection system monitoring, allowing students to familiarize themselves with workflows and enhance practical operational capabilities in virtual settings. At the same time, an AI-based mock interview system tailored to the characteristics of the geothermal industry has been introduced. This system establishes a professional question bank covering geological knowledge, equipment operation, and emergency response capabilities, conducts comprehensive assessments, and provides real-time feedback and improvement suggestions. In addition, the institute has collaborated with higher vocational colleges to jointly establish an “AI + Geothermal” employment-oriented talent cultivation base. Through data sharing and collaborative training mechanisms, this initiative builds a seamless bridge from campus to the workplace, supporting higher vocational students in achieving high-quality employment^[3].

Conclusion

Driven by the wave of artificial intelligence, employment guidance for higher vocational students is undergoing unprecedented innovation. From precision-oriented employment services to personalized career planning, from the construction of intelligent platforms to the innovation of human-machine collaborative models, AI has injected strong momentum into employment guidance practices. Looking ahead, it is essential to continue deepening the application of AI in employment guidance and to continuously optimize innovative pathways, ensuring that technology better serves students’ development and employment needs.

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