

Employment of Vocational Students under the Background of Artificial Intelligence: Opportunities, Challenges and Responses

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Abstract: Artificial intelligence has a powerful “generative capacity”, and the rapid development of intelligent technology provides brand-new opportunities for employment and creates a large number of jobs; at the same time, it also brings certain risks and challenges, leading to the negative effect of employment substitution. The article analyzes the brand-new opportunities for the employment of vocational school students in the context of the artificial intelligence era as well as the realistic challenges they face, and on this basis, puts forward countermeasures from the macro, meso, and micro levels respectively, so as to provide referable opinions for better employment in the future.

Keywords: Generative artificial intelligence; vocational school students; employment.

1. Introduction

The development and application of artificial intelligence has profoundly changed the production and life style of human beings, on the one hand, it has brought new opportunities to human beings, such as replacing human physical and mental labor and improving labor productivity; on the other hand, it has also brought new challenges to the development of human beings, such as artificial intelligence may lead to a certain risk of unemployment. The development and wide application of artificial intelligence bring profound impacts on the employment of vocational school graduates in the new era, and these impacts may be positive or negative. For this reason, we need to analyze it in depth in order to actively respond to the impact of the development of artificial intelligence on employment.

In recent years, scholars have been paying more and more attention to the study of the impact of artificial intelligence on employment, however, there are still different views in the academic community as to whether technological progress has brought about a creation effect or a substitution effect. One viewpoint believes that the total effect of technological progress for employment is the creation of employment (Xie Lu and Han Wenlong and Chen Zhu, 2019) (Zhang Yuanzhao, 2023)^[1, 2]; another viewpoint believes that technological progress replaces jobs (Deng Chau and Huang Yana, 2019)^[3] and leads to unemployment. But no matter which view, it is undeniable that AI has both positive and negative effects on employment. The employment creation effect of technological progress provides a large number of individualized just-demand jobs for graduate employment, which in turn generates the scale and quality effects of employment and promotes more stable employment for vocational school students. The substitution effect of technological progress, on the other hand, brings certain risks and challenges to the employment of graduates. Due to the contradiction between the supply and demand of talents and technologies, many graduates are difficult to meet the job requirements of technical enterprises and face the challenge of employment difficulties, leading to an imbalance in employment.

The above research has a greater reference value and is worth adopting and learning from. Based on the above research basis and practical needs, this paper analyzes in depth the development of artificial intelligence to the vocational school students employment brought about by the brand new opportunities and real challenges, and on this basis puts forward for this phenomenon to cope with the solution to the employment problems in the era of artificial intelligence has a certain degree of reference significance.

2. Brand-new Opportunities, What Can Be Grasped?

(1) Employment creation effect of technological progress

Artificial intelligence has a creative compensation effect on employment while developing, which mainly refers to the introduction and large-scale use of artificial intelligence, the formation of new industries and new needs, the corresponding increase in the need for new technology workers, the creation of diverse and personalized jobs, and the provision of a large number of employment opportunities. Firstly, in the short term, the development of artificial intelligence will inevitably increase the demand for artificial intelligence development, application and management talents in the labor market, and provide more choices of employment positions for the employment of professional graduates; secondly, in the medium term development, the positive impact of artificial intelligence on employment comes from the supportive rather than substitutive function of artificial intelligence on existing jobs^[4], artificial intelligence can make some jobs more simple and improve productivity, but there are some humanized, more emotional and sensual jobs that are more suitable for humans to do, thus potentially providing more employment opportunities. According to media reports, the recruitment of AI technology-based engineers in China in 2017 was 8.8 times higher than that in 2014, and 9 out of 10 positions related to AI are in a vacant status on recruitment websites, and China's demand for talents in the field of AI may surge to 5 million people in the next few years^[5]. Therefore, the rapid development of AI technology has brought the positive effect of job creation for the employment of graduates, and the future will surely move forward steadily towards a better

trend.

(2) Employment scale effect of technological progress

Artificial intelligence technology is used in all walks of life, greatly improving social productivity and economic efficiency, increasing enterprise output, prompting enterprises in all walks of life to actively expand the scale of production. Therefore, the market has increased the frequency of the use of artificial intelligence technology at the same time also increased the demand for talents, requiring a large number of professional talents to engage in specialized technical positions. Thus, in the long term, the development of artificial intelligence technology not only creates jobs, but also creates a large number of just-demanding jobs, which has a positive scale effect on jobs and creates a large number of employment opportunities for graduates. Therefore, the progress of artificial intelligence technology creates a positive scale effect for student employment, drives employment enhancement and guarantees social stability.

(3) Employment quality effect of technological progress

The development of artificial intelligence technology has greatly improved the efficiency of production work, and also greatly promoted the improvement of employment quality. First of all, it improves the employment environment of workers, using artificial intelligence technology some dangerous, heavy, harmful to human health of human work is replaced by machines, so as to eliminate or reduce the adverse factors that threaten people's health and safety, and safeguard the life and health safety of workers. Secondly, it greatly reduces the working time. With the assistance of artificial intelligence, workers can complete their work more effectively, reduce working time and work pressure, and have greater freedom to choose their own working time and work content. Since boring repetitive labor can be performed by robots, laborers have the opportunity to free their minds and hands to do work that is relatively more suitable for human physical and mental characteristics^[6], which improves laborers' job satisfaction and job stability to a certain extent. In addition, the wide application of AI technology promotes industrial value-added, enterprise revenue at the same time also enhances the labor compensation of workers, which provides unlimited possibilities for the employment of future graduates.

3. Realistic Challenges, What's the Check and Balance?

(1) Employment substitution effect of technological progress

The rapid development of artificial intelligence technology has greatly boosted productivity and work efficiency, and the demand for highly intelligent and skilled labor has increased accordingly, while the demand for jobs like simple and repetitive, moderately complex and repetitive, and those combining physical and mental strength has gradually decreased. In addition, the labor skills possessed by workers do not match the skill demand for labor in the labor market in the age of artificial intelligence^[7], thus also replacing some jobs by artificial intelligence or cutting redundant jobs, bringing about a reduction in the demand for labor by enterprises and causing the risk of unemployment among employed people. Therefore, while artificial intelligence technology creates personalized jobs, it also creates a destructive effect on the demand for jobs, resulting in a reduction of jobs, which is not conducive to the future

employment of students. How to fully resist the risk, grasp the opportunity, and promote better and smoother employment for students is a major responsibility that vocational colleges and universities must assume in the era of artificial intelligence.

(2) Employment imbalance effect of technological progress

Advances in artificial intelligence technology have created a large number of jobs while also potentially affecting the prospects for employment, leading to uncertain employment prospects and unstable employment. First of all, the demand for high-tech talents in the era of artificial intelligence is greater, and the requirements for the ability are higher, while the talent training mode of vocational colleges and universities is often too obsolete and single, and school graduates can not meet the requirements of artificial intelligence technology, and it is difficult to meet the demand for talents of enterprises, resulting in a shortage of high-tech jobs, and it is difficult for graduates to find the right job, forming a "job not for the right person, people not for the right job". Secondly, the development of technological progress also requires that colleges and universities make corresponding adjustments in their specialties, the demand for big data professionals, artificial intelligence professionals and other talents is high, and our vocational colleges and universities specialties are mostly related to the actual development of the local economy. Developed areas of vocational colleges and universities may meet the requirements of artificial intelligence technology, while in poor or rural areas of vocational colleges and universities in the specialization of agriculture, animal husbandry, tourism or service industry, such as low-end professional groups, the lack of corresponding technology and resources, and the development of the artificial intelligence era of the development of the needs of the imbalance, which leads to some vocational college graduates in the employment options are often limited, difficult to engage in high-end jobs! or even difficult to be employed, leading to employment inequality. Therefore, technological progress on the employment of vocational school students to a certain extent exacerbates employment inequality, and it is difficult to ensure fairness.

4. What Is the Future Picture, and How Can We See It from A Far?

Macro

(1) Improve the employment security system, make good policy arrangements for the transformation of the employment structure, and reduce the employment risks that workers may face

① Do a good job of employing graduates, and coordinate and regulate the creation of more jobs

Encourage more small and medium-sized enterprises (SMEs) to take the initiative to assume the responsibility for employment, actively recruit on campuses, and absorb more outstanding graduates. At the same time, all types of colleges and universities should further play the role of the main channel for campus recruitment, effectively strengthen the construction of campus recruitment markets, establish a sound mechanism for the development of employment resources, and promote on-campus and off-campus sharing of employment resources. In addition, they should also focus on carrying out online network social recruitment to provide broader development space for the unemployed and unemployable and to broaden more labor market-oriented

socialized employment channels.

② Establishing inclusive policies to support graduates in starting their own businesses and flexible employment

The state actively promotes the construction of financial policies to promote employment, provide job search subsidies for various types of college students, entrepreneurship fund, low-interest loans, special, independent entrepreneurship for graduates to provide financial security support; policy to promote the establishment of innovation and entrepreneurship incubation bases in colleges and universities to strengthen the guidance of employment and entrepreneurship, the establishment of innovation and entrepreneurship competitions and career planning contests for students, so that students in the participation in the event to enhance the ability of career planning at the same time to set up a career choice and career planning for the future. The policy promotes the establishment of innovation and entrepreneurship incubation bases in colleges and universities and strengthens employment and entrepreneurship guidance. In addition, give full play to the absorption of graduates by policy positions, improve the grass-roots work system for graduates, and carry out special programs such as the Western Program, the Three Supports and One Support Program, and the Special Post Program to alleviate the employment pressure on graduates.

③ Optimize the transformation of employment structure and ease the contradiction between supply and demand of talents and jobs

First of all, deepen the structural reform of the supply side of talent and improve the employment ability of graduates. Vocational colleges and universities should increase the cultivation of high-quality and high-skill compound talents, increase vocational skills training, improve the quality of school graduates and their suitability for jobs, and improve the employment contradiction from the supply side of talents. Secondly, increase the industrial adjustment and transformation and upgrading of various industries, promote the innovation and reform of the development mode and system within the industry, create more new personalized jobs and job opportunities, so as to alleviate the structural contradiction of employment from the demand side of the job.

(2) Adhere to the tendency to avoid harm, in promoting the development of artificial intelligence to create more jobs

① Give full play to the effectiveness of the policy system to help realize smooth employment.

Establish a sound and complete artificial intelligence technology management and guarantee system, aim at the wind vane of artificial intelligence technology, and guarantee the development of artificial intelligence technology in a positive direction. Actively respond to the new opportunities and risks and challenges brought about by the AI era, avoid harm and make good use of the double-edged sword of technology. Give full play to the superiority of the socialist system, through the national macro-control means and the supporting role of the state-owned economy, promote policy construction and institutional innovation, strengthen the development and transformation and upgrading of AI-related industries, take the initiative in guiding the development of new industries, create more personalized occupational positions and employment opportunities, provide more employment services, and help to achieve stable employment^[8].

② Promote the development of AI-related industries to create more jobs

Promote the in-depth integration of artificial intelligence technology and industry, especially to strengthen the communication and integration with the service industry, manufacturing industry and other industries related to vocational education majors, actively play the employment creation effect of artificial intelligence, and strive to explore new employment forms, create and provide human-machine synergy employment opportunities, and provide more optional employment opportunities for workers at the mid-range level. In the process of industrial upgrading and development, focus on the cultivation of industrial talents and cultivate the composite talents required by the AI industry; accelerate the improvement of digital infrastructure construction and enhance the scientific and technological innovation capacity of AI; give full play to the technological advantages of AI in industrial upgrading, product development, service innovation, etc., and promote the in-depth fusion of AI and the real economy, so as to realize the high-quality development of the AI industry, and provide graduates with the opportunity to create more jobs^[9].

Medium view

(1) Strengthen artificial intelligence education, vigorously cultivate high-quality composite talents adapted to the era of artificial intelligence

① Change the vocational education system and strengthen artificial intelligence education

Increase the reform of the vocational education system, continuously optimize and adjust the school structure, and continuously deepen the education system, curriculum system setting, teaching method innovation, teacher strength construction, assessment methods and other exempted education reforms. First, change the professional construction, adjust and outlaw backward professions, set up courses and professions that meet the requirements of the artificial intelligence era, keep an eye on the employment dynamics of the labor market, dynamically assess the professional trends, optimize the professional structure, and take the initiative to buttress the market demand. Second, change the curriculum system, change the previous single course structure, and build a curriculum system adapted to the development of artificial intelligence. Vocational colleges and universities should appropriately offer tool courses, quality education courses, civic life courses, career and psychological courses, through learning practical, professional and life diversified knowledge, cultivate students' good humanistic qualities, improve students' personality, promote career development, and cultivate students' compound ability to adapt to career migration^[10]. Add courses related to the cultivation of intelligent technology, and open courses related to big data, cloud computing, Internet, etc. according to their respective specialties to cultivate compound talents. Thirdly, change the teaching method, change the previous single classroom teaching and base practical training, encourage students to participate in various competitions, cultivate their sense of competition and cooperation, improve their cooperation ability, cultivate students' ability to apply knowledge, improve students' innovation ability and their own professional practice quality, grow the potential for career development, and lay a good ability foundation for future employment^[11].

② Dynamic adjustment of talent training objectives, vigorously cultivate high-quality complex talents

Adjust the original training objectives and set up a new target model that is more in line with the characteristics of

talent training in the era of artificial intelligence. In the past, the training objectives of vocational education were set up purely on the basis of professional characteristics and industry development needs, focusing only on the acquisition of practical skills related to the future employment of students, ignoring the cultivation of other pioneering social practices, and the training objectives were too single and narrow, and lagged behind the development of society to a certain extent. Therefore, it is necessary for vocational colleges and universities to set up talent training objectives in line with the artificial intelligence era according to the current development of artificial intelligence in China, focusing on the cultivation of students' technical practical ability while increasing the cultivation of students' innovation ability, humanism, international vision, and vocational migration ability, etc.^[12], and shaping the image of high-quality composite professionals, which can not only obtain more employment opportunities but also make rapid improvement in future Career development in the rapid promotion.

(2) Strengthen vocational skills training, enhance vocational education and social fitness, weaken the employment substitution effect of artificial intelligence

The extensive and in-depth application of artificial intelligence technology inevitably brings the risk of technological unemployment, and the polarization of jobs in the occupational field is increasingly visible^[13], and the substitution effect of artificial intelligence on occupational positions is becoming increasingly significant, therefore, in the context of the technological era, improve the quality of workers' skills and strengthen vocational skills training in order to improve the quality of employment, and effectively alleviate the structural employment contradictions. Therefore, it is necessary to effectively promote vocational education school-enterprise cooperation and industry-teaching integration, strengthen the training and exercise of students' practical skills, and enhance the degree of job suitability. First of all, improve the school-enterprise cooperation system, form a close school-enterprise joint professional development model under the legal framework, and ensure the stability of long-term cooperation between schools and enterprises^[14]. Provide sufficient policy support for enterprises, mobilize enterprises to participate in school-enterprise cooperation enthusiasm, absorb more students to enterprise internships, so that students are in the real front-line work positions for vocational experience, in the exercise of practical training skills while gaining more employment experience, laying a solid foundation for the future of the students to lay a solid foundation for good employment. Secondly, vocational colleges and universities should make corresponding adjustments according to the development of the times and social requirements, open technical practical training courses, organize students to practical training bases to carry out practical skills learning, guide the strengthening of students' practical training, improve vocational job skills, weaken the job substitutability of AI, and improve the employment rate of students and the degree of job matching^[15].

Micro

(1) Strengthen the construction of teachers to create a double-high teacher team in the era of artificial intelligence

① Firmly implement the “1+X” certificate system and improve the dual-teacher training system.

First of all, the school should establish a sound dual-teacher training system, refine the standards and conditions for teachers to participate in training, overseas visits, further

study, research, etc., and earnestly implement them to ensure the effective implementation of the system. Secondly, the government should vigorously provide policy guarantee and financial support, promote the cooperation between vocational colleges and enterprises to build teacher training bases, provide sufficient external conditions to support the practical training of dual-teacher teachers, and provide a platform for the full utilization of the “X” certificate. Play the role of multiple subjects, multi-pronged, and jointly help to build a perfect dual-teacher training system.

② Do a good job of transforming the role of teachers to cope with the challenges of artificial intelligence and help vocational school students to find employment in the future.

Artificial intelligence has a richer knowledge reserve than teachers, a more efficient work mode, more flexible information processing, teachers are at the tip of this era of change, bearing the impact of all aspects and pressure, so they need to actively do a good job of role transformation to cope with the challenges. First of all, they should strive to improve their own ability and become “ability trainers”. Education in the age of artificial intelligence should be a personalized and precise education that cultivates students' innovative creativity, imagination and systematic thinking ability. This requires teachers to actively assume the responsibility of ability cultivation, to be the guide for students on their way to growth and success, and to help students with their future career development. Secondly, teachers themselves should have a clear sense of role transformation and the courage and ability to use new technologies scientifically. In the era of artificial intelligence teachers should not only be sensitive to technology, but also be innovative and dare to use new technologies to assist in the enhancement of teaching. Only with such ability can we avoid teachers losing their direction and self in front of the newer trend of technology, so that teachers can become the dominant technology^[16]. In summary, in the context of the era of artificial intelligence, teachers actively do a good job of role transformation, to cope with the challenges of artificial intelligence, to improve their own ability, to cultivate high-quality composite talents, and to help students in the future employment.

(2) Enhance students' awareness of skill learning, improve the adaptability of highly technical jobs, and facilitate future employment

Motivate students to establish a correct sense of career choice and skill learning consciousness, find the career direction, adapt to the needs of industry development and employment positions in the era of artificial intelligence, improve the adaptability of technical positions and career matching, and provide basic protection for the future employment of students. First, vocational colleges and universities can make students more and more accurately aware of the importance of technical learning by showing them successful cases of AI education and mobilizing their learning motivation to strengthen technical training. Secondly, play the role of society, media and publicity of the general public, to create an environmental atmosphere of artificial intelligence technology learning, subconsciously enhance students' awareness of skills learning, only students take the initiative to make changes and form a sense of active learning, in order to adapt to the job turnover and upgrading in the technological era, better adapt to the diversity of job requirements, and obtain more employment opportunities^[17].

5. Conclusion

In summary, in the era of artificial intelligence, we must fully grasp development opportunities, actively face challenges, give full play to the joint role of multiple subjects such as the government, society, and schools, and promote better and higher-quality employment for vocational school students, so as to promote the development of vocational education.

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