Research on Development Mode of Quality Education Based on the Perspective of Chat GPT

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Abstract. The development of modern educational technology greatly influences education, becoming a prevalent topic in the field of high-quality education. This article examines Chat GPT's current status in high-quality education in China and discusses its significance in promoting educational progress and development. Explored challenges in delivering high-quality education from policy and technical perspectives and proposed viable solutions. Through this exploration, our goal is to acquire a deeper understanding of the challenges and opportunities that exist for Chat GPT in the field of high-quality education. We strive to enhance modern educational technology to better cater to the needs of Chinese students and contribute to their growth and development.

Keywords: Chat GPT, High-Quality Education, Policy Obstacles, Technical Problems, Feasibility study.

1. Introduction

Quality education generally refers to the cultivation of students' innovative spirit and practical skills. It places greater emphasis on fostering subjectivity and promoting the holistic development of students' personalities. The main objective is to enhance students' ideological, labor, and overall physical and mental quality in a balanced manner. The advancements in science and technology have opened up new possibilities for quality education, such as electronic blackboards, multimedia classrooms, and magnetic cards.

On November 30, 2022, the American artificial intelligence company OpenAI released a text-based artificial intelligence application product called Chat GPT. From a technical perspective, Chat GPT is essentially the latest application of artificial intelligence content generation technology - version 3.5 of the generative pre-training converter. Under the influence of big data, advanced models, and powerful computing capabilities, neural network architecture can be utilized to comprehend and master human language. By training on vast amounts of data and machine learning, it can imitate human dialogues and perform various creative content generation. Consequently, it can replace tasks that were previously exclusive to human workers. In today's era, Chat GPT has become versatile, capable of answering questions, writing papers and poems related to various topics. It has been seamlessly integrated into various industries, promoting industry growth and facilitating progress.

In summary, it is not difficult to see that Chat GPT does show very strong capabilities in many fields, but on the other hand, it also exposes some problems, such as may facilitate plagiarism and cheating. The paper discusses the impact of generative artificial intelligence technology, such as Chat GPT, on education. It explores how this technology can empower education and addresses the challenges it may face. The paper also provides strategies to overcome these challenges.

2. The Significance of Chat GPT in Promoting the Development of Quality Education

2.1. Empower the smart educational system

Chat GPT has strong capabilities in information retrieval, processing, logical reasoning, and integration. It can effectively utilize a vast array of high-quality curriculum resources, allowing learners to systematically achieve their learning objectives. Additionally, it facilitates the development of comprehensive and high-quality curriculum systems in universities, creating an extensive "cloud" teaching resource library. Build an intelligent learning platform with generative artificial intelligence, launch virtual digital tutors, and improve the interactivity of intelligent teaching systems. Chat GPT can analyze and integrate existing knowledge for students, and provide intelligent virtual counseling and services, enabling students to receive individualized answers and feedback. In the quality education core accomplishment training system, we prioritize the development of students' ability to independently identify, explore, and solve problems. To aid in this, many foreign scholars have utilized Chat GPT, a virtual digital tutor, to guide and train students as project mentors. Chat GPT assists in guiding students to independently set project goals and develop project plans, while also offering real-time evaluation during the planning process. These cases further confirm the significance of using generative artificial intelligence to create virtual digital mentors in promoting individualized character education and development for students.

2.2. Facilitate teacher development and focus on core competencies.

With the powerful independent learning feature of Chat GPT, Chat GPT can serve as a valuable assistant tool for teachers, providing them with innovative ideas and helping them improve teaching methods in areas such as instructional design, classroom organization, and teaching materials. At the same time, experts and scholars believe that Chat GPT can help teachers free themselves from complex administrative tasks, allowing them to devote more time to the professional development of their teaching practice. For example, Chat GPT can provide automatic grading, speech recognition and other features to help teachers better evaluate students' learning outcomes and oral expression skills.

2.3. Promote innovative learning and pay attention to personalized training.

Today's Chat GPT-4 has been allowed to access the API user custom AI "personality", he can learn the user's writing style, complete creative writing tasks that meet the user's requirements. Then such a technological leap also provides more possibilities for us to customize teaching. Teachers can better use Chat GPT to present innovative problems and inspire students to think. At the same time, Chat GPT can also give personalized evaluation and interpretation to students' feedback. In this reciprocal learning and training, it also requires students to have higher-level comprehensive literacy skills, encourages students to continuously innovate, and motivates them to explore more knowledge.

3. The Bias Existing in Chat GPT in Quality Education Practice

3.1. The issue of policy barriers

The development of generative artificial intelligence in quality education is hindered by policy constraints. Currently, my country's policies for developing generative AI in education are not yet comprehensive enough. The main reasons for this problem include the prevalence of "digital poverty" and regulatory challenges in keeping pace with technological advancements. Issues such as limited access to technology, consent for content usage, online content pollution, and other related concerns are still contentious. Due to these controversies, government agencies are slow in formulating and advancing policies regarding generative AI in education. Furthermore, scholars like Lan Guoshuai and Du Shuilian (2023) have conducted research on the application of generative AI in education.

They have used text analysis and content analysis methods to explore the background and research objectives of UNESCO's "Generative Artificial Intelligence Education and Research Application Guide." Their work provides insights for reflecting on the development of policies for generative AI in education in my country; Sun Lihui, Zhou Liang (2019) and other related scholars analyzed the world's first "Guidelines for the Application of Generative Artificial Intelligence Education in Primary and Secondary Schools" released by the Japanese Ministry of Education, Culture, Sports, Science and Technology in July 2023, and innovatively proposed a new direction for the construction of China's primary and secondary school generative artificial intelligence education application policy from the perspectives of values and literacy. They also put forward relevant practical measures. Shang, Z., and Yan, Y. (2023) have analyzed the existing strategies for tackling potential applications of Chat GPT and have proposed the transformative impact of generative artificial intelligence in the realm of education, along with the ethical challenges that come with it. Currently, the policy research on generative artificial intelligence in the field of quality education primarily focuses on theoretical analysis. There is still limited practical research on the formation of a positive development of generative artificial intelligence in the field of quality education in Suan. So far, generative artificial intelligence has faced significant obstacles in the development of high-quality education, progressing slowly, and has not established a beneficial cycle of industry development driven by policies.

Educational practice equipped with large models Able to complete tasks quickly, but they don't always complete tasks fairly. There are now many studies suggesting that algorithmic bias also exists in education (Loukina et al,.2019; Hu et al.,2020; Baker et al.,2021; Stinar F et al.,2022)[1-4]. The success of large models arises from the seamless integration of algorithms and data, with limitations on bias stemming from the alignment of datasets and inherent societal biases.

3.2. Problem of data set matching

Bias is highly related to data sources, data content and model training itself[5]. When constructing and training large deep learning models, bias can be introduced due to uneven distribution of samples across different categories or groups in the training dataset. This can result in the models exhibiting a preference for more common and easily accessible categories or groups, leading to unfairness.

In natural language processing (NLP) tasks, the training dataset may contain text of different categories. If there are significantly more English-first language text samples, the model may be more biased towards them during analysis and judgement tasks. This can result in misunderstandings or incorrect processing of non-English expressions due to cultural differences. Including more male or female samples in the data set may also cause the model to be gender biased and more likely to use a gender-specific vocabulary or stereotype.

In large-scale recommend systems, the training dataset contains relatively more information about students who actively participate and complete tasks, making it easier to understand their behaviors and interests. On the other hand, the dataset contains relatively fewer data about students who are less active and have difficulty completing tasks, which results in training data imbalance. At this point, the recommendation system may tend to recommend more advanced courses and challenging content for the former. The latter, on the other hand, may receive fewer referrals because the system assumes that they will not complete the courses, causing them to miss out on opportunities to improve and improve themselves.

3.3. The existing social biases

Current research has shown that when the original data is the result of existing biases in society, large models will learn the bias relationship [6,7]. Algorithms themselves do not create biases independently; rather, algorithmic biases reflect biases embedded in social traditions.

The training data for large models mostly consists of text snippets from the network. If the historical data used for training contains biases, these biases may appear if proper correction is not implemented. In addition, different large models will have different value tendencies due to the differences in algorithms and training corpora.

The Durham police in the UK have recently been using the HART artificial intelligence system for crime prediction. However, the model predicts that black people have twice the probability of being criminals compared to white people. It also indicates that there is a higher likelihood of poverty being a risk factor for criminal behavior compared to wealth[8]. Large-scale modeling techniques used to predict student achievement, generate student evaluations, or make educational decisions can be influenced by factors such as gender, race, and socio-economic background Imbalances in educational resources can also result in biased evaluation of models, where some school districts may lack necessary infrastructure and faculty, while others are well-resourced. As a consequence, larger models may tend to underestimate the potential of students from resource-poor districts.

3.4. Ethical risk issues

ChatGPT can effectively promote the development of educational technology, and the progress of educational technology is an essential component in facilitating education development. The application of ChatGPT in quality education poses unprecedented challenges to the establishment of educational ethics. Regarding educational content, there are certain disorderly phenomena in how ChatGPT generates content. Generative artificial intelligence can produce content errors, processing information based on what it collects, possibly resulting in the generation of erroneous and chaotic knowledge. If there is a lack of human teachers for correction, the learning of younger students may be negatively impacted by the absence of scientific and factual knowledge. In his paper "Investigation of the Principles and Educational Applicability of Generative Artificial Intelligence Technology," Miaofeng Chun (2023) referred to this as the illusion of foundational knowledge. This educational phenomenon goes against the original intention of enhancing high-quality education through educational technology and poses ethical risks[9-12].

Shang, a researcher from the Humanities School of the University of Chinese Academy of Sciences, suggests that the integration of ChatGPT in education will bring about a shift in the subjectivity of the learning experience. In traditional classroom settings, teachers hold a prominent position, governing the class atmosphere and assisting students in gradually constructing a comprehensive knowledge framework through guidance and summarization. This approach facilitates comprehensive comprehension and assimilation of knowledge. However, ChatGPT may not allow students to directly construct a solid knowledge framework and logical system, which could prevent them from fully absorbing and retaining the process of learning. This could result in a lack of exposure to the aesthetic, ethical, and intuitive aspects of education that are typically emphasized in traditional schools. This is not conducive to building a harmonious and positive educational relationship.

4. A Feasible Model of Chat GPT Applied to Enhancing Education Quality.

4.1. In the teaching process Automated assessment and feedback:

ChatGPT can automatically assess students' language proficiency, critical thinking skills, and other comprehensive abilities by analyzing their performance and outputs in the teaching process using its powerful data collection and analysis capabilities. It can provide corresponding feedback and suggestions based on the obtained results. Teachers can develop individualized teaching plans based on students' feedback and suggestions regarding their basic situation. This model has been basically applied to some online learning platforms and achieved good results[13].

4.2. Individualized teaching resource recommendation promotes the cultivation of higher-order thinking.

Differentiated instruction is what every educator strives for, and ChatGPT can recommend high-quality education resources based on students' interests, abilities, and learning history. In order to recommend the most suitable educational and teaching resources to students, it is essential to consider their thinking and comprehension abilities, as well as their independence in thinking and ability to raise questions. This requires a higher level of thinking and digestion skills. Experts point out that the

extent to which students can truly acquire valuable knowledge often relies more on their ability to question and critically engage with the information. By providing personalized teaching resources, students are guided towards selecting learning materials that are genuinely suitable and intriguing to them, encouraging independent thinking amidst a plethora of resources available. This approach effectively fosters the development of students' higher-order thinking skills[14,15].

4.3. The use of ChatGPT in high-quality education can greatly improve teaching interaction.

GPT can serve as a virtual tutor or study partner, having interactive conversations with students. Applying it to the high-quality education scene can effectively improve the interactivity in the process of high-quality education and significantly enhance the teaching quality. However, the current GPT model still has some limitations in understanding context and emotion. Thus, it is necessary to train and optimize the model in order to enhance its dialogue and coaching abilities. At the same time, interactive dialogue and coaching must consider the crucial role of teachers, who remain indispensable.

4.4. Teacher aids

The feasibility is quite high. GPT can provide teachers with assistance tools to help them better design teaching materials, assess students' development, and formulate individualized learning plans. Students' learning progress and difficulties can be analyzed through data and pattern recognition, providing feedback to teachers for targeted guidance and support. This model has the potential to enhance teachers' productivity and instructional effectiveness, but it is important to consider teachers' willingness to embrace technology and their professional capabilities.

4.5. Application integration

The comprehensive application of multiple models can further improve the effect of quality education development. For example, a smart learning system can be established by integrating automatic assessment and feedback, resource recommendation, and individualized learning, which provides personalized learning content, assessment, and feedback based on students' learning situations and needs. However, application integration needs to address the collaboration and integration issues between multiple modes, taking into account the needs and feedback of teachers and students.

5. Conclusion

During this era of rapid development, it's crucial that we actively embrace progress and adapt to the times. Despite the numerous obstacles that exist in incorporating ChatGPT into education, we should still explore its feasibility, allowing technology to be used to provide quality education and further the field's advancement. This will promote its development and progress.

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