

The Influence of ChatGPT on Autonomous Learning for College Students

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Abstract: The emergence of ChatGPT has triggered domestic and international discussions on the future of artificial intelligence and human beings, and the connection between ChatGPT and education has received widespread attention. Among them, the impact of ChatGPT on college students' independent learning has become one of the hot spots of research. Firstly, ChatGPT's personalized learning support leverages students' characteristics and needs to provide personalized educational services. ChatGPT recommends resources based on personalization and also has a wide range of learning materials and difficulty levels to give students a sense of resourcefulness. The development of an awareness of independent learning also enables students to gradually build up their awareness and ability to learn independently. Secondly, there are still many limitations for university students in using ChatGPT for self-directed learning, as they have to deal with changes in the quality of knowledge, reduced social interaction and dependency issues. Thirdly, better helping college students use ChatGPT to improve their independent learning skills requires stronger educational leadership, combined with interpersonal relationships and enhanced privacy protection. In addition, college students should use it as an aid to maintain critical thinking and not rely on the tool itself. Comprehensive knowledge is gained by utilizing multiple resources. Developers should continuously improve the system to increase accuracy and knowledge breadth to meet students' needs. In conclusion, this study has a positive impact on the reform and development of the educational field and makes a useful contribution to the cultivation of college students with independent learning abilities.

Keywords: artificial intelligence, ChatGPT, autonomous learning

1. Introduction

With the rapid development of information technology and the rise of artificial intelligence, the application of artificial intelligence in the field of education has gradually attracted attention. Among them, the effect of ChatGPT on college students' independent learning has become one of the hot spots of research. Autonomous learning ability refers to the ability of college students to learn independently to a certain extent, to choose the content, mode, and pace of learning independently, to explore and solve problems independently under the guidance of teachers, and to enhance the enthusiasm and initiative of learning. It serves as an important learning mode that emphasizes students' initiative and self-management ability in the learning process. In the stage of higher education,

independent learning can not only improve the learning efficiency of college students but also cultivate their innovative thinking and problem-solving abilities, laying a solid foundation for their future career development. And the application of artificial intelligence technology provides new opportunities and challenges for college students' independent learning. Therefore, it is of great significance to study the value and limitations of artificial intelligence on college students' independent learning to guide educational practice and promote educational reform.

The main topics of this study are to explore how Artificial Intelligence (AI) enhances the ability of college students to learn independently, to analyze the factors that influence the effectiveness of AI on college students' independent learning, and to assess the effectiveness and impact of AI on college students' independent learning. This research hopes that through this study, it can gain a deeper understanding of the effects and limitations of AI on college students' self-directed learning. At the same time, the research also hopes that through this study, it can promote the wide application of AI in college students' self-directed learning and promote the innovation and development of education.

2. The Value of ChatGPT for Autonomous Learning in College Students

2.1. Personalized Learning Support

By offering individualized and interactive help that is catered to each learner's unique requirements and preferences, Chat GPT may not only encourage learners' autonomy but also improve the learning experiences [1]. ChatGPT helps to improve student learning outcomes and learning experiences. Artificial Intelligence uses students' characteristics and needs to provide personalized educational services. It can provide customized learning services for each learner based on characteristics such as the learner's cognitive level, learning style, interests, and learning goals. When the learner's characteristics are unclear or the learning effect is poor, AI can make use of various types of knowledge bases through intelligent algorithms and data analysis to make inferences and provide instant feedback to correct deficiencies and improve personalized services [2].

First of all, ChatGPT can customize personalized learning plans and resources for students based on their interests, learning styles, and academic levels. A complete personalized independent learning system should include the following modules: personalized knowledge teaching system, personalized skills training system, comprehensive evaluation system, and personalized learning suggestion system. The system can intelligently push learning resources, target intensive training, guide learners to make learning plans, regulate learners' emotions to reach learning goals and track and evaluate learners' learning effects [3]. This customized learning experience can better meet the needs of each student and improve learning efficiency and outcomes. Also providing real-time feedback, ChatGPT instantly analyzes students' learning performance and provides them with real-time feedback and suggestions. This allows students to identify and correct learning problems as early as possible, avoiding the accumulation of errors or misunderstandings in the learning process.

Second, it allows students to adapt to different learning rhythms. Different students learn at different paces and in different ways. ChatGPT can adjust the recommended learning resources according to the student's learning pace so that each student can learn at their most comfortable pace, avoiding confusion or a sense of loss caused by a mismatch in learning pace.

Finally, it can also help students fill individual knowledge gaps, which can be significant across disciplines and topics. ChatGPT can identify gaps in students' knowledge and recommend supplemental materials targeted to help them fill the gaps in their knowledge and improve their academic achievement.

2.2. Resourcefulness

The application of ChatGPT in independent learning for college students brings rich value to resource enrichment. Features such as personalized resource recommendations diverse learning materials and difficulty-leveled resources enable students to access rich and diverse learning resources more flexibly and efficiently, thus promoting their deep learning and the development of comprehensive abilities.

First, ChatGPT's personalized resource recommendations analyze students' interests, academic levels, and subject preferences to recommend personalized learning resources such as articles, videos, courses, and books. This helps students find learning materials that match their needs more quickly. Moreover, the diversity of learning materials provided by ChatGPT allows college students to choose from a variety of sources and formats. It helps students to understand knowledge from different perspectives and pathways, enriching their learning experience.

Secondly, difficulty-leveled resources enable students to adapt to different levels of difficulty at different stages. ChatGPT can provide learning resources adapted to different levels of difficulty according to students' academic levels to meet their learning needs. It also provides real-time updates and up-to-date information. Artificial intelligence can monitor and collect constantly updated academic materials to ensure that students have access to the latest information and research findings. This is particularly important for certain fast-moving disciplines. Intelligent educational services are dynamic and respond promptly to changes in the teaching and learning environment. Artificial intelligence technology can intelligently regulate pedagogical services to respect individual needs [2].

Finally, ChatGPT helps to increase linguistic and cultural diversity. ChatGPT can provide learning resources from different languages and cultural backgrounds. Artificial intelligence technologies such as intelligent speech technology, English language assessment systems, language translation, and intelligent speaking accompaniment are widely used in English teaching. It can help students to cross language barriers, and easily read and understand the knowledge about different cultural contexts while providing learning resources in multiple languages to promote cross-cultural learning and cross-language communication [4]. The convenience and efficiency of these technologies are changing the traditional concepts and modes of college students' learning of English, gradually constructing a model of college English independent learning in the context of artificial intelligence [5]. Promoting students' cross-cultural understanding and communication skills. The main empowerments of ChatGPT as an AI chatbot in foreign language teaching are: facilitating interaction and communication, high ease of use and maneuverability, enhancing the willingness to communicate in a second language, and enhancing the experience of communicative interest [6].

2.3. Autonomous Learning Awareness Development

After college students engaged in self-directed learning, they seldom dealt with motivation, learning strategies, and methods, or thought about the impact on future learning about their previous learning experiences. This indicates that their awareness and ability in self-reflection and self-summarization need to be improved [7]. And ChatGPT can promote the cultivation of college students' awareness of independent learning, so that students can gradually build up their awareness and ability of independent learning, and lay a solid foundation for their future learning and development.

First of all, ChatGPT helps students develop an independent study plan, which can help them make a reasonable study plan according to their academic level, goals, and schedule. By interacting with the AI, students will learn how to plan their learning process and improve their awareness and ability to learn independently. This enhances time management skills and it reminds students to complete their study tasks as planned, helping them develop good time management habits. Students will be able to better balance their studies, rest, and recreation and improve their learning efficiency.

Secondly, ChatGPT helps students reflect and adjust. ChatGPT helps students analyze their learning progress and results, and adjust their learning strategies based on data feedback. Students will gradually learn how to identify problems make improvements from the feedback, and develop a sense of continuous learning and improvement. In addition, ChatGPT can help students with self-assessment and goal-setting. Artificial intelligence can assist students in self-assessment, recognizing their strengths and areas for improvement. Based on these assessments, students can set clear learning goals, driving them to more focused independent learning.

Finally, ChatGPT also enables students to increase their self-drivenness and responsibility. By interacting with AI, students can gradually develop a self-driven attitude toward learning and a sense of responsibility. They begin to realize that learning is a personal responsibility, not just a product of external pressures. Thus advancing students' long-term developmental perspective. Through interaction with ChatGPT, students can gradually develop a long-term developmental perspective and understand that learning is not just about coping with exams, but also about overall personal growth. It is crucial to enhance students' independent learning ability. In the age of intelligence, independent learning ability becomes a necessity for learners to cope with the complex and uncertain future of education, and a basic driving force towards the future of education. Both the Organization for Economic Cooperation and Development (OECD) and other educational institutions should pay attention to the development of students' self-directed learning ability to adapt to rapidly changing social and professional needs [8].

3. Limitations of ChatGPT for Autonomous Learning of College Students

3.1. High Requirements for Students' Individual Qualities

ChatGPT has many advantages in self-directed learning for university students, but at the same time, it faces limitations such as information overload, lack of human instructor guidance, dependence on self-directed learning strategies, limitations of automated assessment, and moral and ethical issues that may affect the quality of students' knowledge.

First, students face information overload and filtering challenges. Although AI technology can help college students filter out useful content from massive amounts of information, ChatGPT sometimes struggles to accurately differentiate between high-quality knowledge resources and low-quality information due to the problem of information overload. This may result in ChatGPT recommending learning resources that are not always trustworthy, thus affecting the quality of students' knowledge.

Second, because of the lack of professional guidance from human teachers, may affect the depth and quality of students' knowledge. Although ChatGPT can provide automated learning suggestions, it lacks the depth of understanding and professional guidance of teachers. It will be difficult for ChatGPT to replace human educators in dealing with complex concepts, promoting critical thinking, and providing personalized feedback.

Then, because of the limitations of automated assessment, ChatGPT can be used to automate assessment of student progress, but because certain subjects may require deeper subjective judgment and review by human experts. So ChatGPT may not be able to accurately assess student understanding and competence in these areas, leading to compromised quality assessment of knowledge. Because there are limitations in educational resources, ChatGPT relies too much on prompt words and questioners and lacks logical reasoning skills, thus its responses are unstable [9].

Finally, students also face moral and ethical issues: knowledge recommendations in ChatGPT may be influenced by data bias and inappropriate content, triggering the creation of moral and ethical issues. Systems based on large-scale language models like ChatGPT sometimes generate incorrect or inaccurate information, and may even contain harmful information such as racial discrimination,

hatred, pornography, and reaction [10]. Students are likely to be misled or exposed to inappropriate content, which is very likely to have many negative impacts on their learning and development. ChatGPT generates test questions and question banks that may violate intellectual property rights. It should be used as an aid to teachers and experts, not as a replacement for them. Intellectual property rights and ethical issues need to be further justified and AI technology should be positioned as a tool to serve human beings, not to replace them [11].

3.2. Students' Excessive Reliance on Technology in Learning

ChatGPT may trigger students' over-reliance on AI in college students' self-directed learning, which may lead to problems such as reduced willingness for self-directed learning, limited breadth of thinking, lack of critical thinking, and over-personalized learning. Therefore, college students should maintain moderate use of AI tools while developing their learning ability, critical thinking, and independence. Educational institutions should also focus on balancing the importance of technology and human interaction when training students.

First, students may reduce their willingness to learn independently. When college students use ChatGPT to get study suggestions, they may reduce their willingness to learn independently because of the convenience of these suggestions. They may become overly reliant on ChatGPT, causing them to stop proactively seeking their learning resources, which can weaken their motivation and initiative to learn. ChatGPT supports personalized learning and research, but it can also trigger an integrity crisis. Students can use it to cheat and undermine the fairness of teaching and learning [8].

Second, ChatGPT limits the breadth of students' thinking, and AI may filter out new areas or unfamiliar content based on students' preferences and historical choices when recommending learning resources. This may lead to students' thinking being limited to only being exposed to areas they are already familiar with, yet ignoring other valuable knowledge. There is also the aspect that university students will lack critical thinking when using AI tools, which may lead to an over-reliance on the advice provided by the tools and a lack of critical evaluation of learning resources. This leads to a lack of ability to think deeply and analyze information critically, affecting their academic literacy and independent thinking.

3.3. Lack of Social Interaction

The use of ChatGPT in self-directed learning for university students may lead to a reduction in social interactions, affecting face-to-face interactions, opportunities for collaboration, social skills development, and affective dimensions of the experience. While using ChatGPT, educational institutions should consider how to balance the importance of technology and social interaction to ensure that students receive a comprehensive learning experience and the development of comprehensive skills.

First, students will lack opportunities for face-to-face interactions; as they use ChatGPT for self-directed learning, students are likely to interact more with the technology, thus reducing face-to-face interactions with their peers and the instructor. Face-to-face interaction facilitates communication and collaboration, and promotes the collision of ideas and sharing of knowledge, whereas an over-reliance on technology diminishes the opportunities for such interaction. Excessive use of machines reduces communication and interaction between teachers and students, leading to over-trust in machines, reduced emotional communication between people, and weakened ability to distinguish between right and wrong, thus leading to an infantilization crisis in students [12].

Second, college education emphasizes the development of teamwork and collaboration skills and opportunities for collaboration can be greatly reduced. However, over-reliance on ChatGPT may deprive students of the opportunity to work with their peers and solve problems together. This greatly

will likely affect their ability to work in a team environment and develop collaborative skills. Then, ChatGPT is likely to decrease social skills, and social interactions help develop students' interpersonal and communication skills. Excessive reliance on ChatGPT may lead to a lack of opportunities for college students to effectively communicate and interact with others, which can harm the development of their social skills.

Finally, the reduction of social interactions also affects the emotional dimension of students' knowledge, which affects the deeper understanding and internalization of knowledge. Learning is not just about knowledge acquisition but also involves emotional experiences and emotional connections. Artificial intelligence cannot provide emotional support and interpersonal emotional experiences, which may lead to a lack of emotional engagement in the learning process. Education requires teachers not only to impart theoretical knowledge but also to infect and move students with emotions and touch their hearts. However, the lack of emotion by AI in education leads many college students to deal with cold data, making it difficult to experience and feel emotional interaction between teachers and students [13].

4. Strategies for Improving College Students' Autonomous Learning Ability by Using ChatGPT

4.1. Strengthening AI Education Guidance

Educational leaders play a key role in integrating AI technologies. They should set clear educational goals and ensure that AI technologies are aligned with those goals. Educational leaders also need to provide teachers with the necessary training and support to help them fully understand how AI can be applied and integrated into their teaching practices. ChatGPT can liberate teachers from the use of AI in the education of college students, giving them more time to stimulate students' curiosity and imagination and foster their creativity and critical thinking. Teachers also need to guide their students to distinguish right from wrong, remove falsehoods from the truth, focus on the harmonious development of man and nature, solve problems scientifically, and avoid the influence and control of technological supremacy over people [13]. In addition, educational leaders should develop ethical guidelines to ensure that AI is used ethically and responsibly in teaching and learning.

4.2. Integration of Interpersonal Communication

Interpersonal communication has an irreplaceable role in education. Digital technology is essentially a tool, and humans use digital technology to better serve education. If left unchecked, technology can also become a force that limits and opposes humanity. Therefore, the control of AI, including ChatGPT, must be strengthened [14]. Teachers' inspirational guidance, interactive discussions among students, and teamwork are important ways to develop students' critical thinking and social skills. ChatGPT can be used as an assistive tool to provide learning resources, personalized advice, and real-time feedback, but it should not replace human-to-human interactions. To develop learners' self-monitoring skills, teachers should pay attention to students' interests, motivation, and emotional states, and provide encouragement and guidance. In this way, students can gradually develop self-directed monitoring ability based on task-oriented monitoring ability, i.e., checking, controlling, and regulating their learning based on their learning interests, learning motivation, and other subjective psychological factors [7]. Therefore, teachers still need to take the roles of instructors and motivators to guide students to actively participate and explore together.

4.3. Strengthening Privacy Protection

Privacy protection is a key consideration when using ChatGPT in education. To obtain ChatGPT's answers to personalized questions, teachers and students need to enter more relevant information and data, which may lead to data privacy violations. ChatGPT technology may also be improperly exploited, causing certain security risks. Further acquisition and dissemination of dangerous information will bring certain youth problems and social hazards [15]. Students' personal information and learning data need to be adequately protected from misuse or leakage. Educational institutions should ensure that data collected is used only for educational purposes and that security measures are in place to prevent unauthorized access to data. Transparent privacy policies and clear regulations on data use are important tools to ensure student privacy, while also helping to build trust and cooperative relationships.

5. Conclusions

ChatGPT, as a chatbot based on artificial intelligence technology, is of great value to college students' independent learning. Through conversations with ChatGPT, college students can get personalized study assistance and guidance. ChatGPT has rich resources and can analyze students' learning characteristics and needs based on their learning behaviors and performances, and provide them with personalized study plans and learning resource recommendations. In this way, college students can choose appropriate learning content according to their learning progress and ability, and improve their learning effect. It can also cultivate students' sense of independent learning and lay a solid foundation for their future learning and development.

However, this paper also found some limitations. First, ChatGPT is still a robot and cannot completely replace the role of a human teacher. It has variable quality of knowledge and may not be able to provide the same depth and breadth of knowledge and experience as a human teacher. Second, ChatGPT may cause a reduction in social interactions, affecting face-to-face interactions, opportunities for collaboration, social skills development, and emotional dimensions of the experience. In addition, ChatGPT's learning advice and guidance may rely too much on students' past behaviors and lack innovation and challenge.

In the future, apt applications of AI in university teaching and learning need to strike a balance between incorporating interpersonal interactions, enhancing educational leadership, and strengthening privacy protection. By taking full advantage while maintaining interpersonal interaction, respecting privacy, and upholding educational ethics, the research can achieve a more effective, personalized, and sustainable model of university education. With the continuous development of technology and the advancement of educational concepts, ChatGPT still needs to be improved and optimized to bring more possibilities to the field of education. Use ChatGPT as an aid to learning rather than relying on it completely. Critical thinking needs to be maintained to validate and probe deeply into ChatGPT's answers. While applying AI technology, it should be necessary to take educators and students as the main body to jointly promote the innovation and development of education. It is hoped that in the future, the application of AI in enhancing the independent learning ability of college students can be further deepened, and a more intelligent, personalized, and collaborative learning environment can be explored to improve the learning effect and learning experience of college students. It will provide useful ideas and methods for the reform and development of the education field and cultivate college students with independent learning abilities.

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