

Chatgpt Empowers Higher Education Middle School Students' Intelligent Adaptation Learning Problems and Path Research

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Abstract. In today's digital age, intelligent learning is the main direction of higher education. Generative artificial intelligence represented by Chat GPT can provide more efficient intelligent services for college students' adaptive learning, that is, intelligent adaptive learning mode. This article uses the interview method to investigate the current situation of intelligent adaptation learning for college students with the help of Chat GPT and analyzes that intelligent adaptation learning has incomparable advantages in the acquisition of learning resources for college students, scene simulation, personalized and accurate scheme provision and result evaluation in the learning process. However, in the application of reality, there are also problems such as insufficient information literacy of college students, imperfect machine intelligence systems, and lack of bad environmental support. Therefore, this article pays attention to the issue of education in the era of intelligence, based on the needs of future education development, through the development of bad environment support, machine intelligence, and the development of student information literacy, to promote the intelligence transformation of higher education, and provide college students with an efficient learning path in the era of information explosion.

Keywords: higher education, intelligent adaptation learning, chatGPT.

1. Introduction

With the advent of today's intelligent era, the field of education proposes a reform of intelligent learning. In 2022, the National Education Work Conference proposed to implement the national education digitalization strategic action and start a new journey in the digital transformation of education. In February 2023, China launched the national digital education strategic action and built a national public service platform for smart education, marking the beginning of the road to smart education [1]. The generative artificial intelligence represented by ChatGPT adopts the training method of "enhanced learning in human feedback" (RLHIF). It has strong retrieval ability and learning ability. It can not only answer questions for students, but also automatically generate sample paragraph examples or heuristic thought tips to identify Combined with professional subject knowledge, it provides students with dynamic teaching support and feedback in the way of human-computer collaboration and co-creation, optimizes their learning path, provides intelligent adaptation services, and becomes a good AI teaching assistant [2,3].

In April 2023, UNESCO explained the effective application of Chat GPT in higher education. Therefore, the generative artificial intelligence represented by chatGPT has greatly promoted the wide development of intelligent adaptation learning modes. On the one hand, as a more open and flexible learning space, College students gradually remove the adaptive learning mode. Based on their interests and needs, learners can determine learning topics, plan action plans, make full use of the learning resources, learning support, and learning guidance generated by the intelligent learning space, and carry out self-oriented learning, to achieve personalized learning goals. On the other hand, with the continuous advancement of the information age, it is difficult for college students to find the required learning resources in complex information and tedious data. It is easy to receive information homogeneity and form a mindset, while intelligent adaptation to the dataization of learning behaviors and processes in learning will promote continuous optimization of the algorithm, to provide more accurate support and services for learners. Therefore, data-centered to realize the benign interaction between learners and algorithms and human-computer symbiosis will be the main learning method

of human beings in the increasingly complex information network environment. Therefore, this article adopts qualitative analysis, studies the current situation of 12 college students in colleges and universities using Chat GPT for intelligent adaptation learning through the interview method, summarizes the general conclusions that affect the current intelligent adaptation learning of college students, absorbs the current advantages of precision, personalization, and convenience, and the shortcomings of intelligent adaptation learning. Then it would help to seek the possibility of changing the intelligent learning model of higher education, improve the learning efficiency of students, promote the construction of talents, and adapt to the needs of the intelligent era.

2. Materials and Methods

2.1. Theoretical Foundation

The concept of intelligent adaptive learning was put forward by Li Haoyang, the founder of Yi Learning [4]. Its basic point is based on knowledge space theory, information flow theory, and Bayes' theorem theory to realize adaptive learning for learners supported by artificial intelligence. On the one hand, individual knowledge can be abstracted into a collection of information to form a knowledge space with a closed-loop structure [5]. From this, intelligent adaptation learning can confirm the learner's learning progress according to the learner's knowledge state, form a weak summary of evaluation and knowledge points, and provide the required key knowledge content and core in the next learning. Learning path [6]. On the other hand, the intelligent adaptation learning system can explore the learning paths and trends chosen by learners through the models of information flow-related data and information channels and establish personalized learning plans according to the learning level. The system will then carry out conditional probability reasoning on the learner's choice, master the learner's information and learning rules, and gradually reason and improve the basic information of the learner according to the learner's continuous learning choice or cognitive loading, according to the learner's learning line. For the gradual enrichment of data, the system will make personalized and independent adjustments to the knowledge map, algorithm model, and test content [7]. At the same time, intelligent adaptation learning can achieve the effect of ubiquitous learning, adapt to the needs of a variety of scenarios, and have a high degree of flexibility, which makes it easier for learners to embed learning into a busy work schedule and participate in learning anytime and anywhere [8].

2.2. Research Design

This article adopts qualitative research methods. First of all, this paper adopts the literature method, based on the text analysis of specific research cases of theoretical support and intellectual adaptation learning, forming the dimension of the general interview, which are four parts: metacognition, learning resource acquisition, learning process feeling, and learning evaluation income. At the same time, this article adopts a semi-structured interview as the main method and an open interview as a supplement. The interview outline is formulated according to the interview survey dimension. Based on understanding the information of the interviewee, people can understand the general situation of learners' use of chat GPT and their understanding of intelligent adaptation learning. By providing the accuracy of the reply and the smoothness of the translated text, people can observe whether Chat GPT provides effective learning knowledge information and judge whether it can generate innovative knowledge. Secondly, this paper summarizes the advantages and disadvantages of the intelligent adaptation learning process based on the characteristics of machine intelligence in processing information, efficiency, learning style, etc. Thirdly, the effectiveness of the evaluation was observed by asking college students about the learning path they were using and the change in their questioning style. Finally, guide other questions and suggestions. The subject distribution of the respondents covers natural science, social science, humanities, sports art, and other disciplines. In addition, this study selected a total of 12 students from 4 college students in each grade from freshman to junior. In the formal implementation, this study abides by the principles of voluntariness, confidentiality,

and return to ensure reliability and generalizability, and is committed to extracting the current situation of college students' use of Chat GPT for intelligent adaptive learning, extracting the current challenges and putting forward some suggestions for the future.

3. Results and Discussion

Based on the analysis of the interview results, this article believes that Chat GPT has many advantages for college students' intelligent adaptation learning. However, at the same time, due to technical limitations and weak students' personal information literacy, Chat GPT also has certain challenges for the development of students' intelligent adaptation learning.

3.1. Advantages

3.1.1 Learning resources

On the one hand, the knowledge map provided by Chat GPT can cover multiple fields, with the characteristics of extension and interdisciplinary integration, which can help learners master abstract knowledge in depth [9]. The natural discipline can provide college students with a simplified version of programming operations and the most effective algorithm path to solve problems at high speed and effectively. The humanities and social sciences can provide cases and theoretical framework diagrams of knowledge points from different perspectives to help students understand and think. On the other hand, chat GPT automatically generates subject-related texts through in-depth analysis of the subject field, including textbooks, teaching plans, and various resources for auxiliary teaching, such as demonstration videos, experimental schemes, case analyses, etc. In the process of learning, learners will generate a large amount of new data and then feed it to the algorithm to effectively promote the continuous optimization and development of the algorithm. Therefore, Chat GPT can provide college students with multi-angle large-capacity retrieval data and self-generated information.

3.1.2 Learning process

First of all, chat GPT can set up scenario-based simulations and provide a virtual learning space. On the one hand, it provides specific and specific Q&A scenarios with the advantage of dialogue. College students try to set up scenarios such as simulated tutors, job interviews, and simulated experiments to provide an effective way to solve real-world problems and accumulate experience. Among them, IELTS and other minor language oral simulations are highly praised by college students. In addition, learners can generate problem awareness and critical thinking through independent dialogue and try to explore the essence of things from different perspectives, to improve their logical reasoning ability in the process of distinguishing the difference between themselves and the system's ideas and answers. On the other hand, it can meet the demands of students in different disciplines, such as scenario imagination, data aggregation, and intuitive thinking.

Secondly, chat GPT provides personalized solutions for college students. From a group point of view, Chat GPT can recognize the overall student learning information, provide general learning paths, and point out diversified learning programs according to the needs of different students to provide suitable educational resources and recommended learning nodes. From an individual point of view, chat GPT can realize the judgment of students' learning behavior, learning style, interest points, interests, weaknesses and advantages by in-depth analysis of students' questioning methods, preferences for answers, and other learning data, to customize personalized learning plans for them, such as Chat GPT can recommend different subject content for each student and set a learning path with appropriate progress. For example, some students need to learn step by step, starting with specific and simple knowledge points while others can quickly understand the content through the overall logical framework. At the same time, Chat GPT provides a variety of learning methods according to different students' learning styles. Some students like to learn through video or interactive teaching, while others prefer to learn through text reading. Chat GPT can recommend

learning methods and teaching resources suitable for students' learning styles according to their learning data and behavior, to help students learn and master knowledge more efficiently [10].

Thirdly, artificial intelligence represented by chat GPT can help college students screen and process information and break the epistemic bubble. Chat GPT's powerful information processing, aggregation, integration, and generation capabilities provide the possibility to break the "hole" of learners' personalization and break through the channel barrier between human intelligence and machine intelligence. At the same time, it reduces unnecessary duplication of work, improves efficiency, and accelerates cognitive development. In the application, it shows that the scientific research model of college students has changed from "trial and error" to "predictive" or "iterative" [11]. Chat GPT conducts repetitive and tedious experimental investigation and path simulation, so students only need to monitor and carry out the most effective mode provided by it.

3.1.3 Learning results

Chat GPT can provide college students with an evaluation and dynamic monitoring system. In the traditional education model, the evaluation of learner learning results is subject to the subjectivity of the teacher's experience and the delay of other evaluations. It is difficult to obtain an effective and comprehensive solution, and then lose the motivation to continue learning. The "instant feedback" advantage of Chat GPT will help to provide more scientific and accurate evaluation and improvement suggestions so that learners can identify their problems more quickly and accurately and improve effectively. At the same time, big data algorithms are used to dynamically track the development of students' academic level, provide portraits, and dynamically depict students' learning thinking and ability. Continuously provide learning programs to form a complete intelligent learning assistance system.

3.2. Challenge

3.2.1 Machine intelligence defects

Although ChatGPT has many advantages, it is still difficult to get rid of the inherent disadvantages of data algorithms and tool rationality. First, Chat GPT has information and logical fallacies. In the generated data, there is a tendency to think about concept exchange, scarecrow fallacy, mutual cause and effect, and pure tool value. The information is seriously hollowed out. It seems that the number of learning materials obtained by college students is considerable, but the overall pattern is pale and useless. Moreover, some of the conclusions are not based on facts or are generalized, which cannot meet the overall needs of intelligent adaptation learning. Second, ethics and values cannot be judged. Chat GPT randomly uses the learning resources in the database and infringes intellectual property rights, resulting in students being inadvertently convicted of academic misconduct. At the same time, in the answers to some questions, there is a tendency to be radical or overly liberal, which leads to a tendency for students to have a correct and incorrect learning attitude. Third, the algorithm mechanism has limitations. Chat GPT mainly relies on learners to input keywords to match, so the quality of the learning content provided intelligently is directly linked to accuracy and the learner's information literacy. Still, the algorithm can only be further assisted, and the generative learning content needs to be carefully screened. The quality and cost of the data algorithm are extremely high. The algorithm model used in intelligent adaptation learning requires a large amount of individual data training to achieve the ideal utility. If the data is insufficient or the data quality is not good, it will affect the prediction accuracy and reliability of the model [12]. In the process of intelligent adaptation learning, it is necessary to carry out repeated probability reasoning of learner data, and a variety of data models are used to meet learning functions. A large number of information flow screening and the accuracy of language descriptions affect the effective provision of learning strategies and increase the complexity and use of intelligent systems cost [13]. The core of the generation comes from element reorganization and optimization, which cannot provide a new solution from nothing, and it is impossible to evaluate the impact and consequences of the solution. Fourth, there is a lack of community construction. Although college students are accompanied by machine intelligence in

using chat GPT for intelligent adaptation learning, they lack peer reference with the same goal and easily tend to lose role model goal motivation and fall into the loss of high pay and low return, reducing evaluation accuracy.

3.2.2 Insufficient information literacy of students

Intelligent adaptation learning is by no means learning under the leadership of artificial intelligence but is essentially a kind of human-computer interaction. The use of intelligence to adapt to learning mode in higher education needs to consider the psychological factors of learners. First, the lack of peer effect in the process of single human-computer interaction learning makes it easy to cause lonely and sensitive psychological problems for learners. At the same time, it is easy to lose the motivation of role models, easy to fall into learning and helplessness, and it is difficult to persist in learning. Second, the intelligent adaptation of generative artificial intelligence is essentially a kind of independent learning, and the learning effect greatly depends on the learner's self-learning ability.

For example, the study found that learners can use Chat GPT to generate homework content and constantly improve it according to detailed requirements to achieve the effect of being false and real. Once students benefit from it, they are likely to have a sense of dependence and even indulge in it [2]. In the era of big data, college students' information literacy lacks specialization and conscious cultivation. First of all, learners face a lack of basic knowledge. Some students have not used it at all and do not understand the use method, form, function, etc. Thirdly, college students lack critical thinking to identify effective answers, provide accurate requirements descriptions, and understand the boundaries of artificial intelligence systems and the extent to which they can be trusted. Then, college students have a weak sense of morality and unethical use, such as stealing personal data or spreading inappropriate information and abusing it. Finally, college students lack self-thinking ability. Due to the convenient and tired learning mentality, they directly rely on chatGPT to complete their studies with no problem awareness and thinking ability.

3.2.3 Lack of environmental support

First of all, the school lacks relevant application guidelines. Students' contact and use are self-study or mutual assistance to students. There is no accurate and universal introductory guide to help students quickly master the use of generative AI tools. Secondly, the school does not have special consulting services for AI literacy or teaching codes of conduct, such as teaching chat groups and personalized consultation mailboxes [14]. Again, there are no general courses or lectures or training, and only natural science majors such as information technology have corresponding learning settings.

4. Suggestion

4.1. Internal Promotion

Learners should improve digital information literacy and practical application ability as soon as possible. As Digital Natives, college students are too dependent on artificial intelligence and need to improve their ability to critically evaluate information, use, and interpret information. Artificial intelligence is always in a service position in intelligent adaptation learning, so college students should promote critical thinking and solve complex problems and other capabilities [15].

First, college students should strengthen their ability to use learning resources, find the most convenient retrieval channels, use their standards to maximize the use of digital resources, timely adjust the retrieval method according to the change in information structure, and form a unique retrieval strategy. Second, student needs to improve their proficiency in intelligent adaptation learning, master the basic use methods, respect the rule of law and ethics in a digital society, as well as the thinking ability to deal with problems related to a digital bad environment. Fourth, the goal of intelligent adaptation learning is not simply "tooled operation skills" but requires college students to develop towards a comprehensive direction with digital research and innovation ability. There is an urgent need for college students to develop the ability to discern, question, and judge information,

distinguish between facts and opinions, and avoid making over-inferential opinions. At the same time, college students should establish a sense of diversity, through learning to understand, construct their knowledge system, form an internalized comprehensive quality, and become a pioneer in leading the digital age [15].

4.2. External Promotion

First of all, colleges and universities conduct artificial intelligence audits to ensure that they meet ethical and legal requirements, comply with their policies and guidelines, and ensure the transparency and responsibility of the intelligent adaptation learning system [16]. Secondly, special courses are set up to provide relevant artificial intelligence systems, so that students can use independent learning, observe the results, and carry out batches one by one. At the same time, colleges and universities should make full use of the time outside the classroom to organize college students to carry out a variety of practical activities and cooperate with social resources such as intelligence companies, so that students can understand the composition of the intelligent adaptation learning system and the effective way to carry out. In terms of hardware, the construction of smart classrooms is a hardware combination supplemented by functional laboratories such as blue box virtual studio, virtual simulation laboratory, and intelligent language laboratory to provide support for the development of class-based intelligent adaptation learning. In terms of software, it provides diversified designs according to different learning needs, provides different versions for different majors, grades, and the needs of men and women, and forms an all-weather "teaching assistant" for teaching, practice, testing, evaluation, and management. In addition, multiple data models are developed, and deep learning algorithms, social network algorithms, and Transformer models are appropriately applied to the actual situation to improve the learning space of community-based intelligence. College students can effectively alleviate learning loneliness and improve learners' learning motivation and interest in learning with the help of community-based teacher-student interaction, Q&A feedback, smart partners, learning teams, and competitions [17].

5. Conclusion

In the digital era, intelligent adaptation learning will be the main learning mode in the future. On the one hand, Chat GPT has incomparable advantages of adaptive learning such as knowledge map construction, accurate content provision, personalized learning path, and dynamic evaluation improvement. On the other hand, intelligent adaptation learning can efficiently help the integration and development of higher education and artificial intelligence technology, use intelligent technology to support the innovation of the talent training model, shape the new ecology of "intelligent +" higher education, and promote the construction of digital education intelligent model. In the process of exploration, people inevitably encounter students' lack of literacy, lack of environmental support, and the lack of artificial intelligence system represented by chat GPT, especially the logical problems of community and materials, which seriously hinder the development of intelligent adaptation learning of college students. However, in the era of exponential development of machine intelligence, with the further innovation of artificial intelligence technology, the improvement of information literacy of college students, and the strong support of the bad environment of colleges and universities, intelligent adaptation learning can certainly create a new future for the coordinated development of machine intelligence and group intelligence.

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