



Progress in the Application of Artificial Intelligence in Mental Health Education for College Students in Universities

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Abstract

The purpose of this paper is to explore how artificial intelligence technology can help mental health education in colleges and universities, analyse the progress of its application in personalised education, mental health monitoring and evaluation, ecological transient intervention, etc., and analyse its current situation, strengths, challenges, and future development direction.

1. Introduction

Based on the severity of college students' mental health problems and the rapid development of artificial intelligence technology, this paper aims to comprehensively explore the application progress of artificial intelligence technology in the mental health education of college students, and analyze its effect, efficiency and personalized education on students' mental health education. What is the purpose of the study? Why are you conducting the study? The main section of an article should start with an introductory section, which provides more details about the paper's purposes, motivation, research methods, and findings. The introduction should be relatively nontechnical, yet clear enough for an informed reader to understand the manuscript's contribution. Data analysis and model construction were used for the research.

1.1 Literature Review

Overview of Artificial Intelligence Technology

Artificial intelligence technology simulates intelligent behaviours such as human perception, thinking, learning and action through computer programs and algorithms in order to achieve automation, intelligence and efficiency. In the field of mental health education, artificial intelligence technology is mainly applied to big data analysis, emotional computing, machine learning and other aspects to provide technical support for personalised education.

Analysis of the current situation of college students' mental health education in colleges and universities

From the data, it can be concluded that the option 'happy' is the most common emotion with 56.52%, indicating that most people are still able to maintain a positive state of mind. Meanwhile, 'hopeful' also occupies 52.17%, showing that people are optimistic about the future. However, the high percentage of anxiety

(47.83%) and depression (43.48%) indicates that many people still face psychological pressure and emotional distress. Comparatively speaking, the proportion of hostility (17.39%) and other emotions (13.04%) is lower, showing that these emotions are less frequent in current life.

From the data, it can be concluded that academic, economic and employment problems are the main challenges faced by college students, each with a proportion of 52.17%. This indicates that most of the students are troubled by academic, economic pressure and future career development. Secondly, interpersonal relationship and relationship-related problems also occupy a certain proportion, with 39.13% and 34.78% respectively.

Application Scenarios of Artificial Intelligence in Mental Health Education for College Students in Colleges and Universities

Artificial intelligence technology can tailor-make a mental health guidance programme for each student based on the results of college students' psychological tests and browsing concerns about their interests and needs. By analysing students' learning data, the intelligent tutoring system is able to identify students' learning difficulties and needs, and provide targeted learning resources and suggestions to help students improve their mental quality and explore their mental potential.

Mental health monitoring and evaluation of college students based on artificial intelligence technology adopts multiple ways of collecting and comprehensively analysing students' psychological conditions, and uses multi-dimensional indicators for mental health evaluation. This technology realises the transformation of mental health monitoring from static monitoring to dynamic management, and mental health evaluation from subjective evaluation to big data algorithms, improving the objectivity and accuracy of evaluation.

Ecological transient intervention is to provide psychological advice and counseling services for college students through intelligent dialogue in students' daily life and natural environment. Artificial intelligence technology can monitor the emotional changes of students in real time, discover the emotional fluctuations and abnormal performance of students in a timely manner, and provide real-time psychological help to students. For example, the algorithm provides students with different combinations of relaxation training forms according to the individual, helping students to relieve anxiety and stress.

Artificial intelligence technology can assist in replacing psychological counsellors and provide convenient psychological counselling and advisory services for college students. Guided self-help voice services, chatbots, empathic computers and other network-based consulting services are not restricted by time and place, and can provide 24-hour psychological counselling and guidance, increasing the chances of college students getting psychological help.

Artificial intelligence technology can more accurately assess students' psychological problems, and by processing a large amount of data from students' electronic health records, behavioural management datasets, wearable sensors, etc., it can formulate a psychological crisis risk prediction model to determine an individual's susceptibility to and risk of psychological disorders. In addition, AI can increase the timeliness of psychological crisis danger signal identification, quickly identify factor fluctuations affecting college students' mindsets, issue timely warnings, and provide targeted interventions for schools and parents.

Research and analysis of the effectiveness of the application of artificial intelligence mental health products and services

From the data, it can be seen that the mental health assessment system is the service with the highest usage rate, reaching 91.3%, indicating that the system is widely recognised and used among users. In contrast, the usage rates of Personalised Psychological Intervention Plan, Intelligent Psychological Counselling Robot, Virtual Reality Psychotherapy and other options are relatively low, all ranging from 17.39% to 13.04%.

The data shows that AI is most effective in 'mental health monitoring and assessment', with a proportion of 78.26%. This result shows that respondents generally believe that AI plays an important role in monitoring

and assessing mental health status, probably because AI can process large amounts of data and provide real-time feedback. Next, ‘personalised counselling and advice’ and ‘mental health crisis warning and intervention’ both tied for second place with 34.78%, showing respondents' recognition of AI in providing personalised support and timely intervention. This shows that AI can be used not only for monitoring in mental health education, but also in actual counselling and crisis management. ‘Assisting psychological teachers to provide accurate support’ ranks fourth with 30.43%, indicating that respondents believe that AI can help counsellors identify and meet students’ individual needs more effectively.

Advantages of Artificial Intelligence Technology in Mental Health Education for College Students in Universities

Artificial intelligence technology can accurately grasp the prevailing mental health problems and psychological needs of college student groups through big data analysis. On this basis, teachers can design and carry out more targeted mental health education activities to help students establish mental health awareness, increase mental health knowledge, and guide and ease mental confusion. In addition, the AI platform can also tailor-make mental health guidance programmes for each student according to the students' psychological test results and interests, so as to achieve personalised education.

Each student is a unique individual with different psychological needs and problems. Artificial intelligence technology can construct a personalised psychological portrait based on students' emotional data, psychological assessment results and consultation records, and provide students with customised psychological support programmes. This personalised service approach not only improves the efficiency of mental health education, but also promotes students' understanding and effective response to their own psychological problems.

Traditional mental health monitoring mainly relies on subjective and static data collection methods such as psychological scales and daily observation, making it difficult to dynamically understand students' psychological status. The college students’ mental health monitoring and evaluation system based on artificial intelligence technology is able to collect and comprehensively analyse students’ psychological status in multiple ways, and use multi-dimensional indicators for mental health evaluation. This not only realises the transformation of mental health monitoring from static monitoring to dynamic management, but also improves the timeliness and accuracy of psychological crisis early warning.

Artificial intelligence technology can assist in replacing psychological counsellors and provide convenient psychological counselling and guidance services for college students. Guided self-help voice services, chatbots, empathic computers, and other web-based counselling services are not limited by time and location, and can provide 24-hour psychological support for students. This not only increases the opportunities for college students to obtain psychological help, but also expands the scope of the target audience of the mental health system services.

Barriers to the Application of Artificial Intelligence Technology in College Students' Mental Health Education in Colleges and Universities

The application of artificial intelligence in mental health relies on a large amount of personal psychological data. However, there is a risk of privacy leakage and misuse in the collection, storage and processing of these data. Once the data is illegally accessed or misused, it will pose a serious threat to the personal privacy of university students. Therefore, how to ensure the privacy and security of the data has become an urgent problem to be solved in the application of AI in mental health.

Despite the achievements of AI in the field of mental health, its technology still has limitations. For example, current AI systems are difficult to fully understand and grasp complex human emotions and non-verbal information. In addition, the accuracy of the AI system's judgement is affected by a variety of factors such as data quality and algorithm design. These technical limitations may lead to unsatisfactory results of AI in mental health applications.

The application of AI in mental health also involves a series of ethical and moral issues. For example, can intelligent diagnosis completely replace the judgement of doctors? How is the attribution of responsibility defined when the wrong judgement or advice made by the AI system leads to inappropriate behaviour by the user? All these issues need to be thoroughly discussed and researched to ensure that the moral and ethical issues of AI applications are properly addressed.

Although AI systems are able to provide convenient psychological support services, the limitations of human-computer interaction remain an issue that cannot be ignored. The ability of human counsellors to provide effective psychological support relies heavily on the emotional connection they establish with their visitors. However, current AI systems struggle to fully mimic human emotional communication, which may lead to students feeling a lack of empathy and support when using AI systems for counselling.

With the widespread use of AI in the field of mental health, people have begun to worry that college students will become overly reliant on the technology and neglect real human emotional communication. In addition, there are concerns that AI technology may replace traditional mental health services, leading to fewer job opportunities for professional counsellors. These concerns reflect the possible social impacts and challenges of AI in mental health applications.

Future Prospects for the Application of Artificial Intelligence Technology in College Students' Mental Health Education in Colleges and Universities

The above data demonstrates the correlation between participants' gender and whether they have used or been exposed to AI-based mental health education services or products. According to the results of the Pearson correlation coefficient, the correlation coefficient between gender and exposure to AI-based mental health services was 0.30, indicating a moderate positive correlation. Specifically, the mean of participants' gender was 1.61 with a standard deviation of 0.50, while the mean of participants who had been exposed to AI-based mental health education services or products was 1.52 with a standard deviation of 0.51. This result suggests that gender may influence individuals' exposure to and use of AI-based mental health services to a certain extent. Notably, the results of the correlation analysis showed that the relationship between gender and the use of or exposure to AI mental health education services was statistically significant ($p < 0.05$), suggesting that gender may be an important factor influencing individuals' acceptance of these services. This finding provides a basis for subsequent research, suggesting that future research could further explore the specific manifestations of gender differences in mental health service use and their underlying mechanisms. Overall, the results of the data highlight the importance of gender in the use of mental health education services, suggesting that relevant organisations need to consider gender factors when promoting AI-based mental health services in order to improve the acceptance and effectiveness of the services.

Examples of Application of Artificial Intelligence Technology in Mental Health Education for College Students in Colleges and Universities

The system can automatically collect students' mental health-related data, such as questionnaire survey results, health application data and on-campus social media information, and intelligently analyse and evaluate them. Through predictive modelling, the system can identify high-risk students, provide early warning and send alerts to relevant teachers or mental health professionals. In addition, the system can provide students with personalised mental health support and interventions, such as psychological science, emotion regulation advice and relaxation training.

This is a digital mental education platform that integrates a psychological cloud platform, educational resources and service system. It relies on AI artificial intelligence technology and the power of psychology experts to provide one-stop mental health services for regional education, schools, families and society. Through intelligent analysis, real-time feedback and personalised intervention, the system is gradually becoming a powerful partner in guarding the growth of young people.

AI assistants such as ‘Little Assistant of the Mind’ can comprehensively analyse the psychological state of college students and provide them with targeted mental health advice. At the same time, these assistants can also interact with users and answer their psychological distress.

2. Research Methods

In this paper, we process and analyze the collected data through the data analysis tool. To evaluate the effect of AI technology in mental health education and explore its impact on students' mental health level. At the same time, according to the analysis results, we put forward targeted improvement suggestions and optimization scheme.

The methodology section typically has the following sub-sections:

- Sampling questionnaire inquiry
- Data collection
- Spss analytic technique

3. Result and Discussion

The application of artificial intelligence in the mental health education of college students in colleges and universities provides powerful support for personalised education, mental health monitoring and evaluation. This paper systematically discusses the progress of the application of AI technology in college students' mental health education, analyses its advantages and challenges, and puts forward the future outlook through Spss analysis. It is hoped that this paper can provide new ideas and methods for mental health education in colleges and universities, and promote the innovation and development of education.

4. Conclusions

The application of artificial intelligence in college students' mental health education not only brings revolutionary changes to the way of providing mental health services, but also provides important enlightenment for the development of mental health education in colleges and universities. In this study, the author believes that more attention should be paid to the development of mental health education scenarios, such as AI technology, such as intelligent dialogue system (chatbot) and virtual reality (VR), which can make mental health education in colleges and universities more interactive and interesting. By simulating scenarios, role-playing and other methods, students can learn how to deal with psychological stress and improve their self-cognition and problem-solving ability in a virtual environment. At the same time, the reuse of AI technology can help universities to collect and analyze a large amount of data on the effect of mental health education, so as to more accurately evaluate the effectiveness of different educational methods and tools, which is of great significance for the continuous optimization and improvement of mental health education strategies.

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