

Research on the Educational Path of College Students' Network Literacy in the Era of Artificial Intelligence

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Abstract: With the rapid advancement of artificial intelligence (AI), the network literacy education for college students is generally confronted with numerous dilemmas including information overload, rampant false information, internet addiction and privacy leakage. Against the backdrop of the AI era, this study thoroughly analyzes the existing problems, challenges and practical predicaments of college students' network literacy education. From the dimensions of innovating curriculum systems, strengthening practical education, improving teachers' professional competence and optimizing collaborative governance mechanisms, it explores a comprehensive and multi-layered educational path to cultivate college students' network literacy. This research aims to enhance college students' network literacy, advance online ideological and political education, facilitate their sound development amid the digital revolution, and provide theoretical support and practical references for network literacy education in colleges and universities.

Keywords: artificial intelligence; college students; network literacy; online ideological and political education

1. Introduction

The extensive application of artificial intelligence technologies, such as intelligent recommendation and intelligent control, has been deeply embedded in people's online lives, endowing information communication with new characteristics of intellectualization and diversification. In November 2017, the Central Committee of the Communist Party of China and the State Council jointly issued the Medium- and Long-Term Youth Development Plan (2016–2025), which clearly stipulated in the section of youth ideological morality: "Carry out extensive network literacy education among young people to guide them to access the internet scientifically, lawfully, civilly and rationally."^[1]

As the main participants of the internet, college students frequently use and engage with various AI applications. Their online information browsing, comment posting and other behaviors are profoundly influenced by artificial intelligence. Against such a background, network literacy education for college students has become an urgent task. It is imperative to guide students to correctly understand AI, standardize the application of AI technologies, and strengthen their capabilities to cope with the complicated online environment. Nevertheless, the new changes and trends brought by artificial intelligence have posed multiple challenges to traditional network literacy education models, which can no longer meet practical demands. Therefore, it is critical to explore innovative educational approaches.

2. Current Status of College Students' Network Literacy Education in the AI Era

2.1 Severe Privacy Security Risks and Weak Awareness of Protection

A prevalent issue among college students lies in their inadequate awareness of online privacy protection, rendering their personal information vulnerable to infringement. From the perspective of privacy threats, AI technologies have greatly expanded the channels for collecting and utilizing personal data. Within the current higher education system, network literacy education occupies a marginal position in university teaching, accompanied by rigid and outdated teaching methods, insufficiently professional teaching staff, and inadequate supervision over new media platforms. These drawbacks make network literacy education a weak link in college education.^[2]

While intelligent applications deliver convenient services, they often overreach to access sensitive user permissions including location data, contact lists and photo albums. However, most college students lack the awareness and capabilities to safeguard their privacy. When registering accounts or using mobile applications, they seldom read lengthy privacy policies and simply click "Agree" without recognizing the risks of personal information leakage, which may further be exploited for precision fraud. In addition, college students possess limited knowledge of basic cybersecurity precautions: many fail to update passwords regularly, conduct sensitive operations over public Wi-Fi or install anti-virus software.

2.2 Deficient Awareness of Online Morality and Laws

In terms of legal awareness, college students have a shallow understanding of internet-related laws and regulations. Many hold the misconception that cyberspace is a lawless zone where they can act arbitrarily without restraint. In terms of online morality, a portion of students engage in immoral online behaviors. Enabled by the anonymity of the internet, some release inappropriate remarks online, such as malicious personal attacks, rumor spreading and cyberbullying, without acknowledging the harm inflicted on others or the binding force of online ethics. Malicious comments and verbal abuse targeting individuals or incidents are commonplace on online

forums and social media platforms, with numerous college students among the perpetrators.

Furthermore, some students plagiarize others' works online, showing little respect for intellectual property rights. With the emergence of AI-generated content, an increasing number of students even utilize AI tools to complete papers and assignments, severely violating academic ethics.

2.3 Difficulties in Guiding Students' Online Behaviors

College students' online activities have become more diversified and personalized, which simultaneously creates obstacles to behavioral guidance.

On the one hand, AI recommendation algorithms easily trap students in "information cocoons". Online platforms analyze users' browsing records and preferences to push personalized content via AI algorithms. Though catering to personalized demands, this mechanism narrows students' access to diverse information and gradually limits their horizons. Long-term exposure to homogeneous information solidifies their thinking patterns, diminishes their tolerance for divergent viewpoints, and impairs the rationality and objectivity of their online behaviors.

On the other hand, internet addiction has become increasingly prevalent among college students, posing great challenges to behavioral intervention. The popularity of smartphones and mobile internet enables students to access the internet anytime and anywhere for gaming, chatting and video streaming. AI technologies further amplify the appeal of online content through intelligent game level design and auto-play video functions, which easily induce addiction. Internet addiction not only disrupts students' academic performance and daily life but also exerts severe adverse impacts on their physical and mental health. At present, universities and families lack professional intervention methods to help addicted students break free from over-reliance on the internet.

Moreover, college students' online behaviors are highly concealed and autonomous, creating hurdles for timely supervision and guidance. In cyberspace, students freely express opinions and participate in various online activities, most of which remain unseen by counselors and parents, thus delaying effective intervention. In addition, college students are in adolescence with strong rebellious tendencies, and tend to resist external supervision and guidance, further hindering the implementation of online behavioral education.

3. The Necessity of Strengthening College Students' Network Literacy Education in the AI Era

3.1 An Internal Requirement for Improving College Students' Comprehensive Quality

From the perspective of learning competence, intelligent information processing capabilities serve as the foundation for efficiently utilizing online learning resources and adapting to human-machine collaborative learning modes. Network literacy constitutes a core competitiveness for college students in the intelligent age. Only students equipped with competent intelligent information processing skills can make full use of online resources for autonomous learning and adapt to new human-machine collaborative learning models, thereby elevating their academic capabilities.

From the perspective of personality cultivation, online ethics and legal literacy act as the bottom line for students to maintain rationality and moral self-discipline in virtual spaces. Confronted with a virtual world flooded with counterfeit and false information, students with sound ethical awareness can consciously resist malicious image manipulation and cyberbullying, and uphold originality standards when creating content with AI tools. The improvement of college students' online ethics and legal literacy helps them maintain rationality and moral self-restraint in cyberspace, facilitates the formation of sound world outlook, outlook on life and values, and prevents unethical online behaviors.

3.2 A Contemporary Mission for Universities to Fulfill Educational Responsibilities

General Secretary Xi Jinping pointed out that "the fundamental task of education is fostering virtue through education, to cultivate all-round socialist builders and successors with sound moral, intellectual, physical, aesthetic and labor development." As core institutions for fulfilling this fundamental task, universities shoulder the responsibility of nurturing all-round socialist builders and successors. Cultivating "qualified citizens for the intelligent age" represents a new connotation of universities' mission of fostering virtue through education, among which network literacy education occupies a pivotal position.

As the backbone of future social development, college students' network literacy level directly affects the governance of cyberspace, and bears relevance to national digital economic development and social stability. As prospective builders of the digital economy and participants in cyberspace governance, students proficient in AI innovation while abiding by data security and privacy protection principles will inject vitality into the sound development of the digital economy. Conversely, those lacking respect for public online order may become rumor spreaders, victims of algorithmic abuse, and even trigger social unrest.

3.3 Practical Demand for Coping with Risks Brought by Artificial Intelligence Technologies

In recent years, numerous AI fraud cases targeting college students have occurred on university campuses. AI fraud tactics against students have become precise and covert, mainly including AI voice imitation and fake identity forgery. Fraudsters replicate the voices of parents and teachers via AI voice imitation to defraud students under the pretext of emergencies; deepfake technology fabricates identity information for financial fraud or reputational infringement; algorithmic recommendation may push harmful content, luring students into online lending and irrational consumption traps. These incidents not only cause direct economic losses for college students but also severely damage their mental health.

Therefore, strengthening network literacy education serves as a fundamental initiative to help students fend off online risks

in the intelligent age. It enables students to establish a complete cognitive system covering risk identification, response and prevention, master common AI fraud techniques, and maintain composure when encountering fraud. Meanwhile, it raises students' vigilance against instrumental rationality of technology, discouraging them from misusing AI tools to infringe others' rights. Students with adequate network literacy can avoid risks through multi-channel verification and refusing instant money transfers.

4. Exploration of Educational Paths for College Students' Network Literacy in the AI Era

4.1 Innovate the Curriculum System by Integrating Artificial Intelligence and Network Literacy Content

Curriculum systems function as the core carrier of university teaching, and innovating curriculum frameworks is the key to improving college students' network literacy. In the AI era, universities shall organically integrate AI knowledge and network literacy content to construct scientific and rational curriculum systems.

First, launch specialized courses integrating artificial intelligence and network literacy. Such courses shall systematically elaborate the basic principles, development history and online applications of artificial intelligence, while thoroughly analyzing core network literacy modules including information screening, cybersecurity protection and online ethics. For instance, case studies in class can illustrate how AI algorithms shape information recommendation, guide students to understand the formation mechanism of information cocoons, and cultivate their ability to proactively expand information sources and judge online information critically.

Second, embed network literacy education into professional courses. Different majors maintain distinct intersections with the internet, so universities shall integrate targeted network literacy content according to disciplinary characteristics. For computer majors, network security programming knowledge can be added to coding courses to teach students technical methods for defending against cyberattacks. For journalism and communication majors, news writing courses shall emphasize the verification of online information authenticity to cultivate professional online ethics.

Third, introduce open online courses and micro-lessons. Leverage artificial intelligence to build online learning platforms that push personalized network literacy learning materials based on students' learning progress and interests. Micro-lessons feature short duration and targeted themes, suitable for fragmented learning. Short courses covering AI-generated content identification and rumor discrimination can effectively boost learning efficiency.

4.2 Improve the Collaborative Mechanism to Build a Multi-stakeholder Educational Ecosystem for Network Literacy

Network literacy education is not solely the responsibility of universities, but requires joint participation from the government, schools, families and society to establish a sound collaborative mechanism.

The government shall play a leading role by issuing relevant policies and regulations to provide institutional guarantees for university network literacy education. It shall increase financial investment to support related research and teaching activities, strengthen supervision over the online environment, crack down on cybercrimes, and foster a healthy digital ecosystem.

As the main venue for network literacy education, universities shall reinforce internal inter-departmental collaboration. Academic affairs offices, student affairs departments and youth league committees shall cooperate closely to incorporate network literacy education into talent training programs and implement it throughout students' undergraduate studies. For example, academic affairs offices can design curricula and arrange teaching schedules, while student affairs departments and youth league committees can organize thematic activities such as debates and knowledge contests to boost student engagement.

Families also play a vital role in network literacy cultivation. Parents shall strengthen communication with their children to understand their online behaviors, guide them to view the internet rationally, and cultivate healthy internet usage habits. Universities can initiate discussions on trending online topics via campus forums and new media matrices, enabling students to examine online information rationally and participate in online public affairs in an orderly manner.^[3] Meanwhile, parents shall standardize their own online behaviors to set positive examples for young people.

All sectors of society should participate in network literacy education. Internet enterprises can develop educational products tailored for college students such as online learning platforms and educational mobile applications to enrich learning resources. Social organizations can launch public welfare campaigns to raise college students' awareness of network literacy.

4.3 Strengthen Practical Education to Improve Students' Capabilities to Address Online Issues in the AI Era

Practice is the sole criterion for testing truth, as well as a critical channel to enhance college students' network literacy. Serving as a core approach to advancing ideological and political education and network literacy cultivation, practical education requires universities to integrate on-campus and off-campus resources and build a diversified practical platform

combining online and offline, on-campus and off-campus activities.^[4]

Universities shall prioritize practical education and provide abundant hands-on opportunities for students to strengthen their capabilities to tackle online challenges in the AI age. First, establish practical platforms for network literacy. Universities can cooperate with internet enterprises and research institutions to build practical bases, providing students with authentic online environments and practical projects. Students can participate in cybersecurity attack-defense drills and AI-generated content detection projects to master professional skills and improve their ability to address online risks.

Second, organize diverse practical activities related to network literacy. Universities can launch online volunteer services such as assisting community residents with internet access and disseminating cybersecurity knowledge, allowing students to elevate their network literacy while serving the public. In addition, host online innovation competitions and incubate internet entrepreneurship projects to stimulate students' innovative awareness and practical capabilities, and cultivate their competence to solve real-world problems via the internet.

Third, encourage students to participate in research projects. Universities can guide undergraduates to join faculty research projects concerning network literacy, enabling them to gain in-depth insights into cutting-edge trends and issues in cyberspace, and enhance their research and innovation capabilities. Research participation also equips students with systematic strategies to cope with complex online challenges.

5. Conclusion

Against the backdrop of artificial intelligence, network literacy education for college students faces unprecedented challenges as well as new development opportunities. Universities can effectively elevate college students' network literacy through four measures: innovating curriculum systems to deeply integrate AI knowledge and network literacy education, strengthening practical education to improve students' problem-solving capacities in real scenarios, developing professional teaching teams proficient in both AI technology and network literacy instruction, and optimizing multi-stakeholder collaborative mechanisms to build an all-round educational ecosystem covering families, society and industries. These measures enable college students to master information identification, privacy protection and rational critical thinking skills amid the complex online environment of the AI era, and grow into high-quality talents adapted to the demands of digital development.

As artificial intelligence technologies continue to iterate, research on college students' network literacy will remain a lasting focus. Universities shall continuously optimize educational approaches, advance network literacy education for college students, and safeguard their sound growth.

6. References

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