The Influence of Social Capabilities on Artificial Intelligence Knowledge Media Literacy: A Case Study of ChatGPT (Postprint)

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Date: 2023-07-23T00:00:00+00:00

Abstract

From the perspective of media literacy, this article explores the reasons behind the phenomenon of "the more socially competent people are, the more and sooner they know about AI knowledge and ChatGPT". This study adopts the research method of questionnaire survey and in-depth interview method, and uses innovation diffusion theory and intermediary factors theory to conduct theoretical studies. This article will discuss the relationship between the audience's social ability and the degree of mastery of artificial intelligence and skills .

Full Text

Preamble

The Influence of Social Capabilities on Artificial Intelligence Knowledge Media Literacy: A Case Study of ChatGPT

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Abstract: From the perspective of media literacy, this article explores the phenomenon wherein individuals with stronger social capabilities tend to acquire AI knowledge and awareness of ChatGPT earlier and more extensively. This study employs questionnaire surveys and in-depth interviews, grounded in innovation diffusion theory and intermediary factors theory, to investigate the relationship between audience social ability and the degree of mastery of artificial intelligence knowledge and skills.

Keywords: social ability; media literacy; ChatGPT; artificial intelligence; innovation diffusion theory; intermediary factors theory

1.1 Background Introduction

At the end of November 2022, OpenAI launched ChatGPT, a new conversational AI model that quickly attracted widespread attention across society. As social interactions become increasingly digitalized and virtualized, and the boundaries between humans and machines blur, virtual social exchanges, participation, and human-machine cooperation have gradually enriched the dimensions of media literacy. Consequently, the ability to comprehend social hotspots through digital media has become a key metric for evaluating user media literacy, with social communication emerging as an effective means to enhance it. We have observed that many users have not personally used ChatGPT but have gained substantial understanding of it through media information. Notably, more socially active users tend to learn about ChatGPT earlier and possess better knowledge of AI and ChatGPT overall. This raises an important question: what underlying mechanisms drive the phenomenon that "more socially competent individuals know more about AI and ChatGPT, and know it earlier"?

2.1 Literature Review of ChatGPT's Extensive Attention Phenomenon

The profound social impact of ChatGPT (Generative Pre-trained Transformer) has been studied from various perspectives, including communication and media studies. For instance, foreign scholars Debby R. E. Cotton, Peter A. Cotton, and J. Reuben Shipway, in their 2023 work "Chatting and Cheating: Ensuring Academic Integrity in the Era of ChatGPT," caution users to remain vigilant about the credibility of GPT-generated responses, particularly in educational and research contexts where academic integrity should be prioritized. Domestic scholars Wang Jianlei and Cao Huimeng, in their analysis of ChatGPT's communication characteristics, logic, and paradigm shifts, challenge traditional research paradigms of "subject-object dualism" and "interpretive empiricism" to reconstruct ChatGPT's value as a new communication medium. In "Contingency Rate Database: ChatGPT as a New Medium of Knowledge," Zhou Baohua examines the knowledge-mediated nature of ChatGPT, arguing that it represents the latest stage in the evolution of contingency rate databases. However, most current academic research focuses on exploring ChatGPT's media nature, communication significance, or its societal and user impacts, while lacking investigation into the relationship between user media literacy and their understanding and adoption of ChatGPT.

2.2 Literature Review of Media Literacy Theory

Research on media literacy emerged internationally in the 1930s. British scholars F.R. Leavis and Dennis Thompson first proposed media literacy education in their 1933 publication *Culture and Environment: The Training of Critical Awareness*. In Neil Postman's 1985 *Amusing Ourselves to Death*, the purpose of cultivating media literacy is described as demystifying media and enabling stu-

dents to interpret symbolic meanings within media content. American scholar Wally Bowen, in his 2000 book *Watch IT: The Risks and Promises of Information Technologies for Education*, argues that media literacy education contributes to developing citizens' capacity to better navigate media culture. Media literacy education has become a focal point of international research and has been integrated into formal education systems in the UK, France, and the US.

Chinese media literacy research developed in the late 1990s. Bu Wei's 1997 paper represents one of the earliest contributions in China, exploring the core content, feasible methods, and significance of implementing media education domestically. Lin Xiaohua's 2009 survey on the media cultivation of ethnic minority farmers found a close connection between media literacy and regional economic development. Cai Qi and Li Ling emphasized in their 2013 work "New Media Literacy in the Era of Information Overload" that traditional media literacy education should transition to new media literacy education to cultivate abilities in filtering and integrating information. In summary, domestic research either provides comprehensive overviews of media literacy and education, such as tracing its developmental trajectory, or investigates the media literacy of different groups across various media environments. However, these studies do not address the relationship between social ability and media literacy.

2.3 Raising Questions

Therefore, from the perspective of media literacy, this article seeks to answer: what are the underlying reasons for the phenomenon that "more socially competent individuals know more about AI knowledge and ChatGPT, and know it earlier"?

3. Research Method

This study employs questionnaire surveys and in-depth interviews to address the aforementioned questions.

3.1.1 Hypothesis Establishment

Based on the research questions, the following hypotheses are proposed:

H1: Social ability is positively related to the degree of understanding of artificial intelligence knowledge.
H2: Social ability is significantly correlated with the timing of awareness about ChatGPT.
H3: Social ability is positively related to knowledge of ChatGPT.

To test these hypotheses, this study developed and administered a questionnaire survey. Data collection, sorting, and analysis were completed on April 27, 2023. The survey included both open-ended and closed-ended questions covering: (1) basic demographic information (age, gender, education level, employment status, place of residence, income); (2) independent variable: social

ability assessment; and (3) dependent variables: audience knowledge about AI and ChatGPT, and timing of awareness. The questionnaire comprised 28 single-choice items and was distributed through both online (WeChat friend circles, Questionnaire Star) and offline channels.

3.1.2 Sample Feature Description

Approximately 60% of the sample were female, 40.16% male, and 0.39% identified as other. In terms of education, most respondents held "college or undergraduate" degrees (151 individuals, 59.45%). Age distribution showed that 35.83% were aged 18-25, while those under 18 and over 60 accounted for 0.79% and 1.57% respectively. Regarding employment status, the majority were either "students" (88) or "working" (133).

3.2.1 Interview Outline

Interview questions were divided into two main parts. The first part covered basic respondent information, including age, occupation, education level, and geographic area. The second part explored social capabilities and channels for acquiring AI and ChatGPT knowledge. During the interview process, researchers adhered to the four ethical principles emphasized by scholar Alan Bryman: (1) avoiding harm to participants; (2) obtaining informed consent; (3) respecting participant privacy; and (4) avoiding deception. Participants could remain silent or withdraw at any time if they felt uncomfortable or dissatisfied. Interview materials that respondents declared unwilling to disclose were excluded from the study.

3.2.2 Selection of Interviewees

This study conducted ten-minute semi-structured depth interviews with nine individuals possessing varying social capabilities. Interviews were conducted in April 2023, beginning with classmates, family, and friends, with additional samples recruited online. Following the maximum variation sampling principle in qualitative research, data collection ceased when the ninth participant was interviewed, as the content was deemed sufficient to answer the research questions. Respondents varied in age, occupation, education level, and region, ensuring low homogeneity. During these interviews, we were surprised to find that more socially competent individuals indeed possessed greater AI knowledge, learned about ChatGPT earlier, and had more comprehensive understanding of it—confirming our initial hypotheses. Interviews were conducted via telephone, WeChat text, and one-on-one face-to-face sessions, resulting in 3,969 words of transcribed material processed by Cui Mingyue. Respondent basic information is shown in .

Table 1: Basic Information of Respondents

Respondents | Profession | Education Level | Region
—|—|—|—

S1 | Student | Bachelor | Guizhou
S2 | Worker | Junior College | Sichuan
S3 | Student | Bachelor | Sichuan
S4 | Student | PhD | Beijing
S5 | Teacher | College | Heilongjiang
S6 | Student | Bachelor | Zhejiang
S7 | Student | Bachelor | Tianjin
S8 | Retiree | Primary School | Sichuan
S9 | Student | Bachelor | Tianjin

4. Results and Discussion

4.1 The Strength of Social Ability Affects People's Understanding of Artificial Intelligence Knowledge

From a communication perspective, audiences with strong social abilities can better utilize social networks and communication channels to obtain trending information and knowledge. This study first conducted a Pearson correlation analysis, finding that social capabilities were positively related to the degree of understanding of artificial intelligence knowledge, with a correlation coefficient of 0.292. Regression analysis further revealed a significant linear relationship, with a regression coefficient of 0.016 ($p < 0.001$). This demonstrates that, generally, stronger social ability correlates with greater AI knowledge.

Such audiences can build broader and closer social relationship networks through communication and interaction, thereby more easily acquiring and disseminating AI knowledge. Additionally, they typically possess stronger information screening and evaluation capabilities, enabling them to better judge information reliability and value, thus gaining valuable AI knowledge more quickly. Furthermore, they can spread acquired AI knowledge to others through social media, blogs, forums, and other channels. Audiences with strong social capabilities also tend to have better persuasive ability and influence, enabling them to shape and guide others' cognition and behavior, thereby promoting the spread of AI knowledge. In essence, audiences with strong social capabilities possess greater ability and advantages in acquiring and disseminating AI knowledge, allowing them to understand and apply AI technology more deeply.

4.2 The Strength of User Social Ability is Directly Proportional to the Timing of ChatGPT Awareness

The more socially capable individuals are, the earlier they learn about ChatGPT. Audiences with strong social ability can receive and spread information faster and more extensively. Pearson correlation analysis revealed a correlation coefficient of 0.317 between social ability and timing of ChatGPT awareness. Regression analysis showed a significant linear relationship, with a regression coefficient of 0.015 ($p < 0.001$). Such audiences typically maintain broader social networks that provide access to information through social media, gather-

ings, and other social occasions. Additionally, they establish closer interpersonal relationships that may provide faster opportunities to learn about ChatGPT-related knowledge. In this context, social capabilities help people acquire the latest knowledge and information more rapidly, enhancing the spread of ChatGPT knowledge.

4.3 The Strength of User Social Ability is Closely Related to People's Understanding of ChatGPT

The stronger one's social ability, the more one knows about ChatGPT. Pearson correlation analysis showed a positive relationship between social capabilities and ChatGPT knowledge, with a correlation coefficient of 0.244. Regression analysis revealed a significant linear relationship, with a regression coefficient of 0.011 ($p < 0.001$). From a communication perspective, human social networks constitute one of the most important media for information transmission and dissemination. More socially competent audiences are more likely to possess broader and deeper social networks, meaning greater opportunities to encounter new information and news. Simultaneously, new information disseminates more extensively through these networks. Stronger social ability increases opportunities to understand new information and to spread it to wider social networks. In other words, stronger social ability facilitates easier access to ChatGPT-related information, and audiences share new information within social networks to help others understand ChatGPT. This explains why individuals with stronger social ability are more likely to know about ChatGPT.

Overall, correlation analysis investigated the relationships between social skills and three variables: AI knowledge, timing of ChatGPT awareness, and ChatGPT knowledge, using Pearson correlation coefficients to indicate strength. The results show significant positive correlations with coefficients of 0.292, 0.317, and 0.244 respectively. Regression analysis examined causal relationships between social capabilities and these three variables, revealing significant linear correlations with regression coefficients of 0.016, 0.015, and 0.011 respectively. The regression models are established, confirming causal relationships and supporting research hypotheses H1, H2, and H3.

4.4 The Characteristics of the Audience are Closely Related to the Effect of Technological Innovation Diffusion

Rogers defines innovation as "a new concept, practice, or thing perceived by individuals or other adopting units," and innovation diffusion as "a basic social process in which information about a new thing spreads through a social construction process, and the significance of its innovation gradually emerges" (Rogers, 2003). In simple terms, innovation achieves its meaning through the process of spreading. ChatGPT represents not only a technological breakthrough but also spreads globally as a technical phenomenon, reaching 100 million monthly active users in approximately two months—the fastest growth for any consumer application. Therefore, ChatGPT has achieved broad and profound societal im-

pact. However, innovation diffusion depends not only on the innovation itself but also on communication methods. The diffusion process is essentially one in which new ideas and things spread through interpersonal communication and information sharing, with both mass media and interpersonal communication affecting the diffusion process. Simultaneously, as information recipients, audience characteristics also influence diffusion effects. Interview materials can be analyzed from three perspectives: interpersonal communication, mass media communication, and audience nature.

4.4.1 Interpersonal Communication Affects the Spread of New Technologies This study found that interpersonal communication serves as an important channel for spreading AI and ChatGPT knowledge. As one respondent noted: "My roommate majors in computer information and often discusses these topics. Through our dormitory conversations, I actively learn a lot of knowledge" (S1). Another stated: "Friends around me frequently talk about these topics. To share common ground with them, I also go online to learn about this" (S4). A third explained: "I collect many trending topics to use as classroom explanations. Students also introduce new technologies before giving presentations in class" (S5).

A key motivation for interpersonal communication is establishing social collaborative relationships with others. Relationships such as friendships and teacher-student bonds require continuous interpersonal communication to build and consolidate. In interpersonal dissemination, people often selectively expose themselves to useful or interesting information to improve communication efficiency. The selective exposure mechanism—comprising selective attention, selective understanding, and selective memory—represents one of the "mediating factors" governing media communication effectiveness (Katz & Lazarsfeld, 2005). Stronger social ability increases the likelihood of selectively understanding hot information for communication needs, thereby intentionally or unintentionally acquiring relevant AI and ChatGPT knowledge.

4.4.2 New Media Users Access ChatGPT More Easily Than Traditional Media Users "The new communication technology has become an important factor in understanding how individuals and society use media and are affected by it" (Duan, 2020). Media possess inherent characteristics, and different information dissemination channels produce varying effects. As respondents reported: "I like browsing Weibo, friend circles, and Xiaohongshu, and I especially love commenting" (S1). "I generally watch Douyin and mobile news" (S2). "Friends share screenshots of their chats with ChatGPT in their friend circles" (S3). "I watch TV news" (S6).

As the communication environment evolves, audiences continuously increase their societal understanding through various media. Audiences with stronger social capabilities frequently expose themselves to new social hotspots through diverse platforms such as Weibo, WeChat, and Xiaohongshu, or through TV

news. Greater exposure to social hotspots across various fields increases the likelihood of encountering AI knowledge—a currently trending domain. Meanwhile, the rapid development of communication media has made new mass communication channels more extensive, faster, more continuous, and more open than traditional media. Therefore, users who learn about social hotspots through new mass communication media generally acquire AI knowledge and learn about ChatGPT earlier than those relying on traditional old media.

4.4.3 Specific Audience Characteristics Affect the Spread of New Technologies and Information Audiences as individuals exhibit significant differences in ideology, literacy levels, and interests, resulting in varied information reception. Based on attention levels and content scope, audiences can be divided into general and specialized audiences. Compared to general audiences, specialized audiences have higher requirements when receiving messages. For example, S9, despite lacking strong social skills, possesses extensive AI and ChatGPT knowledge, which is inextricably linked to their engineering study background. Such audiences participate in specific communication activities with greater purpose and utilitarianism, meaning social ability does not decisively impact their acceptance of AI and ChatGPT knowledge.

As respondents explained: "I don't enjoy socializing, whether online or offline… I usually love reading various academic papers in my spare time. As long as I can understand them, regardless of the field, I read them to gain understanding. This habit is very helpful for understanding cutting-edge and professional knowledge across disciplines" (S7). "I like watching TV news, but I don't know much about my mobile phone… I don't read [online content], I don't understand it" (S8). "I usually don't like socializing and don't have many WeChat friends… I learn more through classrooms and academic papers because I major in engineering" (S9).

Based on media content reception habits and frequency, audiences can be divided into basic and potential audiences. For instance, S7 has become a loyal, stable audience for cutting-edge and specialized knowledge across disciplines—a basic audience frequently exposed to such content—while simultaneously being a potential audience for AI and ChatGPT knowledge with latent interest. S7 accesses trending information by reading papers on the CNKI platform, an informatization project aimed at realizing knowledge resource communication and sharing for societal value-added utilization, with data sources from publicly issued newspapers. Although S7 lacks strong social capabilities and rarely uses social platforms, they can access trending information through professional information platforms. However, compared to new mass communication media, information from traditional media such as newspapers and magazines is relatively delayed.

Given audiences' inherent diversity, we must analyze specific situations during information dissemination, paying attention to particular audience characteristics and selecting appropriate communication strategies. In the new media

environment, we need to focus more on cultivating and improving media literacy among children, adolescents, and the elderly. For example, S8, an elderly respondent, relies on traditional media, experiences discomfort with new media, and has insufficient acceptance capacity. Moreover, educational level has become a constraint for elderly audiences in accepting new technologies. Therefore, we must make traditional media more timely and effective in spreading trending information while lowering the comprehension threshold for new media content to help elderly audiences better understand trending information despite limited literacy levels.

5. Conclusion and Reflection

This study investigated the influence of social ability on AI knowledge media literacy through questionnaire surveys and in-depth interviews, grounded in innovation diffusion theory. The findings demonstrate that stronger audience social competence correlates with greater AI knowledge, earlier awareness of ChatGPT, and more comprehensive understanding of ChatGPT.

This study raises the issue of audience AI knowledge media literacy, reflecting on AI development in media-based society, which presents both significant benefits and potential risks. As AI technology continues to evolve, chatbots have become more convenient and intelligent information tools, with ChatGPT being among the most popular. In social network and digital media environments, ChatGPT is increasingly used as an important tool for daily communication and information acquisition. In this context, ChatGPT's influence on social ability and media literacy has become a focal point of attention.

First, ChatGPT helps improve people's social capabilities. On social media platforms, ChatGPT can assist audiences with Q&A and knowledge categorization, increasing the convenience of social interaction. This process also helps improve audiences' communication, expression, and interpersonal skills. Second, ChatGPT enhances audience media literacy. In modern information society, media literacy has become a necessary competency. By using ChatGPT, people can better understand and apply media technology while more clearly evaluating media information, thereby improving their media literacy. Moreover, improved social ability and media literacy positively impact ChatGPT usage, enabling audiences to use ChatGPT more effectively and adapt better to digital media environments.

However, concerns remain regarding the digital divide and data monopoly. In digitally mediated environments, information and resource inequalities can occur between different social classes and groups. Individuals lacking technical medium capabilities may face marginalization, creating obstacles to improving their social ability and media literacy. Additionally, those with weak social capabilities may not fully utilize ChatGPT's assistance due to delayed awareness of technical mediums, affecting their social ability and media literacy levels.

Addressing these issues requires appropriate solutions. First, regarding the dig-

ital divide, we must promote the popularization of digital media technology and knowledge while strengthening citizens' digital literacy cultivation. Society should provide greater attention and support to disadvantaged groups in media technology popularization and application. Second, concerning data monopoly, relevant government departments should recognize its disadvantages and implement regulations in ChatGPT usage. Only through reasonable ChatGPT usage, strengthened supervision, and ensured user rights and data security can we better leverage ChatGPT's role in media society.

In conclusion, social capabilities and media literacy significantly impact ChatGPT usage and application, and their interrelationship requires deeper study and exploration. We must improve social ability and media literacy levels, support vulnerable groups, strengthen social interactions, and enhance overall societal media literacy. Simultaneously, we must strengthen norms and supervision of AI technology to better apply and develop digital media technology. However, this study has limitations in sample size and selection. Future media literacy research should pay greater attention to audience AI knowledge media literacy phenomena and expand investigation into how social competence influences AI knowledge media literacy.

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Note: Figure translations are in progress. See original paper for figures.