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A Study on the Impact of Parental Mediation of Online Activities on Digital Literacy among Rural Adolescents

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Abstract: *To investigate the relationship between parental mediation of online activities and digital literacy among rural adolescents, this study used convenience cluster sampling to select 440 rural junior high school students in Guangxi as the sample and collected data via a questionnaire survey. Results showed that rural adolescents' overall digital literacy is slightly above average. Among dimensions, digital social responsibility scored highest and digital awareness was relatively weak. Overall, rural parental internet use interventions are also slightly above average, with restriction - based interventions most common and monitoring - based least used. There are significant positive correlations between parental companionship, parental initiative help, parental constraints and rural adolescents' digital literacy. This study's findings offer guidance for rural parents on online interventions, schools on digital literacy education, and relevant authorities on policy - making.*

Keywords: *Parental mediation of online activities; Digital Literacy; Rural adolescents*

1. Introduction

Digital technology is profoundly reshaping the social landscape. To better adapt to and shape the future, enhancing young people's digital literacy has become an essential prerequisite for them to successfully navigate society and achieve personal growth. As of June 2025, the number of young internet users in China stood at approximately 210 million. Internet penetration among minors has nearly reached saturation, and the trend of younger children going online is becoming increasingly pronounced[1]. Digital literacy is a key competency for addressing the various challenges of a digital society. As future participants and builders of the digital society, rural youth should also possess a high level of digital literacy. Therefore, researching and enhancing the digital literacy of rural youth is of great significance.

UNESCO's Global Framework for Digital Literacy encompasses seven domains of digital competence: operational, informational, communicative, content creation, safety, problem-solving, and career-related. The framework emphasizes the role of digital literacy in daily life and its transferability to the professional sphere. In its "Action Plan for Enhancing Digital Literacy and Skills for All," China defines digital literacy and skills as "a set of qualities and abilities—including digital access, creation, use, evaluation, interaction, sharing, innovation, security, and ethics—that citizens of a digital society should possess for learning, working, and living."

Based on ecosystem theory, the concept of the eco-technological subsystem proposes that parents serve as important micro-level factors influencing adolescent development[2]. Parental mediation of online activities has a significant impact on adolescents' use of digital technology and digital literacy. Research shows that more than 90% of parents set limits on their children's screen time. Liu's research found that differences in parental intervention strategies lead to variations in children's internet literacy levels, with positive intervention strategies having a positive impact on children's internet literacy levels[3]. The research findings indicate that while both positive and restrictive forms of online supervision help reduce the risk of pathological internet use among adolescents, positive supervision also helps foster digital literacy among adolescents[4]. This study will focus on the family microsystem to examine the impact of parental mediation of online activities strategies on the digital literacy of rural adolescents, with the aim of enriching the theoretical framework regarding family-based pathways to digital literacy.

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2. Research Methods

2.1 Study Population

This study employed convenience cluster sampling to conduct a questionnaire survey of 600 students at a rural junior high school in the Guangxi Zhuang Autonomous Region. After excluding invalid questionnaires, a total of 440 valid responses were obtained, resulting in a response rate of 73.33%. Among them, there were 212 seventh-grade students, 142 eighth-grade students, and 86 ninth-grade students. There were 184 male students and 256 female students.

2.2 Research Tools

2.2.1 Digital Literacy

This study utilized the questionnaire on digital literacy among junior high school students developed by Shan[5]. The questionnaire comprises six dimensions: digital technology knowledge and skills (4 items), digital application skills (7 items), communication and collaboration skills (4 items), digital social responsibility (5 items), problem-solving skills (4 items), and digital awareness (3 items). The questionnaire employs a five-point rating scale. The Cronbach's alpha coefficient for the scale in this study was 0.91.

2.2.2 Parental Mediation of Online Activities

This study utilized parental mediation of online activities questionnaire developed by Livingston and Helsper and revised by Wu et al.[6]. The questionnaire comprises 5 dimensions and 25 items, including 3 items on accompaniment, 8 on initiative help, 6 on constraint, 4 on monitoring, and 4 on technical limitations. The questionnaire uses a 4-point scale, with the Restriction dimension scored in reverse; the mean score is calculated separately for each dimension. In this study, the Cronbach's alpha coefficient for the scale was 0.886.

2.3 Data Analysis

This study used SPSS 19.0 software to perform statistical analysis on the data. The specific statistical methods employed included descriptive statistics and correlation analysis.

3. Results

3.1 Descriptive Statistical Analysis of Digital Literacy among Rural Adolescents

To understand the overall level of digital literacy among rural adolescents and the development of its various dimensions, a descriptive statistical analysis was conducted on their overall digital literacy scores and scores across each dimension. The results are shown in Table 1, indicating that the overall mean score for digital literacy among rural adolescents was 3.75. In terms of scores across dimensions, the digital social responsibility dimension scored the highest, with a mean of 4.12, suggesting that rural adolescents perform well in terms of online behavioral norms, information discernment, and awareness of online ethics. The digital awareness dimension scored the lowest, with a mean of 3.38, reflecting that rural adolescents are relatively weak in terms of initiative and innovation in applying digital technologies, as well as their understanding of trends in the digital age. The mean score for the digital technology knowledge and skills dimension was 3.92, for the digital application skills dimension was 3.51, for the communication and collaboration skills dimension was 3.78, and the problem-solving skills dimension was 3.79.

Table 1: Descriptive Analysis of Digital Literacy Among Rural Adolescents

Dimension	*M*	*SD*
Digital Technology Knowledge and Skills	3.92	0.86
Digital Application Skills	3.51	0.72
Communication and Collaboration Skills	3.78	0.77
Digital Social Responsibility	4.12	0.76
Problem-solving Skills	3.79	0.67
Digital Awareness	3.38	0.95
Digital Literacy	3.75	0.61

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3.2 Descriptive Statistical Analysis of Parental Mediation of Online Activities

To understand the status of internet use interventions among parents of rural adolescents, we conducted a descriptive statistical analysis of the overall scores and scores across various dimensions of these interventions. The results are shown in Table 2. Among the dimensions, the constraint dimension had the highest mean score of 4.05, indicating that parents of rural adolescents tend to impose more restrictions on their children's online activities, such as setting time limits for internet use and restricting access to certain types of websites. The initiative help dimension scored 3.06, reflecting that parents are moderately willing to actively assist their children in solving problems encountered during online activities. The monitoring dimension had a mean score of 2.25, suggesting that parents have a certain degree of supervision over their children's online behavior, such as paying attention to the websites they visit and the duration of their online activities. The companionship dimension scored 2.73, indicating that parents occasionally accompany their children when they use the internet, but the frequency is not high. The technical limitations dimension had the mean score of 2.41, reflecting that parents of rural adolescents have relatively limited use of technical means to manage their children's online activities, such as installing filtering software or using parental control tools.

Table 2: Descriptive Statistics for the Parental Mediation of Online Activities

Dimension	***M***	***SD***
Companionship	2.73	0.99
Initiative help	3.06	1.02
Constraint	4.05	0.74
Monitoring	2.25	1.23
Technical Limitations	2.41	1.05

3.3 Correlation Analysis Between Parental Mediation of Online Activities and Adolescents' Digital Literacy

As shown in Table 3, the correlation analysis indicates that parental companionship, parental initiative help, and parental constraints are all significantly positively correlated with the digital literacy of rural adolescents.

Table 3: Correlation Analysis

	Companionship	Initiative Help	Constraint	Monitoring	Technical Limitations
Digital Literacy	0.115*	0.237**	0.857**	-0.039	0.011

Note: * $p<0.05$, ** $p<0.01$

4. Discussion

4.1 General Characteristics and Dimensional Differences in the Digital Literacy of Rural Youth

This study found that the overall mean score for digital literacy among rural adolescents was 3.75, indicating a moderate level. These findings are closely linked to China's ongoing efforts to improve rural digital infrastructure and promote widespread internet access in the digital age. With the advancement of the "Digital Rural Areas" strategy and the continuous expansion of internet coverage in rural regions, rural adolescents have gained significantly greater access to online resources and digital devices, which has laid the foundation for the development of their digital literacy.

When examining development across various dimensions, rural adolescents scored the highest on average in the dimension of digital social responsibility, demonstrating particularly strong performance. This may be closely related to family education and moral education in schools in rural areas. Generally, rural families place greater emphasis on moral education, and schools also focus on cultivating students' sense of social responsibility. These values have extended into the digital space, enabling rural adolescents to develop a solid understanding of online behavioral norms, information dissemination theory, and digital rights and obligations. Furthermore, the growth environment for rural adolescents is relatively simple, and their channels for receiving information are more limited compared to their urban counterparts. Their online activities are primarily concentrated on formal mobile applications subject to regulatory oversight, such as online classes, basic social networking, and

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gaming and entertainment. Consequently, their exposure to harmful online content is relatively low, which has also contributed to the development of their sense of digital social responsibility.

The digital awarenessdimension had the lowest mean score, indicating that there is room for improvement in the development of digital literacy among rural adolescents. Digital awareness reflects an individual's understanding of the value of digital technology, their initiative in digital learning, and their sensitivity to trends in the digital age. The weak digital awareness among rural adolescents may stem from the following fundamental causes: First, in rural areas, digital education generally focuses on the transmission of technical skills, while adolescents lack cultivation of deeper-level qualities such as digital thinking and innovative awareness. This results in their application of digital technology being limited to the level of tool usage, and they fail to fully recognize its value in personal development and participation in social development. Second, families and schools in rural areas place extreme emphasis on improving grades in exam-oriented subjects, neglecting the enhancement of adolescents' digital literacy. They fail to provide timely and proactive guidance for adolescents to actively explore the digital world and utilize digital resources for self-improvement. As a result, adolescents remain in a state of passive reception of digital learning, making it difficult to effectively stimulate their digital awareness.

Scores across the dimensions of digital technology knowledge and skills, communication and collaboration skills, problem-solving skills, and digital application skills were relatively balanced, though scores for digital application skills were slightly lower than those for the other three dimensions. This indicates that rural adolescents have largely mastered basic digital technology operation skills and are capable of handling simple digital tasks. However, they are not yet able to perform complex tasks on digital platforms, and their abilities in integrating digital resources, applying digital tools, and innovating remain relatively underdeveloped. This is closely related to issues such as the scarcity of high-quality digital resources and the limited variety of digital teaching methods in rural areas, and teachers' digital teaching capabilities also need to be improved.

4.2 Current Status and Characteristics of Parental Mediation of Online Activities

According to the scores across dimensions, the "Constraint" dimension had the highest mean score, making it the most commonly used intervention method among rural parents. Restriction interventions primarily involve setting clear limits on adolescents' internet usage duration, time of day, and content. This approach is simple, effective, and aligns with rural parents' educational beliefs and behavioral habits. When faced with issues regarding adolescents' internet use, rural parents tend to rely on coercive measures such as "prohibitions" and "restrictions" to manage their children's online activities, aiming to prevent excessive internet use or exposure to harmful online content. This tendency stems from the fact that most rural parents lack professional digital literacy and scientific intervention methods.

4.3 Analysis of the Correlation Between Parental Mediation of Online Activities and Digital Literacy Among Rural Adolescents

The results indicate that there is a significant positive correlation between parental accompaniment and digital literacy among rural adolescents, a significant positive correlation between proactive assistance and digital literacy among rural adolescents, and a significant positive correlation between parental constraint and digital literacy among rural adolescents. As core members of the family microsystem, parents' interventions regarding internet use directly impact adolescents' online experiences and the development of their digital competencies. Appropriate interventions can promote the enhancement of adolescents' digital literacy. Negative monitoring interventions merely regulate adolescents' online behavior superficially, lacking guidance and cultivation of the core competencies of digital literacy. Consequently, negative internet use interventions do not significantly enhance adolescents' digital literacy. Constraint interventions show a highly significant positive correlation with adolescents' digital literacy. This may be because adolescents are not yet physically and mentally mature, generally have weak self-control, and are easily drawn into irrational behavior by online entertainment content. Restrictive interventions can compensate for their lack of self-control through external regulation, reducing aimless and excessive internet use, and thereby promoting the enhancement of digital literacy.

Adolescents in the digital age often lack the discernment and self-discipline needed to navigate the internet safely, making them vulnerable to harmful online content or prone to issues such as excessive

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internet use and online gaming addiction. Parental guidance regarding internet use can help adolescents avoid these risks while encouraging and inspiring them to use the internet for learning and innovation, thereby promoting the comprehensive development of their digital literacy. Therefore, proactive parental guidance on internet use is a crucial family factor in enhancing the digital literacy of rural adolescents.

6. Conclusion

This study finds that rural adolescents' digital literacy is at a moderate level, with digital social responsibility scoring highest and digital awareness lowest. Parental mediation, particularly constraint and proactive assistance, is significantly and positively correlated with adolescents' digital literacy. These findings suggest that improving rural digital infrastructure, strengthening digital awareness cultivation in family and school education, and guiding parents to adopt scientific mediation strategies are key pathways to enhancing rural adolescents' digital literacy.

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