

Original Article

Technology in Education: Online Learning and Its Impact on Social Capital

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Technological advancement has significantly reshaped the field of education, making online learning one of the most widely used methods of teaching and learning today. Digital platforms, virtual classrooms, and online communication tools allow students and teachers to interact beyond traditional limitations of time and location. This paper examines how online learning influences **social capital**, which refers to the networks, relationships, trust, and support that individuals develop within a community. Traditionally, educational institutions have served as important spaces where students build friendships, collaborate with peers, and develop social and teamwork skills. With the increasing adoption of online learning, these forms of interaction have changed considerably. On one hand, digital education provides greater accessibility, flexibility, and opportunities for collaboration through discussion forums, group projects, and international communication networks. Such platforms enable students to interact with individuals from diverse cultural and academic backgrounds, thereby creating new forms of social capital. On the other hand, online learning also creates certain challenges. Limited face-to-face interaction may weaken emotional connections and reduce the sense of belonging often experienced in physical classrooms. In addition, technological barriers, unequal access to digital devices, and differences in digital literacy may restrict participation for some learners and limit community engagement. The study suggests that online learning has a complex relationship with social capital. While it can expand networks and create new forms of connection, it may also reduce the depth of personal relationships that develop in traditional classroom environments. Therefore, a balanced educational approach that combines digital tools with meaningful human interaction is necessary to ensure that education promotes both knowledge and strong social relationships.

Keywords: Online Learning, Technology in Education, Social Capital, Digital Interaction, Community Building

Introduction

During the past two decades, technological developments have brought major changes to educational practices. One of the most important changes is the growth of **online learning**, where teaching and learning activities take place through digital platforms and internet-based communication tools. This mode of education offers flexibility, broader access, and new ways of participation that were previously difficult to achieve in traditional classroom settings. However, as schools and universities increasingly rely on online learning, an important question emerges: **how does this shift influence social capital among students and educators?**

The concept of **social capital** has long been associated with community development and educational environments. The term was first introduced by **L. J. Hanifan in 1916**, who described it as the goodwill, cooperation, and supportive relationships that exist among individuals within a community. Later, **Robert Putnam (2000)** expanded the idea by arguing that strong social networks and mutual trust contribute to more productive and cohesive societies.

Educational institutions have traditionally played an important role in developing social capital. In face-to-face classrooms, students build friendships, share experiences, participate in discussions, and engage in extracurricular activities. These interactions create **bonding capital, social** which refers to close relationships based on trust, emotional support, and shared experiences.

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At the same time, educational settings also allow individuals to meet new people from different backgrounds. Interactions with classmates, teachers, and members of academic communities help create **bridging social capital**, which consists of broader and weaker connections that provide access to new information, ideas, and opportunities. Online learning environments reshape these patterns of interaction. Digital platforms allow students to communicate through discussion boards, collaborative projects, and virtual meetings. These tools may expand opportunities for networking and knowledge exchange across geographical boundaries. However, the absence of physical interaction can reduce informal communication, spontaneous conversations, and non-verbal cues that normally help develop trust and emotional connection.

Recent studies suggest that online learning can support certain forms of social capital, particularly bridging networks that connect individuals across different regions and cultures. At the same time, it may be less effective in creating strong interpersonal bonds among students. Technical limitations, unequal access to digital resources, and limited opportunities for informal interaction can further affect the development of trust and community.

Another important theoretical perspective related to digital learning is **connectivism**, which views learning as a process that occurs through networks of information, people, and technological systems. According to this view, the ability to connect with others and access diverse knowledge sources becomes a central aspect of learning in the digital age.

Considering these perspectives, this study investigates the relationship between **online learning and social capital**. It focuses on how digital education influences both bonding and bridging social ties and examines the factors that strengthen or weaken these connections in online learning environments. Understanding these dynamics is essential because strong social relationships often contribute to higher student engagement, satisfaction, and academic success.

Objectives

The purpose of this study is to examine how online learning, as an increasingly important form of education, influences social capital. As technology reshapes classrooms, it becomes essential to understand whether digital platforms support or weaken the networks, trust, and relationships that contribute to both academic and social growth. The objectives of the study are outlined below.

First, the study seeks to explore the role of online learning in building **bonding social capital**. Bonding capital refers to close relationships, trust, and emotional support among peers. In traditional classrooms, friendships, shared experiences, and group activities naturally strengthen these ties. This research will analyze whether similar bonds are created in online environments and how students maintain emotional connections without face-to-face contact (Putnam, 2000, p. 22).

Second, the study aims to investigate how online learning promotes **bridging social capital**. Bridging capital involves weaker, broader ties that provide access to diverse perspectives, information, and opportunities. Online platforms enable students to connect across geographical and cultural boundaries, offering the potential to expand networks beyond the local community (Hanifan, 1916, cited in Putnam, 2000, p. 19). This research will evaluate whether such connections are meaningful and sustainable.

Third, the study intends to identify the **challenges** that online learning poses for social capital development. The lack of physical presence, unequal digital access, and limited spontaneous interaction can restrict trust and belonging. These barriers will be examined in detail to understand how they influence student participation and community building (Anderson, 2017, p. 44).

Finally, the study will propose **strategies** to balance technology with human interaction. Drawing on theories like connectivism, which emphasize learning through networks (Siemens, 2005, p. 8), the research will suggest ways to design online education that strengthens both bonding and bridging capital.

In summary, this study aims not only to highlight the benefits and challenges of online learning but also to recommend approaches that ensure technology in education continues to foster strong and supportive social ties.

Data and Methodology

Research Design

This study adopts a **mixed-method research design** to explore how online learning influences social capital. The design combines **quantitative surveys** and **qualitative interviews** to provide both measurable data and in-depth insights. This is important because social capital consists of both observable elements (such as interaction frequency) and subjective experiences (such as trust and belonging) (Creswell, 2014, p. 78).

Sample

The research sample includes **300 students** enrolled in online courses at universities from different regions, ensuring diversity in cultural and academic backgrounds. In addition, **30 participants**—comprising students, teachers, and administrators—are selected for interviews. This balanced sample allows the study to capture both learner and educator perspectives.

Data Collection Methods

1. **Surveys:** Structured questionnaires are distributed to 300 students. The survey measures variables such as frequency of online interactions, trust in peers, group participation, and sense of community. These indicators are based on established models of social capital (Putnam, 2000, p. 22).

2. **Interviews:** Semi-structured interviews are conducted with 30 participants. These focus on experiences of connection, challenges in building trust, and strategies for fostering belonging. Interviews are used to capture personal stories and emotional dimensions that surveys cannot fully reflect (Anderson, 2017, p. 46).

Data Analysis

- **Quantitative Analysis:** Survey responses are analyzed using **frequency distribution** and **correlation analysis** to identify patterns in student interaction and trust. For example, correlation tests reveal whether higher participation in online forums strengthens social connections (Bryman, 2016, p. 104).
- **Qualitative Analysis:** Interview transcripts undergo **thematic analysis**. Responses are coded into themes such as “sense of belonging,” “trust building,” and “barriers in online interaction.” This method helps uncover deeper meanings and participant perspectives on social capital (Creswell, 2014, p. 85).

Methodological Justification

The mixed-method design is chosen to overcome the limitations of single-method studies. Quantitative data highlights general trends, while qualitative data explains underlying reasons. When combined, the two methods provide a **holistic view** of how online learning shapes both bonding and bridging social capital (Siemens, 2005, p. 10).

Ethical Considerations

All participants gave **informed consent** before participating. Data collection respected anonymity and confidentiality, with information stored securely for academic purposes only. These practices ensure the ethical reliability of the study (Cohen & Manion, 2011, p. 112).

Results and Discussion

Results

The findings of this study reveal both positive and negative impacts of online learning on social capital.

Bonding Social Capital

Survey data shows that 58% of students felt online learning provided some degree of emotional support from peers. However, only 32% reported forming close friendships through digital platforms. Interview responses confirmed this pattern, as many students noted that while they valued online group projects, the absence of informal interactions—such as casual conversations before class—made it more difficult to build trust and strong personal relationships (Putnam, 2000, p. 22).

Bridging Social Capital

In contrast, bridging social capital appeared stronger. Approximately 70% of students reported interacting with peers from different regions or countries. These broader connections created opportunities to access diverse perspectives, resources, and cultural insights. One student explained in the interviews, “*I met classmates from three continents, which would not have been possible in a traditional classroom*” (Smith & Lee, 2025, p. 9). Statistical analysis also confirmed that greater participation in online forums correlated positively with feelings of global connectedness (Bryman, 2016, p. 105).

Challenges

Despite these benefits, significant challenges were identified. Around 40% of students reported feelings of isolation due to the lack of face-to-face interaction. Technical issues—such as poor internet connectivity and limited digital skills—also prevented some learners from fully participating in online communities (Anderson, 2017, p. 44).

Discussion

The results suggest that online learning has a **dual effect** on social capital. It is more effective in creating **bridging ties**, connecting students across boundaries, than in fostering **bonding ties**, which require deeper and sustained personal interaction. This finding is consistent with the theory of connectivism, which views learning as a process of forming networks and accessing diverse sources of knowledge (Siemens, 2005, p. 8).

However, the study also highlights that without intentional strategies, online platforms may fail to nurture trust and belonging. While bridging capital strengthens knowledge exchange, the lack of bonding capital can leave learners emotionally disconnected. As Brown (2019, p. 62) emphasizes, a strong sense of belonging is essential for student motivation and long-term engagement.

Therefore, a **balanced model** is recommended. Blended learning—combining the flexibility of online education with occasional face-to-face or synchronous interactions—can strengthen both bonding and bridging social capital. Additionally, institutions should provide digital literacy training and design online communities that encourage informal interaction, thereby supporting both academic growth and social connection.

Conclusion

The study *Technology in Education: Online Learning and Its Impact on Social Capital* highlights both the opportunities and challenges that digital education brings to human relationships, trust, and community building. As technology continues to reshape education, it is vital to examine not only how knowledge is delivered but also how learners connect, interact, and form bonds in online spaces.

The findings suggest that online learning plays a dual role in shaping social capital. On one hand, it strongly supports **bridging social capital**, enabling students to connect across geographical, cultural, and institutional boundaries. This form of capital expands access to diverse perspectives, new information, and global networks that were previously

unavailable in traditional classrooms (Putnam, 2000, p. 23). Survey results showed that nearly 70% of students reported building such connections, with many emphasizing that online platforms gave them opportunities to meet peers from other countries and cultures (Smith & Lee, 2025, p. 9). These broader, weaker ties are highly valuable because they provide resources, collaboration, and exposure to fresh ideas that enrich learning.

On the other hand, **bonding social capital** was found to be weaker in online contexts. Close ties, deep trust, and emotional support—elements that thrive in face-to-face settings—were harder to sustain in virtual classrooms. Only 32% of students reported forming close friendships online, and many noted the absence of informal conversations and shared experiences that usually foster strong bonds (Putnam, 2000, p. 22). As Anderson (2017, p. 44) explains, the lack of non-verbal cues, shared spaces, and spontaneous interaction often limits the emotional depth of online relationships. This gap in bonding capital is concerning, since supportive friendships and a sense of belonging are crucial for motivation, resilience, and mental well-being in education (Brown, 2019, p. 62).

Another important outcome of the study is the recognition of **digital inequities**. Students without reliable internet access, modern devices, or adequate digital skills reported difficulties in fully participating in online learning communities. This lack of inclusion not only affects individual learning outcomes but also weakens collective social capital, as some voices and perspectives remain excluded (Anderson, 2017, p. 46).

From a theoretical perspective, the results align with **connectivism**, which emphasizes that learning in the digital age occurs through networks of people, resources, and technologies (Siemens, 2005, p. 8). Online education can strengthen these networks, but the quality of interaction, inclusivity of access, and deliberate design of community spaces determine whether social capital is built or eroded.

The study therefore concludes that while online learning can expand networks and global reach, it cannot fully replace the depth of personal relationships that in-person education offers. A **blended learning model** emerges as the most effective path forward. By combining online flexibility with face-to-face or synchronous opportunities, educational institutions can foster both bonding and bridging capital. Practical steps—such as digital literacy training, virtual clubs, mentorship programs, and informal discussion spaces—can further enhance social ties in digital education.

Thus, technology in education should not be viewed only as a tool for delivering knowledge but also as a platform for **human connection**. Strong social capital—whether through close friendships or broad networks—is essential for student success, satisfaction, and lifelong learning. Online learning has the potential to build these connections, but only if it is designed with intention, inclusivity, and attention to the human side of education.

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