

Balancing Virtual Boundaries: Investigating the Impact of Online Learning on Socialization and Social Skill Development

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<https://doi.org/10.24191/ajue.v20i2.27031>

Received: 12 January 2024

Accepted: 20 May 2024

Date Published Online: 16 August 2024

Published: 16 August 2024

Abstract: As online learning continues to gain prominence in modern education, concerns about its impact on socialization and social skills development have emerged. This research aimed to investigate the interplay between online learning and socialization among students of various age groups. Through a comprehensive literature review and empirical data collection, researchers examined how the shift to virtual classrooms affects social interactions and the development of social skills. The study used quantitative approach, survey was used, to gain insights into students' experiences, perceptions, and behaviours related to online learning and socialization. Preliminary findings suggested that while online learning presents unique challenges to socialization, it also offers opportunities for cultivating adaptive social skills. It is observed that students who actively engage in online discussions, group projects, and virtual extracurricular activities display enhanced adaptability and digital communication proficiency. In conclusion, this research sheds light on the intricate relationship between online learning and socialization. The findings have implications for educators, parents, and policymakers aiming to optimize the online learning experience and promote holistic student development in an increasingly digital educational landscape.

Keywords: Adaptability, Digital communication, Holistic development, Online collaboration, Online learning, Socialization, Social skill, Virtual interaction.

1. Introduction

The advent of digital technologies and the rapid expansion of online education platforms have brought about significant changes in the realm of education. As more learners engage in virtual learning environments, it becomes imperative to understand the potential impact of online learning on socialization and the development of social skills (Günindi, Y. 2023). This literature review aims to critically examine existing research related to the effects of online learning on socialization and social skill development.

In an increasingly digital world, the landscape of education has witnessed a transformative shift towards online learning platforms (Othman et al., 2022). The rapid proliferation of virtual learning environments has offered unprecedented access to education, transcending geographical barriers and temporal constraints. However, as education transcends physical classrooms and enters the realm of cyberspace, questions emerge about its impact on fundamental aspects of human development, particularly socialization and the acquisition of social skills (Lestari & Haryanto. Sukmawati, 2021).

The digital revolution has brought forth an era of unparalleled connectivity and accessibility in education through the advent of online learning platforms. As technology continues to reshape the

educational landscape, traditional barriers of time and space are giving way to a new paradigm of learning, one that extends beyond the confines of physical classrooms. This transformative shift has prompted educators, researchers, and learners alike to examine the multifaceted repercussions of this evolution. Amidst the myriad dimensions of change, the alteration in the dynamics of socialization and the acquisition of social skills stands as a significant focal point (Günindi, 2023). The interplay between the virtual and the social raises intriguing inquiries into how online learning influences individuals' capacity to interact, communicate, and foster meaningful relationships.

The journey of education has traditionally been intertwined with the process of socialization, a mechanism through which individuals develop the essential skills and behaviors needed to engage effectively within their communities (Othman et al., 2022). The classroom, with its diverse group of peers and interactive dynamics, has historically served as a fertile ground for the cultivation of these social aptitudes. However, the proliferation of online learning environments has introduced a paradigm shift, necessitating a reevaluation of the mechanisms by which individuals forge connections, communicate, and hone their social proficiencies (Lestari & Sukmawati, 2021).

The transition to online learning carries profound implications for social interaction and skill development. With the capacity to transcend geographical distances and time constraints, virtual learning environments offer an unprecedented level of flexibility and accessibility (Beelmann & Lösel, 2021). Yet, as education evolves into a digital realm, concerns arise about the potential impact on the quality and depth of interpersonal engagement. While technology empowers learners to collaborate across boundaries, it also raises questions about the authenticity of virtual interactions and the extent to which they can replicate the richness of face-to-face encounters. Social skills are used to communicate with others, establish and maintain relationships, cope with the social environment, and even aid in satisfactory school adjustment (Gresham, Van, & Cook, 2006). Without competent social skills a person may be at risk for mental health concerns, fail to maintain employment, and may suffer when trying to form and maintain relationships with others (Gresham et al., 2006).

2. Literature Review

The evolution of online learning has been marked by early adoption and technological advancements, leading to shifts in educational paradigms and methodologies (Kurniawan, et.al. 2023). However, concerns about socialization and social skills in online settings have been raised, with some students feeling a sense of isolation and discomfort (Bitsch, Senjic & Kneip, 2022). The implementation of online learning has also been influenced by social adaptation patterns, with educators and students often adapting in ways that differ from government policies (Daulay, 2021). Despite the potential of online learning, there is a need for further research on how social interactions in online education relate to subject-specific interactions and learning (Alzahrani, et.al. 2023).

The transition from traditional classroom settings to virtual learning spaces has sparked discussions about the potential effects on socialization. Early studies, such as those by Vonderwell and Turner (2005), identified concerns regarding the limited opportunities for informal social interactions in online environments. A range of theoretical frameworks and models have been proposed for online learning. Bell (2011) emphasizes the need for a variety of approaches, while Picciano (2021) and Brieger (2020) focus on specific theories (e.g. online instruction, cognitivism, connectivism, heutagogy, social learning theory, transformative learning theory and Vygotsky's zone of proximal development). Picciano (2021) and Brieger (2020) both propose integrated models, with the former focusing on pedagogical purpose and the latter analyzing six learning theories for their relevance and application in online instruction. Bell (2011) and Brieger (2020) both highlight the importance of matching the learning theory to the instructional situation and the background of the learners.

Online learning has gained immense popularity in recent years, offering learners the flexibility to pursue education outside the traditional classroom. However, the shift to virtual learning environments has prompted discussions about its impact on socialization. This literature review aims to explore the relationship between online learning and socialization, focusing on the various factors that influence how learners interact and connect in digital spaces (Beelmann & Lösel, 2021). Vygotsky's sociocultural theory, which emphasizes the role of social interactions and cultural influences in cognitive development, has been widely applied in educational research (Marginson,

2017). This theory has practical implications for classroom management, assessment, and lesson preparation, particularly in pre-secondary and secondary education (Barnett, 2019). It also highlights the importance of language and community in the learning process (Liew, Voon & Leong, 2023). However, further research is needed to fully understand the impact of Vygotsky's theory on teaching and learning (Liew, Voon & Leong, 2023).

Bitsch, Senjic and Kneip (2022) emphasizes the importance of online learner participation, arguing that it is a complex process supported by various tools and activities. Alomyan (2019) discusses the application of behaviorism, cognitivism, and constructivism to online learning, highlighting the need for effective learning design. Anderson (2009) and Harasim (2011) both provide comprehensive overviews of the field, with Anderson focusing on the evolution of distance education and the emergence of Web 2.0, and Harasim (2017) offering a synthesis of e-learning theory and research. These studies collectively underscore the multifaceted nature of online learning and the need for a nuanced understanding of its theoretical underpinnings (Bitsch, Senjic & Kneip, 2022).

Learner characteristics play a pivotal role in how individuals engage in online socialization. Huang, Hood, and Yoo (2013) found that personality traits like extraversion can influence the extent to which learners participate in online discussions. Additionally, prior experience with technology impacts learners' comfort levels with virtual interactions (Gunawardena, Lowe, & Anderson, 1997). Moreover, cultural factors also come into play; Hrastinski (2008) noted that learners from collectivist cultures might prefer group-oriented online interactions.

Technology-mediated communication tools are central to online socialization. Wang et al. (2019) noted that written communication skills are enhanced through online interactions, as learners must convey ideas effectively in text-based formats. However, Song and Hill (2007) highlighted the challenge of missing nonverbal cues in digital interactions, which can impact empathetic communication. Integrating video conferencing tools can mitigate this gap by enabling synchronous communication (Dixson, 2015).

Online learning communities are integral to fostering socialization. Palloff and Pratt (2007) proposed strategies for creating a sense of community, including icebreaker activities, peer introductions, and ongoing discussions. Garrison, Anderson, and Archer (2000) introduced the concept of "community of inquiry," highlighting the interplay between cognitive presence, social presence, and teaching presence in online courses.

The development of social skills is a complex process involving various cognitive and affective elements. Online learning environments introduce unique challenges and opportunities for the cultivation of these skills. Wang, Zhu, and Wu (2019) found that virtual collaboration and communication in online courses can enhance skills such as written communication and digital literacy. Conversely, Song and Hill (2007) raised concerns about the potential loss of nonverbal cues and the implications for empathetic communication in online interactions. Therefore, while some aspects of social skill development may thrive in virtual environments, others might require intentional strategies to mitigate potential deficits.

The emergence of virtual environments has significantly impacted how individuals communicate, interact, and develop social skills. This literature review aims to explore the nuanced relationship between virtual environments and the development of social skills. By analyzing existing research, this review seeks to uncover the opportunities and challenges posed by digital platforms for fostering essential social competencies.

Navigating virtual environments requires a certain level of digital literacy, which encompasses skills such as effective written communication and critical evaluation of online information. Young (2010) argued that engaging in online discussions, blogging, and social media interactions hones written communication skills. Moreover, online platforms necessitate concise and clear communication, fostering the development of effective communication skills (Rice, 2006).

The concept of "social presence" refers to the degree to which individuals perceive others as real and capable of forming meaningful relationships in virtual environments (Short, Williams, & Christie, 1976). Parks and Floyd (1996) emphasized that social presence is crucial for the development of online relationships and, consequently, social skill acquisition. Engaging in online communities, forums, and social networks can enhance one's ability to initiate and maintain relationships in virtual spaces (Liew, et.al. 2023).

Nonverbal cues, such as facial expressions and body language, play a vital role in face-to-face interactions. However, the absence or limited availability of nonverbal cues in virtual environments poses challenges for accurate communication and empathy (Walther, 1996). Song and Hill (2007) cautioned that the lack of nonverbal cues can hinder the development of certain social skills, such as interpreting emotions and building rapport.

Several factors can influence how online learning impacts socialization and social skill development. Learner characteristics, such as personality traits and prior experience with technology, can shape engagement in virtual interactions (Huang, Hood, & Yoo, 2013). Additionally, course design, instructor presence, and the availability of synchronous communication tools play significant roles in creating opportunities for socialization (Hrastinski, 2008). Moreover, cultural differences and the digital divide can influence the extent to which learners can effectively navigate online social contexts (Hew & Cheung, 2008).

The transition to online learning has brought forth new dimensions in socialization and skill development. Understanding the factors that shape these processes is essential for educators and learners alike (Dunton, Do, & Wang, 2020). Digital literacy is a foundational factor that influences how learners navigate online environments. Individuals with higher digital literacy are more adept at using online communication tools effectively (Abid et al., 2021; Hew & Brush, 2007). Prior technology experience also shapes learners' confidence in engaging with virtual platforms. Those familiar with social media and online forums may be more comfortable participating in online discussions, potentially enhancing their socialization and skill development (Gray & DiLoreto, 2016). The design of online courses has a substantial impact on the opportunities for socialization and skill development. Hrastinski (2008) emphasized the importance of creating structured online activities that encourage collaboration, communication, and peer interaction. Synchronous interactions, such as virtual meetings and live discussions, can foster more immediate and personal connections among learners (Lowenthal & Dunlap, 2017). Course structure and clear expectations for participation influence the extent to which learners engage and develop skills in virtual environments.

Cultural diversity plays a role in how learners approach online socialization and skill development. Cultural norms regarding communication styles and participation levels may influence learners' interactions in online discussions (Kreijns et al., 2003). Educators need to consider these cultural differences when designing activities that promote inclusivity and accommodate various communication preferences. Instructor presence is a critical factor influencing online socialization and skill development. Instructors who actively participate in discussions, provide timely feedback, and facilitate collaborative activities contribute to a sense of community and peer interaction (Rourke et al., 2001). Instructor presence can also model effective communication and interaction strategies, guiding learners in their skill development journey (Puspitasari, 2021).

The notion of "balancing virtual boundaries" emerges as a key theme in the literature. It underscores the need to strike a harmonious equilibrium between the benefits and drawbacks of online learning for socialization and social skill development. Effective strategies for achieving this balance include fostering a sense of community through icebreaker activities and ongoing discussions (McNair, Palloff & Pratt, 2015). Furthermore, integrating synchronous interactions and video conferencing tools can help bridge the gap between virtual and face-to-face communication (Dixson, 2015).

Building a sense of community is essential for effective online education. Palloff and Pratt (2007) emphasize the significance of creating a supportive and interactive online environment through strategies like icebreaker activities, peer introductions, and ongoing discussions. By establishing a virtual community, learners can experience a sense of belonging and peer-to-peer support, mitigating feelings of isolation and promoting socialization (Dunton, Do, & Wang, 2020). The absence of face-to-face interactions in online learning environments can hinder the development of certain social skills. Dixson (2015) suggests that incorporating synchronous interactions, such as live video discussions and virtual meetings, can bridge the gap between virtual and in-person communication. This approach enables learners to benefit from immediate feedback, nonverbal cues, and real-time interactions, enhancing their social skill development. As virtual spaces lack the immediacy of face-to-face interactions, cultivating digital etiquette, or "netiquette," becomes crucial. Educators must guide learners in appropriate online behavior, respectful communication, and responsible use of technology (Yang & Chang, 2019). By emphasizing the importance of respectful virtual interactions,

learners can navigate the online environment with social sensitivity and skill. A combination of synchronous and asynchronous learning activities in online education has been found to enhance student engagement and connection with peers and instructors (Puspitasari, 2021). This balance is particularly important in maintaining the desired quality of interaction in distance education (Malik, 2010). Synchronous learning activities, such as real-time discussions and feedback, have been shown to better support students' psychological needs for competence and relatedness, leading to greater satisfaction with online learning (Puspitasari, 2021). Therefore, a well-designed blend of synchronous and asynchronous activities is crucial for effective online education.

The challenge of balancing virtual boundaries extends to accommodating learners from diverse cultural backgrounds. Cross-cultural interactions can be enriching, but cultural differences in communication styles and norms must be considered (Hew & Cheung, 2003). The research landscape regarding the impact of online learning on socialization and social skill development is intricate and multifaceted. While initial concerns about limited social interaction persist, empirical evidence suggests that well-designed online courses can facilitate meaningful engagement and the acquisition of various social skills (Kim & Kim, 2021). The challenge lies in understanding the factors that influence this dynamic and implementing strategies that foster positive outcomes. Achieving a balance between virtual boundaries is a vital consideration for educators and institutions as they navigate the evolving landscape of online education. This review highlights the need for ongoing research to uncover nuanced insights into this complex interplay between virtual learning and socialization.

The significance of balancing virtual boundaries in educational settings is underscored by the need to optimize online learning environments. Alzahrani, et.al. (2023) and Brieger (2020) both emphasize the importance of teacher presence and immediacy, as well as a blend of asynchronous and synchronous opportunities, in creating engaging online classes. Bitsch, Senjic and Kneip (2022) further highlights the need for instructors to set boundaries to manage their time and workload, while Picciano (2021) underscores the potential of virtual environments in fostering active social learning. These studies collectively call for ongoing research and proactive measures to enhance the quality of online education.

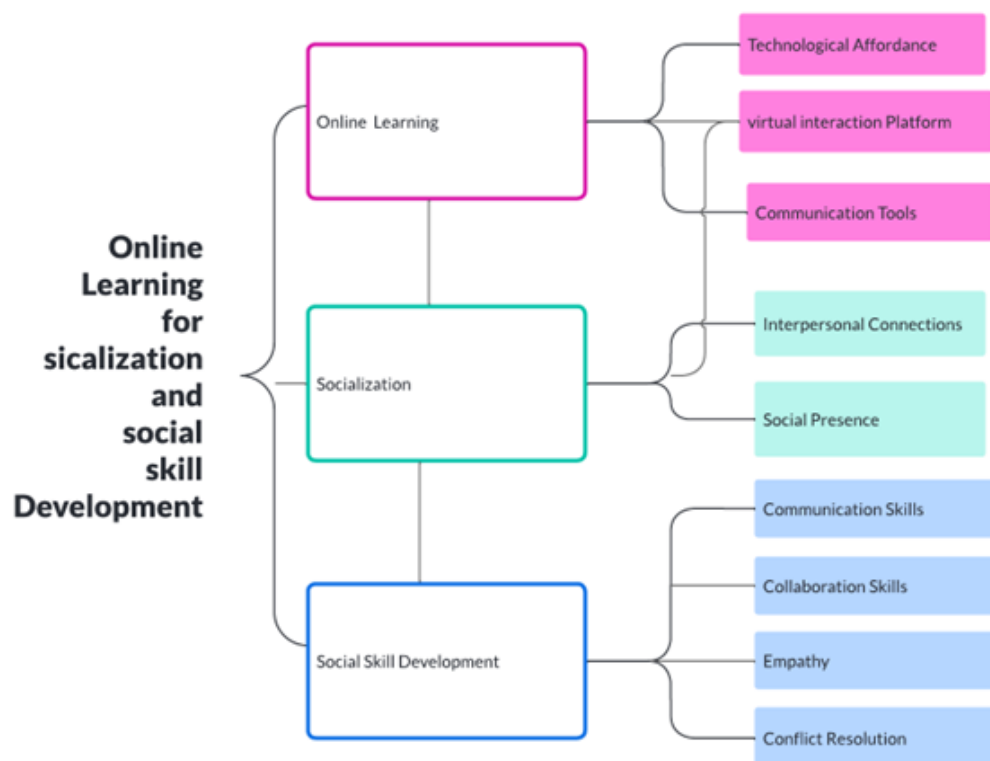


Fig. 1 Conceptual Framework of the study

2.1 Theoretical Framework of the study

To unravel the intricate dynamics of how online learning affects socialization and social skill development, this research draws upon a multidimensional theoretical framework. Social constructivism provides a foundation, positing that knowledge is co-constructed through interactions and experiences within social contexts. This lens is complemented by the social presence theory, which underscores the importance of interpersonal connections for effective online learning. Additionally, the transactional theory of communication is integrated to grasp the reciprocal nature of online interactions and the resulting impact on skill acquisition. Furthermore, this study incorporates elements of the socio-cultural theory to explore the role of cultural and societal norms in shaping online interactions and skill development. The affordances of technology, as conceptualized in the media richness theory, are also considered to understand how various online platforms offer diverse communication tools that might influence socialization outcomes. These theoretical underpinnings together create a comprehensive framework for investigating the complex interplay between online learning and social development.

3. Research Objectives:

In light of these evolving dynamics, this research article endeavors to explore the intricate interplay between online learning, socialization, and the acquisition of social skills. The primary objective of this research is to empirically examine the impact of online learning on socialization and social skill development. To achieve this overarching goal, the study aims to accomplish the following specific objectives:

- Investigate the ways in which individuals engage in social interactions within virtual learning environments.
- Explore the factors that shape online socialization processes.
- Examine the extent to which online learning experiences play a significant role in socialization and social skill development.

4. Methodology

In this research, a quantitative approach and descriptive research design were utilized to explore students' encounters, viewpoints, and actions regarding socialization and the development of social skills in the context of online learning. A survey was used to collect data.

4.1 Participants of the study

The study population consisted of students of undergraduate programs studying for 1-8 semesters. To select participants, a non-probability sampling technique known as convenient sampling was employed. The research sample consisted of 350 students, encompassing both male and female participants.

5. Findings

Table 1 indicates the demographic characteristics of the participants of the study; it shows a total of 350 students participated in the study. The sample consisted of 230 females (65.7%) and 120 males (34.3%). The participants were from three different departments. Specifically, 91 students (26.0%) were from the History department, 104 students (29.7%) were from the Literature department, and 155 students (44.3%) were from the Education department. Regarding the semester distribution, 260 students (74.3%) were in their 1st to 4th semesters, while 90 students (25.7%) were in their 5th to 8th semesters. The participants were almost evenly distributed between university types, with 180 students (51.4%) attending public universities and 170 students (48.6%) attending private universities.

Table 1. Demographic characteristics of the students

| Demographics characteristics | Frequency (f) | Percent (%) |
|------------------------------|---------------|-------------|
| Gender | | |
| Female | 230 | 65.7 |
| Male | 120 | 34.3 |
| Department of study | | |
| History | 91 | 26.0 |
| Literature | 104 | 29.7 |
| Education | 155 | 44.3 |
| Semester | | |
| 1-4 semesters | 260 | 74.3 |
| 5-8 semesters | 90 | 26 |
| University type | | |
| Public | 180 | 51.4 |
| Private | 170 | 49% |

Table 2 shows that WhatsApp is the communication tool which is often used by students for socialization in online learning during COVID-19 pandemic (M=3.55, SD= .868). Cell phone is the tool which holds second place on the basis of usage in online learning by students frequently for socialization (M=3.41, SD=1.034). Zoom is the communication tool which is frequently used by students for socialization (M=3.03, SD=1.255). Google docs were used for socialization in online learning by students sometimes (M=2.71, SD=1.302). Chats were also used sometimes for socialization in online learning (M=2.68, SD=1.435). Students used google meet sometimes for socialization in online learning (M=2.51, SD=1.487). Microsoft teams is also used sometimes by students for socialization in online learning (M=2.32, SD=1.551). Video conference is used sometimes by students for socialization in online learning (M=2.29, SD=1.450). Discussion forums are rarely used by students for socialization in online learning (M=1.58, SD=1.4). Students rarely used skype for socialization in online learning during COVID-19 pandemic (M=0.84, SD=1.230)

Table 2. Descriptive statistics on the usage of communication tools for socializing in online learning during COVID-19 pandemic.

| Communication tools | M | S.D |
|---------------------|------|-------|
| WhatsApp | 3.55 | .868 |
| Cell phone | 3.41 | 1.034 |
| Zoom | 3.03 | 1.255 |
| Google docs | 2.71 | 1.302 |
| Chats | 2.68 | 1.435 |
| Google meet | 2.51 | 1.487 |
| Microsoft teams | 2.32 | 1.551 |
| Video conference | 2.29 | 1.450 |
| Discussion forums | 1.58 | 1.399 |
| Skype | .84 | 1.230 |

An independent sample t-test was performed to compare the perceptions of university students about socialization with faculty based on gender. The results in Table 3 indicate that there is no significant difference ($t= .761, p=.447$) in the perception of male students and female students. Also, table reveals that male students (M=42, SD=6.36) have same perceptions than female students (M=41, SD=6.98) regarding socialization with faculty.

Table 3. Independent Sample t- test comparing mean score on socialization with faculty based on gender

| Dependent Variables | Gender | N | M | SD | t | Sig. |
|----------------------------|--------|-----|------|------|------|------|
| Socialization with faculty | Male | 230 | 41.7 | 6.36 | .761 | .447 |
| | Female | 120 | 41.0 | 6.98 | | |

Table 4 shows the findings of One-Way ANOVA, which reveal that there is a significant difference in university students' perceptions of socialization subscales based on their department of study. There is a significant difference ($F=4.277$, $p=0.01$) between the perceptions of university students about socialization with faculty in online learning during COVID-19 based on their department of study.

Table 4. ANOVA test comparing students' perceptions about socialization with faculty based on department of study

| | | Sum of Squares | df | Mean Square | F | Sig. |
|----------------------------|----------------|----------------|-----|-------------|-------|------|
| Socialization with faculty | Between groups | 363.749 | 2 | 181.874 | 4.277 | 0.01 |
| | Within Groups | 14756.720 | 347 | 42.527 | | |
| | Total | 15120.469 | 349 | | | |

Results in table 5 show post-hoc multiple comparisons were performed. According to table 4.5.5, students of education ($M= 1.86$, $p=0.081$) have a better perception of socialization with faculty as compared to students of history. Similarly, students of education ($M=2.17$, $p=0.03$) have a better perception of socialization with faculty in online learning as compared to students of literature.

Table 5. LSD multiple comparisons of perceptions about socialization with faculty on the basis of department of study

| Department of study | Department of study (I) | Mean difference | Sig. |
|---------------------|-------------------------|-----------------|------|
| History | Education | 1.73258 | .045 |
| Literature | Education | 2.26005 | 0.07 |

The independent sample t-test was used to compare university students' perceptions of socialization based on gender. The table shows that there is no significant difference ($t=1.19$, $p=.233$) between the perceptions of female students ($M=48.1$, $SD=7.99$) and male students ($M=47.01$, $SD=8.33$) regarding socialization with peers in online learning during COVID-19 pandemic.

Table 6. Independent Sample t- test comparing mean score of socialization with peers on the basis of gender

| Dependent Variables | Gender | N | M | SD | T | Sig |
|--------------------------|--------|-----|------|------|------|------|
| Socialization with peers | Male | 230 | 48.1 | 7.99 | 1.19 | .233 |
| | Female | 120 | 47.0 | 8.33 | | |

5.1 Structure Equation Model (SEM)

Table 7 shows sequential equation model of fitness generated using AMOS to test the relationship of faculty and peers in socialization and social skill development in online learning environment. Results shows that the fit chi-square value/degree of freedom value = 295.646, RMSEA = 0.095, CFI = 0.832, norm fit index (NFI) = 0.749 and tucker-lewis index (TLI) = 0.778, which are <0.9. the model fits well. The model is recursive.

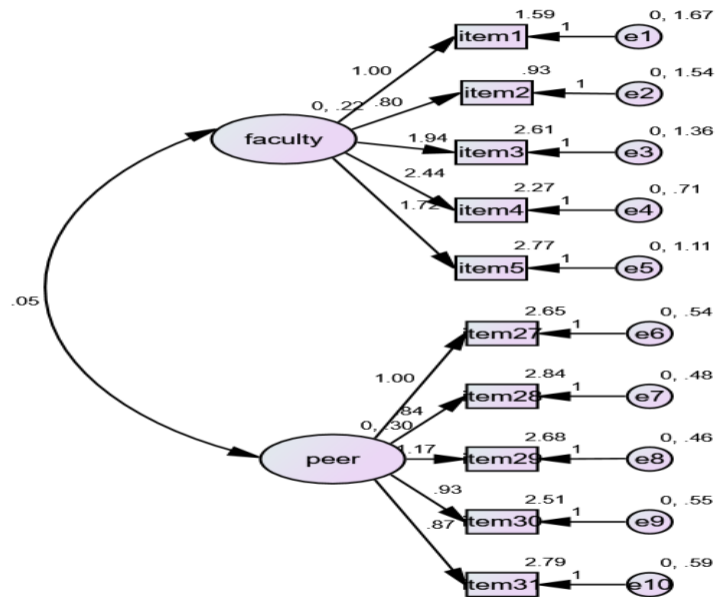


Fig. 2 Structural equation model faculty and peers

Table 7. Model fitness results

| Statistical test value | Measurement model |
|------------------------|-------------------|
| CMNI | 80.178 |
| TLI | 0.778 |
| CFI | 0.832 |
| RMSEA | 0.095 |
| NFI | 0.749 |

Table 8 shows sequential equation model of fitness generated using AMOS to test the relationship of faculty and peers and barriers hindering in socialization and social skill development in online learning environment. Results shows that the fit chi-square value/degree of freedom value = 295.646, RMSEA = 0.054, CFI = 0.787, norm fit index (NFI) = 0.547 and tucker-lewis index (TLI) = 0.762, which are <0.9. the model fits well.

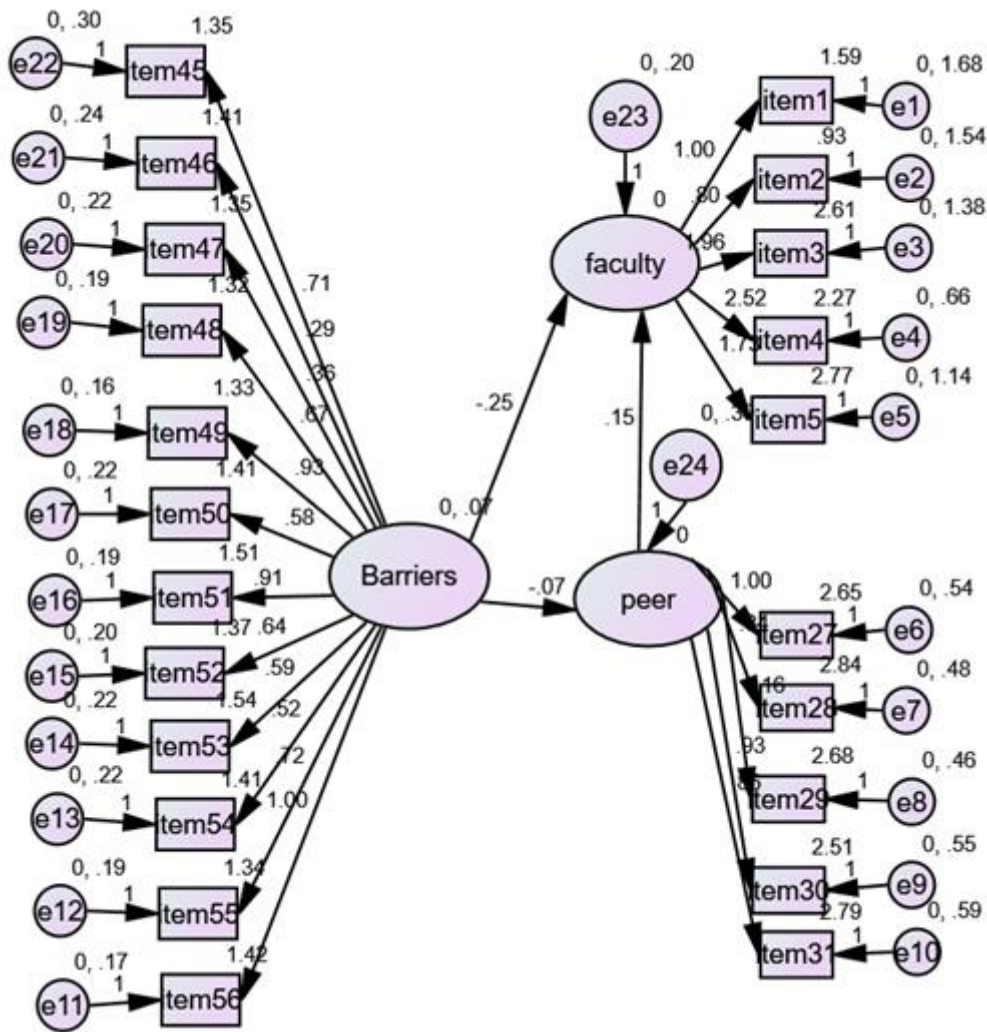


Fig. 3 Structural equation model elaborated
Table 8. Model fitness results explained

| Statistical test value | Measurement model |
|------------------------|-------------------|
| CMNI | 295.646 |
| TLI | .762 |
| CFI | .787 |
| RMSEA | .054 |
| NFI | .547 |

6. Discussion

The shift towards online learning, accelerated by the COVID-19 pandemic, has transformed the educational landscape. One crucial aspect of this transformation is the impact on students' socialization and the development of social skills in virtual learning environments. While online learning offers flexibility and accessibility, concerns have been raised about its potential to hinder traditional forms of social interaction and social skill development. This discussion explores the nuances of socialization and social skill development in the context of online learning, drawing from recent research.

Socialization encompasses the exchange of competencies, knowledge, and values, while online learning pertains to educational endeavours utilizing digital devices. This investigation delved into students' perspectives regarding online learning within the dual realms of social interaction: one involving faculty and the other involving peers. The outcomes of this study underscore the pivotal role of socialization in online learning, encompassing interactions with both instructors and fellow students. These findings corroborate the assertions made by Salehi et al. (2012) and Davies et al. (2013) that socialization constitutes a fundamental element of online learning and courses.

Within the context of university students' interactions with faculty members, it was evident that engagement with instructors enhances the rapport between teachers and students, aligning with the discovery by Lopez and Ashe (2020) that the time students invest in communicating with their educators positively affects their well-being. This research further identified a sense of isolation experienced by students in online learning, stemming from perceived social distance, which corresponds to the findings of Lu (2011) regarding the emotional distance felt by online learners. It was also established that students value faculty respect, which fosters improved socialization between them, consistent with Tu's (2010) findings that insufficient instructor encouragement can leave students feeling excluded from online learning. Hence, it can be inferred that instructor encouragement and recognition play a pivotal role in enhancing student socialization (Alzahrani, et.al. 2023).

Moreover, the study explored the significant role played by platforms like Zoom, WhatsApp, and email in facilitating social interaction, enabling students to become better acquainted with each other. This observation aligns with earlier research indicating that these platforms facilitate and influence socialization in online learning (Huang & He, 2017; Moorehouse & Kohnke, 2020). The study revealed the paramount importance of socialization in online learning, as peer support emerged as a key factor. This finding concurs with Davies et al.'s (2013) observation that peer-to-peer socialization primarily centers on collaboration and mutual motivation among students.

One of the primary challenges in online learning environments is the absence of face-to-face interaction. Researchers like Anderson and Dron (2011) have pointed out that this lack of physical presence can limit spontaneous socialization and inhibit the development of crucial social skills such as non-verbal communication, empathy, and active listening. To address these challenges, online educators have implemented structured interactions using discussion forums, group projects, and video conferencing tools. A study by Richardson and Swan (2003) emphasizes the importance of structured discussion boards in fostering socialization and collaborative learning. Such environments can encourage students to engage in meaningful discourse and build relationships, albeit in a digital space. Peer-to-peer socialization is a vital component of social skill development. Research by Dennen, Darabi, and Smith (2007) suggests that collaborative online activities, such as group projects, can facilitate peer interaction and enhance social skills like teamwork, conflict resolution, and leadership.

Teacher-student interaction is equally crucial. In a study by Joksimović et al. (2015), it was found that instructors who actively engage with students in online forums and provide timely feedback can enhance students' sense of connectedness and social skill development. This interaction contributes to a positive learning experience. A study by Garrison and Arbaugh (2020) highlights the significance of social presence in online learning environments. Social presence refers to the perception of being part of a social group. The authors argue that increasing social presence through various strategies can foster socialization and social skill development among online learners (Liew, Voon, & Leong, 2023).

It's important to consider the cultural and diversity aspects of online socialization. Recent research by Kim and Kim (2021) emphasizes the need for inclusive online learning environments that accommodate diverse cultural backgrounds, which can enhance cross-cultural socialization and social skill development. Beyond academic contexts, online learning can also impact professional development. A study by Seaman and Tinti-Kane (2020) suggests that online courses that incorporate collaborative projects and discussions can prepare students for the digital workplace, where virtual collaboration and social skills are essential.

7. Conclusions

In conclusion, while online learning presents challenges to traditional forms of socialization, recent research underscores the potential for social skill development in virtual learning environments. Structured interactions, peer-to-peer engagement, teacher-student interaction, the promotion of social presence, and considerations of cultural diversity all contribute to a well-rounded online socialization experience. As the digital learning landscape continues to evolve, educators and institutions should embrace these findings to optimize social skill development for online learners, preparing them for both academic success and the demands of the modern workforce.

To enhance social skill development in online learning, it is crucial to integrate synchronous learning opportunities, promote peer interaction, and incorporate social presence strategies. Educators should receive training to effectively facilitate socialization, while course content should be designed to be culturally inclusive. Regular evaluation and refinement of course structure based on student feedback and data analytics is essential. Emphasizing soft skills integration, encouraging self-regulation, fostering a sense of community, and supporting mental health and well-being can further contribute to creating a conducive environment for holistic learning and social growth in the digital age. By implementing these evidence-based recommendations, online courses can strike a balance between virtual boundaries and socialization, ultimately preparing students for success in the digital workplace.

8. Co-Authors Contributions

The co-author has contributed significantly to the research and manuscript preparation. He assisted in conceptualization, design of the study and data collection. All authors have approved it for publication.

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