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Interpersonal Relationships in the Contemporary 21st Century Society

Edited by Jorge Ferreira



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Meet the editor



Jorge Ferreira holds a Doctorate in Social Work with a specialization in Social Work, Social Policies, and Society. He is a Professor at ISCTE – University Institute of Lisbon, where he serves as Director of both the Undergraduate and Doctoral Programs in Social Work, as well as Director of the Department of Political Science and Public Policy. He conducts research at CIES-IUL (Centre for Research and Studies in Sociology – University Institute of Lisbon), within the Political and Citizenship research line. His research interests include both theoretical and applied dimensions. Theoretically, he focuses on epistemology, the theory of social work, and interdisciplinary knowledge. In applied research, he studies social work practices within institutional, community, and family contexts, particularly in relation to children, families, and adults in vulnerable situations within the social protection system and social policy frameworks. Dr. Ferreira has authored numerous scientific publications and has presented at national and international seminars and conferences in the field of Social Work. He is also a member of the editorial boards of several national and international Social Work journals.

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Preface

Over the last twenty years, we have witnessed a social transformation in global society, with implications for the system of life and social and human relations. This is a problem and a co-responsibility for everyone, including citizens, political decision-makers, and academic thinkers. We are witnessing the evolution of a society that is more individual and less collective, but a society that defends democratic values and ethical principles towards an inclusive society. We are in an accelerated process of digital transition, and today, every citizen's daily reality is to deal with their daily social issues 60% through digital platforms, including social networks.

Verbal and human communication is being replaced by digital communication based on language codes, which negatively affects social and human relations.

Interpersonal relationships are reflected in the relationship of social solidarity in contemporary society, particularly in terms of intergenerational relationships.

The changes we see in social reality can be explained by the virtualization of human rights and the ethical principles and values of coexistence in society. This can be explained by the contexts of vulnerability, uncertainty, the social precariousness of life, armed conflicts, as well as economic guidelines for the rapid accumulation of wealth and the formation of new social, financial and political elites.

When we reflect on interpersonal relationships, we must reflect on the democratic society in which we live, characterized by free expression, participation and active social citizenship.

It is also important to analyze through research the conditioning factors that interfere with the process of promoting interpersonal relationships, namely:

- The demographic imbalance,
- The consolidation of the family,
- The increase in the number of people over 65,
- Territorial inequalities, with greater concentration in urban areas and desertification of rural areas,

In this context, it is essential to encourage local neighborhood services (where people live) to promote social activities, conversation, help, sport, and social support activities to develop healthy living relationships.

In this book, we will share knowledge about interpersonal relationships at a time in history when society is undergoing social transformation and transitioning to a digital

society. The chapters that make up the book provide an in-depth look at the concept and its impact on improving citizens' quality of life in contemporary society.

They reflect on and analyze interpersonal relationships today, whether at the family level, employment, training and education, social networks, or essentially digital social relationships, encouraging greater investment in creating collective spaces that reinforce social and intergenerational solidarity. They emphasize the role of interpersonal relationships in the co-construction of a healthy life, comparing some consequences for each person's mental and psychological health.

This book invites reflection on interpersonal relationships in the family and everyday life, employment, social networks, and education and training. As a contribution to the society of the 21st century, it proposes a deepening of interpersonal relationships for a greater humanization of services, a greater realization of human rights and a truly participatory social citizenship that consolidates collective social well-being. It also calls for thinking about interpersonal relationships within the framework of ethical values and principles in an inclusive and global society.

It was a very positive experience and a great learning experience, motivated by the proposals presented for publication in the book. I want to thank all authors and co-authors for their scientific merit and magnificent contributions to strengthening and improving interpersonal relationships in the 21st century.

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Chapter 1

Interpersonal Relationship Needs of Tertiary Students

Bahire Özad and Gülen Uygarer

Abstract

Interpersonal relationship is a sine qua non of our lives. Universally, starting university education, among other things, means leaving home and starting a new independent life, away from the family and hometown. During this time, establishing interpersonal links and feeling socially well is important. Currently, the young generation has two options for socializing: face to face and online. In other words, at the outset of the new millennium public sphere has gained variety. In addition to traditional forms of socialization, virtual socialization has been gaining ground. This variation brings in different kinds of gratification obtained from various platforms. The present study seeks to explore how tertiary students meet their socialization needs over social media platforms.

Keywords: interpersonal communication, social media, tertiary students, needs, well-being

1. Introduction

Interpersonal communication has become increasingly important, particularly in the light of globalization for interpersonal communication is a necessity for people. In a similar vein, for staying in touch with the loved ones is a necessity. Throughout the history, being accepted and being part of the society has been very important for humans. This has gained even more significance with innovations and new communication technologies. The best example of this is the evolution of ways of communicating with unlimited/wireless Internet connection from desktop computers to the smartphones we have. Beyond what we think, staying in touch is not only limited to the message; but we should also take care of who to send. Sending messages also opens the door for us to meet our need of belonging. It can be thought that the distance will become closer, and the borders will disappear due to the digitalization. We try to meet our needs to stay in contact by communicating with people we know or with people we do not know. Beyond coping with loneliness, it can be said that being in touch contributes to the well-being of the individual by making him/her feel good for himself/herself as an individual. Thus, novelty of the twenty-first century brought a new dimension to interpersonal communication especially young generations via digital new media which have become irrevocable for themselves.

Human beings continue to communicate either intentionally or unwillingly in every second of their lives. As it has been defined among the first principles of

interpersonal communication by Ref. [1] as "*We cannot not communicate*." Through the help of new technologies which add a new dimension to interpersonal communication, human beings obtain the opportunity to maintain their different needs. In other words, new media platforms provide alternative ways or tracks for human beings to meet their most essential needs (communication and well-being) since their interpersonal communication skills have gained a new dimension. These needs have wrapped oneself up in a variety of dimensions by several factors such as culture, personality traits, and so on. Similar to other needs, well-being is a vital need. Parallel to the developments in new communication technologies, new media has gained a significant place in socialization.

The present paper seeks to provide a theoretical framework for tertiary students for meeting their communication. The discussion focuses on the choice of face-to-face or online communication.

2. Communication

Defining "communication," necessity in interpersonal relationships. As it has been mentioned earlier, communication plays a significant role in a human being's life. Every human being gives importance to communication because it gives meaning to his/her life. Ref. [2] defines communication and focuses on endlessness of communication as "one those human activities that everyone recognizes but few can define satisfactorily. Communication is talking to one another, it is transmission of messages through radio, films, and television; it is spreading information; it is our hair style, it is literary criticism: it is endless" ([2], p. 1). Indeed, communication is also unavoidable for the activities of human beings because by communicating, they satisfy their needs. One of the initial examples for why we need communication was given by [3] in his hierarchy of need as: people set up communication to maintain a "range" of a "human needs" [3]. Thus, human beings communicate in order to establish close relationships to satisfy their needs. Ref. ([4], p. 328) assert that "Communication is central to relationships" and "Our close relationships mean a great deal to us. They help satisfy our need for connection." In addition to these, Ref. [5] states that "Communication" started with humanity out of necessity ([5], p. 23) and [6] points out that "To maintain a relationship, partners must communicate with one another. Conversely, as long as people communicate, they have a relationship" ([6], p. 1).

Troglodytes draw pictures on caves' walls, Red Indians made fire to use smoke, and natives of Africa hurtle tam-tam to communicate. Today, the need for communication is maintained by constantly developing products of technology in sophisticated societies [5]. As [5] defines, sophisticated societies do not keep them far from technology while they are communicating. Especially young generation is very fast followers of new digitalization in every form of communication from education to close relationship as well [5].

3. Interpersonal communication

Interpersonal communication is a sine qua non of our lives. Interpersonal communication is a systematic, selective process that enables individuals to reflect, learn more about one another personally, and develop shared meanings. By examining the definition of the term "interpersonal," we can start to comprehend the distinctive nature of interpersonal communication. Interpersonal communication actually

happens between individuals; the term comes from the prefix inter-, which means "between," or "among" the people [1]. The main focus of interpersonal communication is on messages being exchanged between two or more individuals. As it has been mentioned earlier, at the outset of the twenty-first century, interpersonal communication gained variety through social media. Ref. [7] state that "interpersonal communication is what people do together, not what each does separately" ([7], p. 13) that means people do something with cooperation. Principles of interpersonal communication are listed by Ref. [1]. These are Principle 1: We cannot communicate; Principle 2: Interpersonal communication is irreversible; Principle 3: Interpersonal communication involves ethical choices; Principle 4: People construct meanings in interpersonal communication; Principle 6: Interpersonal communication develops and sustains relationships; Principle 7: Interpersonal communication is not a panacea; and Principle 8: Interpersonal communication effectiveness can be learned.

As it has been listed above, these principles are at the center of interpersonal communication. In the digital age, social media platforms are actually aiding to sustain relationships by providing online platforms. Also, interpersonal communication's features are also visible on social media relationships. Selectivity in relationships is also possible with the help of the features of social media platforms. Interpersonal communication is difficult to define. As Ref. [8] suggests, interpersonal communication is continuum ranging from I-It, I-You, and I-Thou relationships. I-It relationship is used to describe our relationship with the society in general. People here are not very important for us. I-You type of relationship is used to indicate people we know, such as our colleagues. I-Thou type of relationship is our relationship with people who are very close to us. We know them well, and they occupy a significant role in our lives. The former two are also more common on social media platforms.

3.1 Interpersonal communication and interpersonal needs

Many times, "need" is equated with a particular form of "want" (such as a strong or reasonable desire, or whatever) [9]. There is a need to communicate and since interpersonal communication is essential to all facets of life and can only have significance within it, it is vital that we all develop these skills [10]. Based on interpersonal needs, Ref. [11] established a systematic method to studying interpersonal communication. Three categories can be used to classify interpersonal requirements, according to [11]. These three are affection, control, and inclusion. Control is related to the desire for influence and power; attachment is related to the need for friendship, connection, and love; and inclusion is related to the need to maintain a satisfying relationship with others and to feel that one has adequate involvement and belongingness. Interpersonal needs vary from one individual to another. We can better understand people's communication behaviors if we are aware of their interpersonal demands. According to Ref. [11] system, interpersonal interaction is considered effective when both parties' requirements are met. We converse with one another and assess how others perceive our thoughts, attitudes, and beliefs [11].

4. Computer-mediated communication

Humans nowadays mostly encounter novelty through technology. One notable example of technological innovation is computer-mediated communication, which is crucial to formation of social networks. Social networking sites have begun to

become a part of people's life due to the rise in computer-mediated communication. Conversely, "although computer-mediated communication is not a novelty, its current spread is casting a blaze of light on the new environments created by electronic communications," as noted by Ref. ([12], p. 12). According to [13], there has been a significant rise in computer-mediated communication over the past 10 years. A range of electronic communication and conferencing systems are included in computer-mediated communication, and these can be enhanced with audio and video links. "Any communication patterns mediated by a computer" is how Ref. [14] defines computer-mediated communication ([14], p. 32). "As computer-mediated communication has grown in popularity, traditional communication skills are changing" ([15], p. 1). The enormous success of Internet dating, which enables one to connect with probable partners they would not have otherwise met, is another sign of the growing use of computer-mediated communication, according to [13]. Furthermore, [13] states that a computer and Internet connection are necessities for modern life. People, indeed, place a high value on the Internet and computer technologies. One, therefore, cannot give up using computers or the Internet. The reasons why individuals cannot give up using computers and the Internet are explained by Ref. [13]. "This raises the question of how different online communication is from face-to-face communication, given the prevalence of computer-based communication in our daily lives" ([13], p. 12). According to Rheingold [16], computer-mediated communication more broadly creates a setting in which individuals can participate in communal activities. Cyber (virtual) communities emerge on the Internet as social groups. Furthermore, conversations and supportive dialog are generated to strengthen and establish partnerships. Ref. [17] asserts that while computer-mediated communications influence people to form strong, powerful bonds, they also provide opportunities for people to form weak, unique associations. Various researchers study computer-mediated communication in order to demonstrate its impact on humans. Among these, Ref. ([18], p. 2973) points out that "an area of computer-mediated communication research that has continued to evolve focuses on interpersonal characteristics and online influence, along with research relating computer-mediated communication to such tangibles as civic participation and work productivity." This quote captures the importance of computer-mediated communication research since studies are conducted to demonstrate the impact of online communication. Additionally, as social networking sites are essentially computer-mediated communication products with Internet capabilities, the study's objectives are similar. In addition to the Internet, a lengthy history of computer mediated communication technologies like the printing press, telegraph, radio, telephone, and television also gave rise to computer-mediated communication [19]. According to [20], the main goals of social networking sites are to clarify things. Ref. ([20], p. 2946) states that "Social networking sites, like MySpace, are designed to let users express their personalities through the creation of elaborate homepages, personalized with various backgrounds, graphics, music, and videos, while conversing through computer-mediated communication."

5. Social networking sites

Nearly 20 years ago, the grounding of new media had been constructed by social networking sites. In 1994, theglobe.com, geocities, and Tripod were formed as online communities. These social networking sites let individuals interact for finding information and focusing on particular interests [21]. In 1997, SixDegrees.

com was revealed as the first social networking site. Initially, it let users build their profiles and list their friends. Then, the users could surf on their friends' lists. Opportunities were supplied to connect and send messages to others. In 1999, LiveJournal, Asian Avenue and Black Planet were well-known as social networking sites. In 2000, Lunar Storm and MiGente were major social networking sites. Cyworld and Ryze were well-known social networking sites in 2001. Fotolog, Friendster, and Skyblog were predominate social networking sites in 2002. In 2003, LinkedIn, MySpace, Tribe.net, Open BC/Xing, Last.FM, and Hi5 were predominated social networking sites. Orkut, Dogster, Fickr, Piczo, Mixi, Facebook (Harvard-only), Multiply, aSmallWorld, Dodgeball, Care2, Catster, and Hyves were predominated social networking sites of 2004. In 2005, Yahoo! 360, YouTube, Xanga, Cyworld, Bebo, Facebook, Ning, Asian Avenue, and BlackPlanet were major social networking sites of 2005. In 2006, QQ, Facebook (corporate network), Windows Live Spaces, Cyworld (U.S), Twitter, MyChurch, and Facebook (everyone) were predominated social networking sites [22]. Today, social media is now accessible anywhere and at any time [23]. Thus, social networking sites are web-based services and permit people to build their profile. A profile can be built as public or semi-public within the delimited system. Thereto, social networking sites enunciate other users' lists, who partake in a mutual connection. Also, users can catch and reach their own connection list that were built by others who are within the system. This process can be different from site to site [22]. Since 2010, some social networking sites are still popular, for instance, Facebook, Twitter, LinkedIn and so on.

Current new media platforms are not only increasing day by day, but also more and more people target to use them. In other words, people need to be part of those platforms, especially young people. It might be highlighted that they need to be part of a network for communicating, for getting information, and for following novelties according to their interests or for just keeping themselves well, increasing their well-being.

6. Social media

In the twenty-first century, social media platforms are utilized by most people all-around the world mainly for surveillance and entrainment. Over the past decade, social media and services have especially become the heart of contemporary culture and became an esoteric jumble of technologies [24]. Social media provide opportunities for establishing online communities [15]. Social media users can learn the agenda of their friends; what happens to friends that are in their friend lists. They can make comments about any post of their friends and become part of their conversations. They can share views or even they can press the "like" button without typing anything. Thus, it could be stated that currently social media has become a significant part of our lives with respect to interconnectedness and interdependence of culturally diverse world [25]. There are plenty of definitions of social media that we may find if we search for it. The general consensus among definitions is that social media refers to digital technologies that highlight user-generated content or engagement [26].

Figure 1 above provides a historical timeline of the evolution of social network sites. As the time passes, social network sites develop parallel to the developments in technology. Initially social network sites started with sharing texts, and then, photos and videos are added. Developing technology led to the formation of a variety of social network sites with emphasis on Twitter (now X) for political communication;

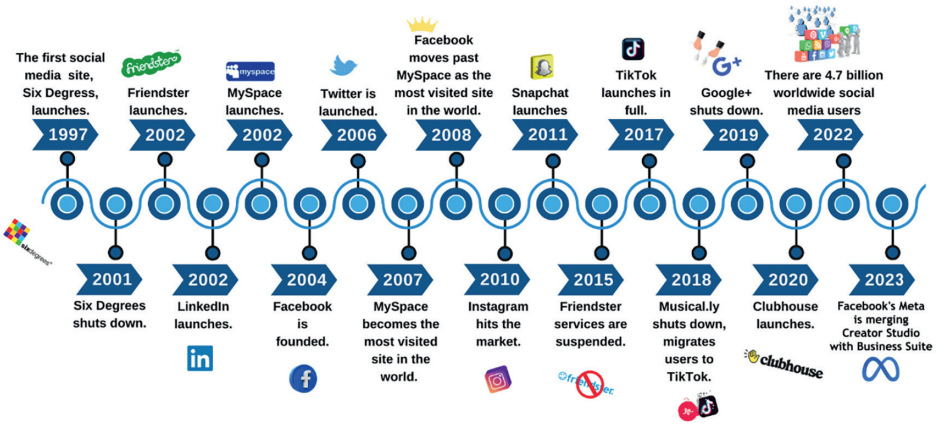


Figure 1.
Current timeline of social media [27].

Instagram for rather visual communication, etc. Tertiary students constitute the category of people who have initial access to the most developed technology. Also, they are familiar with digital technology for their studies. This extensive use of technology makes tertiary students extensive users of social media in order to cater for their communication needs. What is more, going to university, for many tertiary students means leaving home for the first time and starting to live alone away from the family home in a new environment. This brings in some difficulties in communication for young people who are in need to form a new social circle due to starting a new life in a higher institution sometimes on a different city, sometimes in a different country with people they do not know earlier. In this case, young people prefer social media for socializing in addition to face-to-face communication.

7. Public sphere and interpersonal communication in digital age

Ref. [28] asserts that an important concept for interpersonal communication is "public sphere" which defines it as network for communicating information and points of view. Thus, it provides an arena where citizens come together, exchange opinions regarding public affairs, discuss, deliberate, and eventually form public opinion. This definition explains public sphere well and shows that people need to take place in these areas in order to exchange opinions, discuss political issues, etc., since these are natural needs in people's lives and they constitute a need for communication. Sharing ideas leads to change. The concept of the public sphere is influenced by the current developments. Today's public sphere has become more powerful than ever with the help of the media. Ref. ([29], p. 52) explains the significance of media in public sphere as: "defined in relation to the mass media, because the mass media permit the circulation of opinion and offer the conditions in which the forum can function." Also, developments in computer technology and the Internet provide important opportunities for the public sphere. Social networking sites are the best examples for recent products of computer technology and the Internet which create

opportunities for the public sphere. Indeed, Ref. ([30], p. 7) asserts that "The Internet as, fundamentally a freely accesses medium of mass communication, is introduced to this otherwise heavily commercialized theatre of mass communication, sparking great expectations in the minds of those that support the reinvigoration of a public sphere." Current new media platforms constitute new "public sphere." Thus, "when people communicate online, time and distance do not matter. When communicating, they may be able to express themselves without the fear of judgment" ([15], p. 15). People overcome obstacles in normal life because in online life, people do not face judgments like normal life so that they can set up good relationships and they can maintain their needs.

Thus, social media bring a new dimension to our lives, especially the young generation initially gets benefit from those novelties. Hence, it can be concluded that social media are new channels for interpersonal communication. As it has already been known, the channel serves as our means of disseminating knowledge and learning new things. With innovations in technology, cell phones can now serve as multiple channels of communication simultaneously. Just think about how we can text and converse on our smartphones. We can also communicate with each other via email, Instagram, Facebook, and Twitter, among other platforms. These channels are all in addition to our conventional means of communicating, which include phone calls, letters, and telegrams. As [31] mention, this process is not entirely one-way from the sender to the receiver. This has transformed due to the developments in technology. They have provided us with opportunities for contacting and communication that we did not have before [31]. Prior to analyzing what the world ultimately did with those possibilities, we must first clearly define what those potentials are. Thereto, this chapter emphasizes what impact social media bring to tertiary students and their interpersonal communication. Today interpersonal communication is not the same, and the younger generation does not know old forms of interpersonal communication better. They know online and offline interpersonal relationships in the same public sphere better than older generation. They may not distinguish differences between online interpersonal communication over social media platform (online public sphere) and offline interpersonal communication (offline public sphere). As Ref. [28] defines that the public sphere is "network for communication," and young people prefer to use networks for communication both online and offline at the same time for fulfilling their needs. Additionally, as [7] mentioned in their book, sustaining relationships and social media have relationships. That is why researchers who study interpersonal relationships have focused on the interpersonal relationships people are involved and how they feel about themselves in many of their studies. The importance of emotions in social contact has been acknowledged by interpersonal communication scholars on a growing number of occasions [32–34]. For sustaining relationships, our emotions and feelings are important.

8. Conclusion

Many innovations in technology in the twenty-first century have made people's lives easier. The lives of people alter as a result of these advancements. People's interpersonal communication abilities, for instance, are evolving as a result of these advancements. One of the causes of those shifts is social media. Social media is an amazing technological creation. People's use of social media has become permanent. The most popular social media platforms among university students are Facebook,

Instagram, Twitter, and others. For tertiary students, social media has brought novelty to interpersonal communication skills and maintenance needs, such as well-being and connection. As a result, there have been good changes in how tertiary students maintain their necessities. The aforementioned needs are vital requirements for all ages, and social media serves as a platform for maintaining interactions, well-being, and participation in society (being part of public sphere in digital age). Since communication gives a purpose to our lives, it holds a significant place in human society. Relationships depend on communication, as was previously stated ([4], p. 328). In particular, communication plays a major role in human existence. Ref. [5] asserts that the expanding range of technological products sustains communication needs. Social media, according to [21], are web-based platforms that enable users to construct personal profiles. Within a restricted system, users can build their profiles as public or semi-public as they choose [21].

For nearly 60 years, numerous theories have attempted to explain why humans interact. Interpersonal needs theory, which was created by Ref. [11] holds that humans create and sustain relationships in order to satisfy three basic wants [11]. Affection, or the desire to love and be liked, is the most basic need. The need for inclusion, or the need to fit in and be social, is the second need. Control, or the desire to have power over the people and things in our lives, is the third need. According to [3] theory, human communication meets a variety of purposes. Ref. [3] states that meeting our basic needs comes before concentrating on our more abstract needs (physical needs, safety and protection needs, belonging needs, self-esteem needs, and self-actualization needs). In other words, we communicate in line with our needs. Young people and university students also communicate to meet some of their needs. This communication process continues from belonging to a group to feeling good in a group.

Furthermore, interpersonal communication also highlights how communication processes evolve over time. Consider the changes that have occurred in online and digital communication during the last 20 years. Also, social media is now an integral part of every society. Regardless of their individual participation levels, today's teens are growing up in a time characterized by easy access to information and mediated communication. Social media innovations will keep coming up, opening up new avenues for connection, and intriguingly nuancing social dynamics. Physical and digital boundaries will always be hazy and intertwined as social media usage grows. People will face new obstacles as they attempt to redefine privacy, claim their identity, and renegotiate everyday social relations in the light of new developments. Despite the new challenges that will arise, social media platforms will continue to be a channel for interpersonal communication, as one of the ways to stay in global communication. Because the way to stay in touch is not only established through traditional channels, young generations will continue to stay in touch effectively with innovations. We will keep up with the latest technological advancements. Innovations shape our needs. In short, staying in touch and maintaining communication will always continue as a need. Also, being engaged in interpersonal communications has an impact on our emotions. This situation is also seen in the relationships established on social media platforms. Because we express our emotions in the relationships we establish on social media platforms. This expression and response to it finds a place in our needs. As Ref. [8] claims for face-to-face communication, I-Thou relationships are uncommon because we cannot afford to constantly expose ourselves to everyone. I-Thou relationships and the communication within them are therefore unique and uncommon [8]. A large portion of our communication is what Ref. [8] referred to as "seeming," where

we are concerned with projecting the right image and taking care to control how we come across [1]. Ref. [8] views also will continue to happen on social media that means online communication [8]. One could not get engaged in I-Thou relationships easily over social media platforms for and this type of communication is extremely significant for human beings.

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Chapter 2

Tradition and Social Relationship in Utilizing Resources

Bisrat Yazew

Abstract

The study aimed to discover the social relationships, network ties, and cultural norm functions in endorsing systems of traditional resource utilization. It also deals with the interdependencies between natural environments, indigenous pastoral communities, and the conditions of pastoral way of life. A qualitative methodology was applied to collect the primary data through focused group discussions, open-ended interviews, and situational observations. The research participants were selected based on the purposive sampling technique. The gathered data was interpreted thematically with a qualitatively grounded network analysis approach. The study explored that the community's social ties and resource use customs *(faagee and maygarraa)* were governed and directed by the unwritten customary law *(maa'daa)* procedures. However, economic inequality and environmental degradation impacted traditional socio-cultural value practices, social interactions, and social trust. Furthermore, ineffective government interventions reduced mechanisms for resource use. Therefore, in light of the livelihood circumstances faced by desert pastoralists, efforts must be made by stakeholders and social groups to preserve traditional resource use and social interaction knowledge and practices.

Keywords: traditional, resources, networks, environmental, cultural, clan group, interactions

1. Introduction

Pastoralists in Africa occupy territories in peripheral locations, use and access resources, and apply traditional governance and customary law procedures [1]. Several studies on the Afar case have reported on resource use and conflicts, prospects for social development, and settlement patterns among Upper Awash River Valley pastoralists [2]. Besides, rangeland access perceptions [3] and livestock rearing and production administration systems [4] were explored. At this juncture, African pastoralists have maintained or acquired traditional experiences to lead their overall socio-economic activities within very hot and arid climatic conditions [5]. In addition, livestock production practices have also helped pastoralists to acquire detailed experiences and knowledge of their environment. These community-based skills still play a significant role in managing and utilizing resources [6].

However, Afar pastoralists have faced challenges in maintaining their traditional lifestyle, which is being eroded [7]. Other factors also characterize widespread marginalization, social injustices, economic inequalities, and insignificant political representations and participation [1]. Here, let alone the sociocultural cases, government policy intervention often challenges pastoralists. State agencies usually ignore or even attempt to undermine indigenous socio-cultural practices and traditional institutions. This resulted in broader perceptions of economic and social injustice [8].

Furthermore, the expansion of mechanized farming at the expense of pastoralist pasture lands, the growth of urbanization, and changes in settlement patterns [2] were claimed to be the major factors of increasing effects of implementing irrigated agriculture, in turn, prevailed marginalization and resource degradation [9]. These factors have impacted pastoralists' livelihoods, which have not yet shown improvement. Even the cumulative impacts reflected in pastoralists' clan interactions and cohesion become dispersed. Hence, this study proposes to investigate how these factors affect traditional social relationships and socio-cultural values and practices in utilizing and conserving natural resources.

As far as the applications of social network theoretical perspectives, various types of research investigated networks and household member relationships [10], fertility [11], social work [12], and gender roles [13]. Other empirical studies have taken network elements to find out factors affecting network ties and balanced interactions [14], communication links [15], and the impacts of socio-cultural obstruction that affect the network relationships [16]. Research on social networks in natural resource

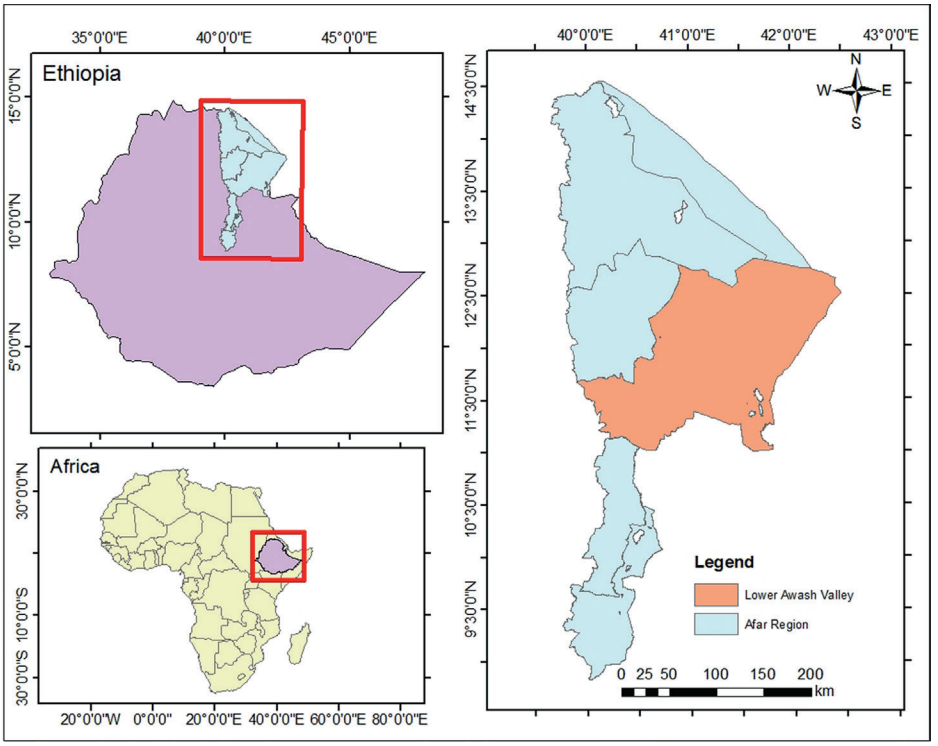


Figure 1.
The location of the study area.

utilization from traditional societal contexts is limited; instead, it has given more focus to urban areas and organizational levels.

Traditional social relationship processes are supposed to maintain natural resource balance. Recognizing pastoralists' livelihoods would help to draft effective policies and programs for sustainable resource management, preserving traditional knowledge, cultural values, and social capital [17]. At this point, from the conventional point of view, exploring Afar pastoralists' socio-cultural and livelihood contexts and traditional practices, social network theory is needed. Thus, using a social network theory and qualitative research methods, this research is keenly interested in identifying the interdependencies between social relationship patterns and the environment. Therefore, this study explored the dynamics of social relationships and traditional cultural value practices in utilizing and conserving resources among pastoralists in the lower Awash River Valley (see **Figure 1**).

2. Method

The study area, the Afar region, is located in northeastern Ethiopia. The Afar pastoralists are known for their establishment based on clan conglomerates. The society uses similar language, traditional governance, and the applications of the traditional court system [18].

2.1 Research method and design

The study used a qualitative method to collect the primary data from target research populations. An ethnographic research design was implemented to investigate the nature of social relationship and socio-cultural value practices in accessing and utilizing natural resources, participant situations, reflections, and social interaction processes.

2.2 Sampling technique

The concentration of Afar clans and sub-clan groups for accessing water and natural grazing lands, Zone 1, Awsi-Rasu, was selected as a significant research site. Along the lower Awash valley, the settlement locations of *Afambo, Asayita, Dubti, Elidar, Mille, and Samara-Logia* were chosen (see **Figure 2**). Accordingly, using the purposive sampling technique, participants [experts, clan leaders, women, community leaders and workers, administrators, managerial skills, pastoral livelihood, and communication and information representatives] were selected based on their participation, acceptance, job responsibilities, attitude, and knowledge. As a result, 96 primary data sources were selected and contacted. To get a reliable result, utmost care is essential [19]. Participants were chosen without bias during the selection process to protect data distortion.

2.3 Data-gathering tools

The nature of this study was open-ended, and a qualitative approach to data collection systems was applied. This is because the collected data were not numbers but words in nature [20]. Thus, group participants, key informants, and observation techniques were used as data-gathering tools. A total of six focused group sessions, with

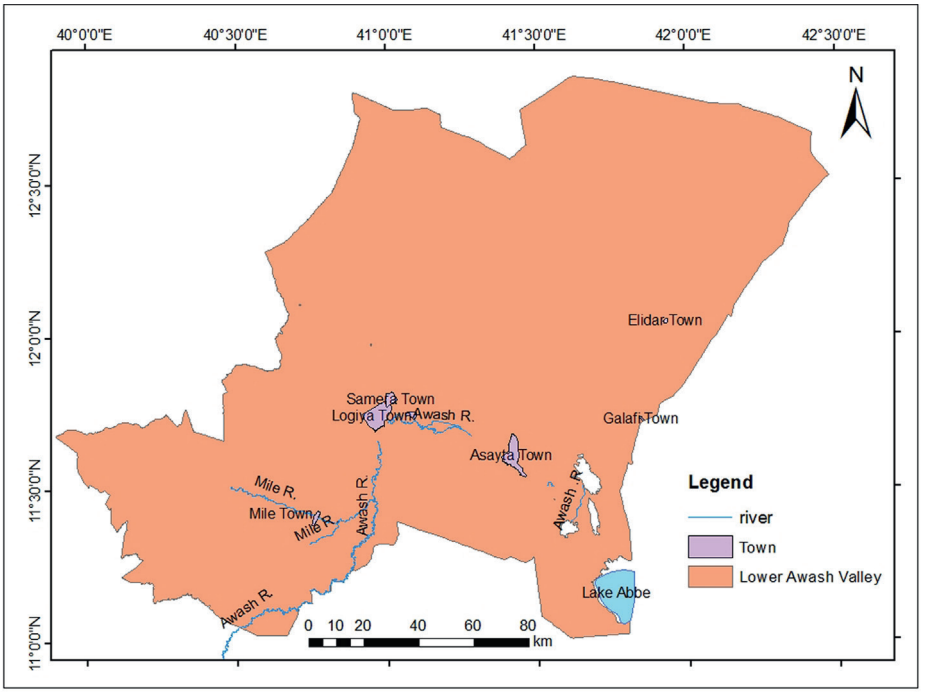


Figure 2.
Lower Awash River Valley and settlement areas.

a range of eight to twelve participants for each, were conducted. Such a group size is believed to be convenient for flexible discussions among participants [21]. Again, 22 key interview participants from all research areas participated. All the results were stored in a voice-recorder apparatus. From the local language (*Afar af*), all primary data were translated into English.

2.4 Data analysis method

As it has been said, qualitative research supports gathering, tabulating, and analyzing the data on what people do and say [22]. Accordingly, a descriptive/interpretation technique was applied to analyze the collected primary data from a key informant and focus group participants. The interpretation process followed the objective of the study.

3. Results

3.1 The social system and exchange of information

The mechanisms to use resources while preserving and protecting the environment vary from place to place. Most people have applied modern techniques, while other indigenous people have implemented traditional ones. Meanwhile, the Afar people are discovered for their traditional systems of utilizing natural resources.

Afar's pastoralist's traditional law (*maa'da),* which is unwritten, preserves rules and regulations to use resources sustainably. Violating resource use practices may lead to punishment, up to the suspension of getting services. This law recommends that groundwater be preserved in open areas for forest animals at night during the dry season. Female animals are not allowed to be used for carrying goods or transportation services. In principle, fair treatment and resource utilization are expected from all social members. The land is a communal proprietorship. At times of seasonal mobility, resources are primarily utilized in each clan territory per the agreement reached among clan groups. The people have a close interdependence and harmonious coexistence with nature. Therefore, the traditional mechanisms of society, in resource utilization and social interactions, were facilitated by strong social network systems.

In the Afar society, each social segment has a leader calls followed by the name *abba*. Each unit's decision-making is based on the social levels, each with unique traits and obligations. The authority name, such as the household head, extended family head, and clan leader, is each social level's appointed leader. Makabantu is the other higher official's collective authority name for collective clan leaders, in plural form *meekaaben*. As one of the key informants explained the scenario:

> *"At each social level, consultation allows the agreement to cooperate, preserving community cohesiveness and avoiding threats resulting in division and violence. [KI4, male-1, community elder, ages 63, Asaita area]*

The Afar people's social hierarchical status and socio-economic interactions have still been achieved through effective and comprehensive traditional communication systems, *dagu*. The social networking system allows individuals within a social group to develop relationships with other individuals. The social link also provides networking opportunities, such as benefits to help actions against disaster, searching for resources, performing public works, etc. According to one of the FGD participants,

"The traditional communication serves when members of the community or visitors from other locations meet; when a person is known to visit or go to another location, and when gathering data on where there is peace and security and available rain, water, and pasture." [FGD3, male-4, age 41, Logya-Samara area].

The importance of exchanging information is also stated by one of the key informants:

"Traditional communications include issues containing people's day-to-day activities, ritual performances, religious festivity, etc. These are significant in strengthening social relationships." [KI21, male-2, community elder, age 58, Dubti area].

The information transmitted to each recipient, in turn by the receiver, must be transmitted without altering the message's contents. As one of the key informants stated the case from the overall law perspective:

"Revealing information that jeopardizes the security of the social members or even a clan, the traditional court puts one in jail. For example, if someone divulges information about rain, water, or pasture that isn't available, they will be penalized since the other realizes that this information may hinder their efforts to find resources." [KI11, male-2, age 48, Logya-samara area].

At this point, within a social relationship process, the flow of communication was primarily coherent and free of deformation, allowing people in different locations to cooperate and interact. Thus, the social relationship process plays a vital role in helping individuals and social institutions succeed in fulfilling their goals.

3.2 Seasonal mobility and resource use: From traditional practices perspectives

The nexus between natural resources and socio-economic conditions shows that pastoralists apply seasonal mobility as a coping mechanism to survive the impacts of recurrent droughts and resource scarcity. Afar lands are divided into clans' territories (*dinto)*. The pastoralists migrate or move to other areas where resources are supposed to be available. After staying for some months, they re-settled in their original places (*guubb);* see **Figure 3**. This seasonal mobility supports pastoralists in sharing the available resources. According to one of the key informants,

> *"Even though territorial claims live among clan groups, usage and sharing of natural resources sustainably take the highest position of agreements. Yet, this procedure applies only if permission is given from other territory clan heads to protect conflicts." [KI9, male-4, age59, Logya-samara area]*

Afar pastoralists have a specific place of birth *guubb* and a permanent settlement area *allee-gehena;* see **Figure 3** below. As one of the key informants stated the reasons:

> *"The traditional knowledge is used to search for water and pasture lands with care and confirmed procedures. This is supported by 'dagu' regarding the season and where and how resources are available." [KI15, male-2, kebele administrators, age 61, and Mille area]*

In the Afar pastoralist's context, children, elders, lactating women and some home animals are supposed to remain at home during seasonal mobility. Some travel to search for pasture and water, while others keep the livestock (see **Figure 4**). As one of the FGD participants stated the reasons as follows:

> *"First, all animals and settlers are not supposed to travel. The available peace and security and the needed resources determine the moving directions. Cross-checking*



Figure 3.
Allee-gehena-guubb – original settlement village after mobility.



Figure 4.
Pastorals in searching for water and grazing land.

> *the target pasture areas must be done to ensure either they are reserved or protected [desso]. The second alternative is that all people with livestock leave their permanent houses." [FGD6, male-3, community elder, age 65, Dubti area]*

During no contact, the environment is protected to be rehabilitated and rejuvenated. It implies that there are places where pasture lands are either protected or open to access (see **Figure 4**). One of the pastoral livelihood experts described the reasons:

> *"There are two types of pasture lands. The first is 'Desso,' which is not allowed for purpose, and if someone breaks or violates this rule, punishment follows. When traveling to get places, it is important to check if the pasture land is protected or open to animals. Pastoralists manage resources based on these principles." [KI10, male-3, age 49, logya-Samara area]*

It was discovered that resources are managed according to the change of seasons. During the winter and summer seasons, such as *akidda*, when the grass is rejuvenated and rehabilitated, and *eidalsa* or *dabbana*, when pastures are permitted, and permanent water sources are accessed, people are restricted from moving to other locations, see **Figure 5**. Perpetual usage of springs and ponds should not be allowed during the rainy season, but the practice of protecting the environment would be recommended. As one of the key informants explained:

> *"During rainy seasons, pastoralists should use resources with caution to protect from potential exploitation, as they will provide enough food for animals during the dry season. Hence, animals should not be allowed to use pastures near spring or pond water sources." [KI9, male-4, Pastoral Livelihood experts, age 59, Logya-Samara area]*

Trees were given special attention to protect them from being deforested. As one of the key informants generally reflects their experiences:



Figure 5.
Livestock near the pond.

> *"Every social institution and social segments protect natural resources and punish those who harm and destroy them. So, old and unique fruit trees have been given special protection. However, some local tree branches are used for fundamental purposes, such as home construction. Otherwise, deforestation and cutting down of trees will allow being punished." [KI4, male-1, age 63, Asaita area]*

Allalla is a cattle training system that increases their speed and movements while traveling long distances for food. One of the FGD participants and key informants described the reasons respectively:

> *"When the competition increases, the number of animals running faster also increases. The animals can move to where the water and pasture are. As a result, the number of animals affected by food shortage will decrease, and the outcomes [like milk, meat, money, wealth, and social status] will also increase. As such, the main participants in training sessions are those in the leading positions." [FGD4, male-3, age56, Mille area]*

> *"The fundamental principles of home animals' natural law dictate them to lead in front of others and identify water and pasture source locations. These animals are trained to be faster, more conscious, capable of identifying and directions, understanding, hearing, and practicing the herdsmen's orders, steeping in fast motions, knowing where water is located, and becoming the first users of water and pasture." [KI6, male-3, pastoral livelihood expert, age 65, Asaita area]*

Furthermore, pastoral livelihood experts, community members, and almost all FGD participants responded similarly that *mdelayto* cattle are preferable because they cannot give birth but are strong enough to take the lead in running competitions and are more selective. Cattle with such natural characteristics are strong and can travel at least 20 to 30 km daily.

3.3 Resource usage procedures

Ponds (*deeraa)*, a digging whole (*aellaa),* and springs, for example, are water sources that support pastoralists' desert life; see **Figure 6**. At this point, one of the interviewees stated the utilization process as follows:

> *"When utilizing ponds and available water sources, everyone shall respect the resource access procedures. The procedures apply at dry and wet seasons, 'daayu' and 'dugguggu' respectively." [C1, male-1, age 55, Afambo area]*

Furthermore, one of the pastoral livelihood experts stated why these procedures are needed:

> *"The idea is that water should be managed to protect its sources and surrounding areas from overload pressure and upcoming destructions. This is especially important for animals with high numbers, as it can limit their chance to drink as much water as possible." [KI12, male-5, age 36, Logya-Samara area]*

Faagee is the other procedure for utilizing river water and pasture fields. It is an area within a river where animals and people can cross to the other side. It is made of

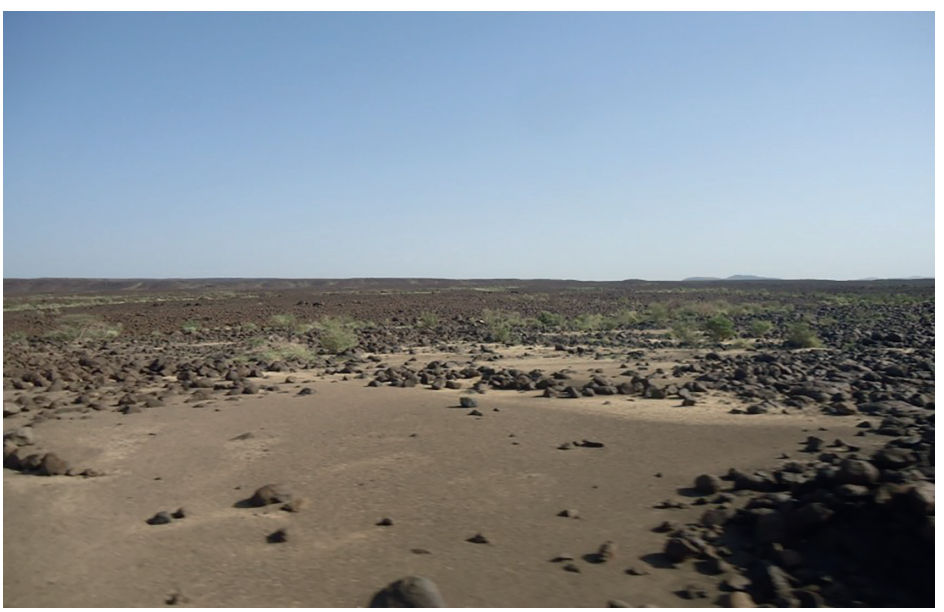


Figure 6.
Ponds in the dry season.

stones and is not available on all river banks; instead, it is prepared after determining service provision suitability. The importance of such a resource utilization procedure is stated by one of the research participants as follows:

> *"The significance of selecting service locations, raising awareness, and implementing based on function is determined by the preconditions of knowing the comfort of the place, protecting children and cattle from harm incidents, and respecting the rights of both home and forest animals." [C6, male-1, elder, age 57, Dubti area]*

Furthermore, one of the key informant respondents provided more concepts on how social interactions have been involved in utilizing resources:

> *"Because of adopting the desert life, pastoralists know where water and forest animals are found and can identify which part of the river is used. This connects with the philosophy of pastoral knowledge in' faagee.' Thus, the procedures that one must not discriminate impose the other and must not put insecure others' right to use the available natural resources. It implies a pastoralist's life connects with the principles of interdependency." [KI12, male-5, age 36, pastoral livelihood expert, Logya-samara area]*

Who Manage Resource Usage Procedures? *The community nominates Ella Abba* to manage, control, and coordinate the services of ponds and spring water sources. One of the FGD participants described the scenario:

> *"Ella Abba's are expected to manage and follow up on resource use activities. They protect illegal usage by getting the services in order of turn and, if a conflict arises, manage it through conciliation. If someone does not respect the procedures and acts, they will be punished by paying compensation or being barred for a limited time from getting service provisions." [FGD2, male-3, Ella Abba, age 42, Asaita area]*

Non-home animals are considered in two categories: those that harm other animals (fox, hyena, snake, tiger, lion, and others) and those that do not harm (elephant, zebra, ostrich, etc). Killing those harmful animals is forbidden unless defending and protecting their actions. Harming and discrimination against both types of animals are confirmed, and punishment will follow accordingly. Non-home animals are provided and respected by *faagee*, as it allows them to be free and use water during the nighttime. Thus, the Afars reserve and provide aella water for forest animals with an open channel during the dry season (see **Figure 7**). It implies that humans and forest animals can coexist harmoniously by sharing resources.

3.3.1 Challenges

The expansion of Prosopis tree species, locally called '*dergi-hara,*' recurrent drought, environmental degradation, and weak expertise advice and government interventions were discovered as the main challenges affecting pastoralists' livelihoods in many ways. During field visits, some pastoralists were observed selling firewood and charcoal to generate household income for survival. Were they cutting trees? One of the key respondents replied:



Figure 7.
Physical features during the dry season (Eli'dar area).

> *"Those people sold firewood and charcoal not by cutting trees, but rather the Afar community, in rural areas, used to collect wood from the floods from the uplands and trees falling from wind effects. The dominant acacia tree's shallow-rooted nature and the slope's gentle nature can also be attributed to destructive impacts from winds and floods. This is the reason that they are selling firewood and charcoal." [KI10, male-3, pastoral livelihood experts, age 49, Logya-samara area]*

However, in Mille, Asaita, and Dubti's research areas, situations were observed in which people were identified as cutting Prosopis Julifera tree species. Why? Is it not deforestation? And does it not affect the surrounding climate? For these and other related questions, one of the FGD participants and key informants respectively explained the possible reasons:

> *"The Prosopis julifera trees do not allow undergrowth of grass and bushes beneath its canopy. Shrub species' growth is an important source for our livestock. So, we control its expansions in areas where animal fodders like shrubs and pasture land are located." [FGD4, male-8, age 42, Mille area]*

> *"The expansion of Prosopis has limited and inhibited such growth, shrinking the natural pasture land. This further results in rangeland resource conflicts, migration, and challenges to livestock production." [KI12, male-5, pastoral livelihood expert, age 36, logya-samara area]*

According to one of pastoral livelihood and range land management experts, FGD, and key informants, as a witness to the impacts of Prosopis tree species on the local natural pasture lands, livestock availability, and the other huge gaps that claimed for environmental degradation explained:

> *"Livestock market prices are deteriorating due to the unavailability of pastures and the impact of recurring drought. Hence, livestock restocking for the market is becoming*

unprofitable, putting the livestock of pastoralist households at risk." [KI9, male-4, age 59, Logya-samara]

"The ground reason for the depletion of natural resources, as most sector organizations know, is poor management and inadequate monitoring systems, although the government has taken on the responsibility of preserving, managing, and protecting natural resources." [KI22, male-3, age52, Dubti area]

"Improper practices of maa'da contributed to worsening environmental degradation and inefficient resource use." [FGD1, male-4, age 30, Afambo area]

Besides, selected community members provided their appeal:

"During the rainy season, as we expect rain, it might not appear on time. Thus, a water shortage for animals occurs, and we would be forced to use the protected water sources."[C5, male-3, age 52, Eli'dar area]

"Although we have acquired traditional knowledge of how to protect and use alternatives to ensure resource availability, environmental degradation, recurrent drought, and other human-made impacts forced us to use pond water even during the rainy seasons." [C2, male-1, age 64, Asaita area]

"What the experts have consulted us is already what we have known. No better and alternative mechanisms have still not been introduced. The strength of practicing the customary law has become less and less over time. This resulted in exacerbating environmental degradation and poor resource use. Thus, we are forced to use either protected or unprotected water sources for the time being as needed." [C1, male-3, age 52, Afambo]

4. Discussions

4.1 Social network and social network analysis: A conceptual perspective

From a social network perspective, interpersonal interactions are vital. Numerous social science disciplines, like cultural studies, sociology, and management, have utilized it extensively [11]. Depending on its notion, the explanation might change. Social networks may facilitate the enforcement of social norms in close interactions where significant others have the authority to impose sanctions [12]. The social network may be the process by which connected individuals within a social group exchange goods and services [13].

This would help define the kind, extent, and type of social support required to build social capital among groups. Accordingly, using this social network theory technique, it is possible to measure how players interact in social networks. More scholars who applied network concepts are considering the "network structure" of social life. The relationship between people and content used to find each other is symbiotic [23]. According to social network analysis, structure plays a vital role in characterizing the social environment [12].

A collection of qualitative analytical methods called social network analysis can potentially include socio-cultural phenomena. It is based on an investigation of

social actor interactions and the relationship between the features of social networks. Various methodologies for analyzing links or structures are included in social network analysis, a widely used theoretical approach to structural analysis [13]. A group of nodes, or social actors, and their connections make up the social network. Socio-economic reciprocity and interpersonal interactions are the main variables affecting these linkages. As a result, social relationships and support tie practices could be seen as the two most essential components of social network analysis.

It is possible to incorporate socio-cultural phenomena into social network analysis, a group of qualitative analytical techniques. Investigating social actor interactions and the connections among social network features forms its foundation. Social network analysis is a widespread technique encompassing a range of linked or structure analysis methodologies [17].

In social network analysis, network participants, nodes, or connectors can be individuals, families, communities, or organizations because it can happen at various conceptual levels. Actor-to-actor interactions can also follow a wide range of principles. Currently, there are two methods for researching social networks: *sociometric analysis,* which considers the connections between all the network participants, and *ego-centric analysis*, which concentrates on networks of interpersonal interactions. On the other hand, sociometric links can focus on a range of social interactions, such as romantic relationships, friendships, people with whom a person uses resources and related activities, or networks of cooperation between social service organizations [24].

Players' interactions within social networks can be measured using the social network analysis method in social network theory. Its foundation studies the interactions between social actors and the connections between social networks' characteristics and strengths. Social network analysis includes and extensively uses a range of approaches for finding and analyzing links or structures [13]. Scholars examine the network structure of social life and focus more on social relationship research. In addition, network concepts, including structural holes, density, centrality, and structural equivalence, are becoming more prevalent [25]. Social network analysis now highlights the importance of structure in characterizing the social environment [26]. Additionally, people are connected [12] to a specific social group through a social structure known as a network. As a result, indirect connectivity is crucial for coordinating or regulating autonomous social entities [27].

Qualitative network analysis techniques with the production approach were used to link the previously mentioned ideas with the current study's goal. This method concentrates on situations where social groups exchange knowledge and engage in direct and indirect environmental interactions [28]. This production approach also evaluates the relationship between the environment and societal impacts, acknowledging the significance of process factors within knowledge production networks [29]. The study's efforts to create network maps of the relationships and interactions among social groups, individuals, and the environment were thus aided by these methods.

To comprehend patterns of cultural participation in terms of particular people's cultural practices, Bennett et al. [30] used presumptive theories that were investigated using a qualitative methodology. Additionally, Allington [15] used social network analysis to examine the significance of shared values among peer groups in functioning within cultural domains. Cultural values are linked to meaning, networks, and interactions; many are also amenable to qualitative network analysis [29]. For example, the social network analysis approach can help close the gaps between

the real social world phenomenon and the theoretical space of objective relations. The networks indicate maps of social ties in the area of cultural production and systems of direct and indirect links [31]. Therefore, the qualitative network map can bring together the patterns of social groups and individual interactions and network attributes connecting various cultural values.

Based on the information collected from respondents and evaluating the relative strength of the various flows and relationships pertinent to articulating and triangulating [32] cultural value practices, the qualitative network analysis employed a network map or diagram that was qualitatively grounded. This method focuses on specific interactions and individual relationships through the use of descriptive and thematic analysis of the qualitative data [16]. The network maps' qualitative characteristics can depict the relationships' and interactions' content and flows. Accordingly, the network maps would incorporate fundamental subjective relationships, participants' cultural behavior, and information flow. This study employed a qualitative approach to conduct a participatory and culturally discursive analysis of social relationships and connectivity.

4.2 Social networks: From social relationship perspectives

People's interactions, connections, and exchanges with their social and physical surroundings are called social relations [33]. Accessing valuable resources through social connections may enhance performance [34]. However, the dominant family coalition's desire to pursue particular economic and non-economic objectives may also be influenced by social interactions. A strong sense of shared identity is necessary for socialization and group interactions. For example, the process of constructing social integrations has phases. These phases include shifts from hostile social relations (like exclusion, polarization, and fragmentation) to positive ones (like cohesiveness, coexistence, and collaboration), which lead to community integration. According to several viewpoints, robust social relationships may help people to communicate each other.

Regarding the social interaction process in society, the interactions between individuals and members of clan groups, focusing on their behaviors and responses to each other, could serve as an example [17]. Members adhered to a standard set of expectations, guidelines, and norms through their social interactions. The clan head, clan councils, or traditional court judges enforce consequences when those norms, rules, or expectations are broken. This is done based on the social perception of antisocial or resource-mismanagement behavior.

At the largest, middle, and small social levels, the interactions between individuals and groups in society would undoubtedly be represented by the fundamental sociological concepts of social relations and social change [25]. A group of Afar people who live in a specific area of Afar land interact with one another and share a common culture—a collection of customs, values, beliefs, and practices—that makeup Afar society.

One could classify the Afar society according to how it represents various social strata or divisions. Every level of society was examined to comprehend the multiple forms of individual and group behavior that transpired at various connections between these levels. From a micro-level perspective, for example, we can observe the one-on-one interactions between members during traditional communication, conflict resolution, socio-economic reciprocity sharing, and utilizing the limited desert resources and livelihoods. Members at this social level can recognize individual dynamics of social phenomena [35].

Organizations are established within a portion of Afar society to consider the larger social dimensions that influence social relations processes. The patterns of social relationships among members of a clan group and how these patterns impact the clan group as a whole could be identified at this social level with a network analysis approach [17]. However, the macro level perspective was used to analyze the Afar society, which considered the study area's socio-economic and other livelihood potential that affects both individuals and institutions. Silva and Wright [36] suggest that this level might miss significant aspects of micro-level social interactions. This indicates that, in this instance, the value of social relationships and cultural value practices were fixed by the interconnectedness of the social segments.

4.2.1 Network types: Nature and characteristics

The network maps listed in the following sections show the connections between different social entities and those who belong to a social group. The maps emphasized the qualitative construction and interpretations more, as explained by the research participants. The essential elements of the network confirmed the relevance of the participant's interpretations and articulations of the social relationship process and their level of practicing cultural values on outcomes of utilizing resources. For this, cultural values and practices were considered emergent content of networks.

4.2.1.1 Within a clan member's network types

According to Borgatti and Halgin [33], actors can have an indirect effect based on physical proximity to other actors; they can also have dichotomous connections with different actors, whether present or absent, or have a friendship. This implies that the strength between ties will determine the value of the relationship between actors [14].

The network maps (see **Figure 8**) created in this study are based on social interactions, information communication systems, and resource use practices from the perspective of the studied social group. According to the gathered data, the mechanisms through which members' socio-economic and environmental interactions were impacted by traditional information exchange mechanisms, cultural influences ties, and formal and informal activities to facilitate members' social relationships. Accordingly, the Afar social groups and individuals discovered that they used to maintain such significant cultural values as *harrayna kurra* and *edebbontaa*, which connect members within the same clan, and *affehinaa* and *tehaluff*, which form socio-economic and territorial issue cooperation ties among different clan groups.

In this study, the actor or a node is considered an individual, such as clan leaders, figurative social unit heads, clan councils, and youth group leaders. The clan group' *networking activities'* include informal and formal interactions developed for communication between these nodes. *'Internal networking relationships'* are created between individuals in the same clan group and social units. Each member is subjected to a reciprocate set of activities within a clan. The number of reasons for connecting with other actors within a clan may include friendship, common interest, interdependency, cooperation, or other benefits.

Furthermore, the network map, as shown in **Figure 8** above, the traditional communication (*dagu)* highlights the importance of information for groups and individuals who rely on resources like peace, rain, disease, conflicts, water, and pasture for their livelihoods. As a result, it was discovered that *clan group network locations change due to socio-economic interaction level*s and seasonal mobility. Each group forms

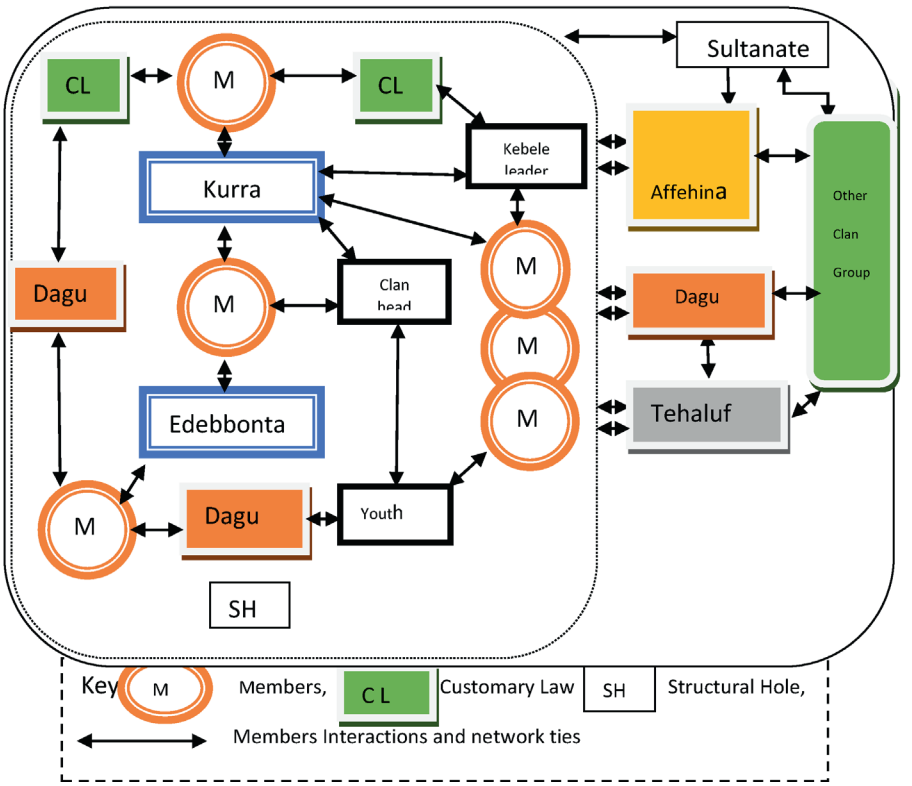


Figure 8.
Network structure and relations within a clan.

a network centered on the clan, with *structural equivalency* indicating roles like clan leader, council head, or youth leader. The overall interaction suggested that the network ties are more commonly used to depict member social relationships.

Intimate ties are another name for the actor's relationship. There are numerous reasons to connect with other actors, including friendship (kataisa), relationships inside and outside one's clan or kin, shared interests, interdependence, and other benefits [25]. For example, an actor can be controlled by another actor in a one-way effect when advising someone else. Actors may have a dichotomous relationship with other actors based on their proximity and whether or not they are friends [27]. A social relation is also defined as a connection between ties of a specific type [14], and each actor-to-actor connection defines a distinct network with connections known as a networking relationship [37]. Accordingly, the value of the relationship between actors will depend on the ties' strength. This study discovered that network ties and relationships more frequently represent member interactions and clan group network structures. As a result, clan group networking activities comprise formal and informal relationships created to facilitate more seamless interactions and prevent crimes by fostering cooperation and trust among members.

4.2.1.2 Network ties and resource utilization process at times of seasonal mobility

The pastoral mode of production and resource utilization is based on mobility, which is aimed at the extensive use of grazing lands, as the network map in **Figure 9**

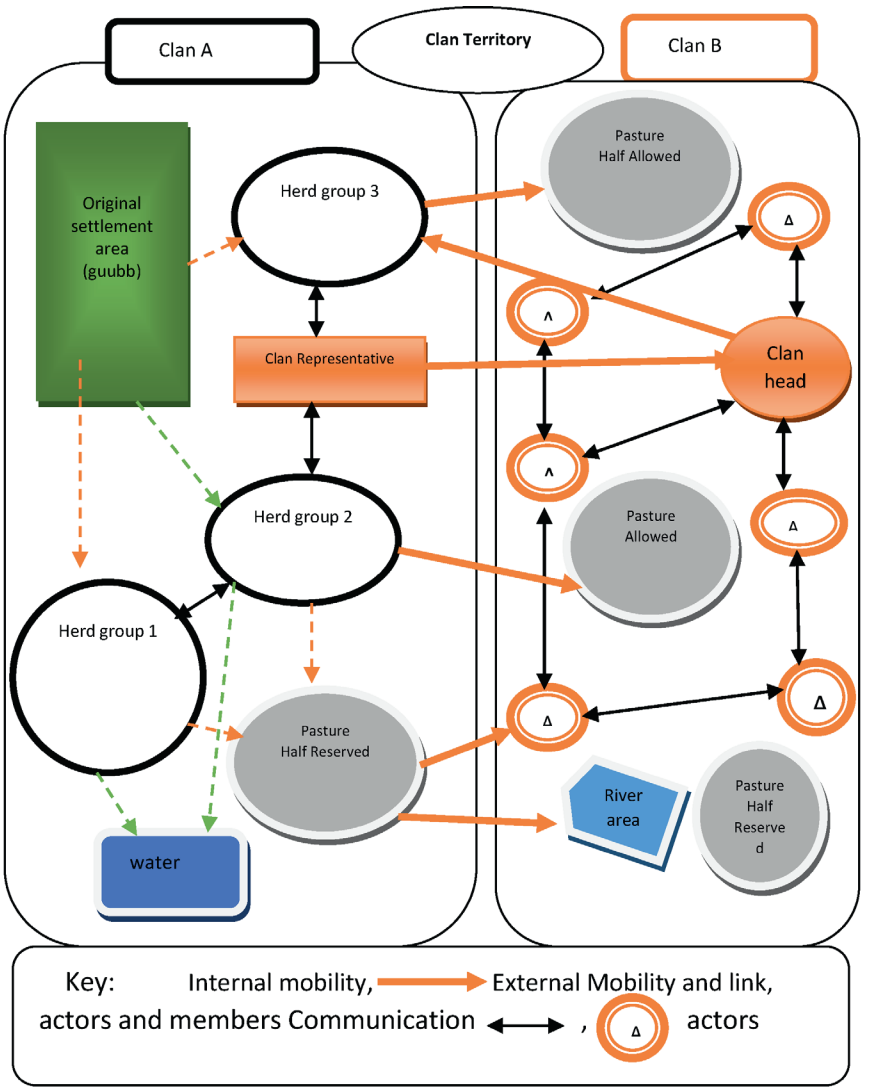


Figure 9.
Communication and network ties at times of seasonal mobility.

reveals. There are two types of seasonal mobility: one that can occur within a clan territory, and the other is mobility to another clan territory. The resource utilization practices wherever the mobility occurs were discovered to be the same.

Cultural value practices in resource use were explained by research participants as not an easy task (see **Figure 9**). They need special attention as the practices are beneficial in the context of the desert environment and pastoral livelihood situations. However, according to the gathered data, seasonal mobility and resource utilization systems were affected by climate change, drought, flooding, internal conflicts, and low household income. Besides, deviating from practicing cultural norms impacted utilizing resources decreased from time to time. For this gap, the overall descriptions of the voice-recorded key informant interviewee's and focused group discussant's reply indicated that the government,

stakeholders, and the society themselves should have taken initiatives that collaborate to address socio-economic and environmental challenges and support the community-based cultural activities.

4.3 Summary and policy implications

This study, hence, outlined various explanations for its findings. The primary goal will be the importance of interventions and strategies that strengthen conventional approaches to resource conservation recognition for traditional practices. It might be accomplished by investigating various conventional cultural values and practices. First, this would provide different approaches to understanding the cultural values supporting pastoralists in their struggle for survival. Second, using materials and methods would suggest upcoming policy interventions and project implementation procedures. It is the cause of the majority of projects failing to achieve their goals. Therefore, using qualitative and quantitative research approaches, it is essential to conduct further research on how pastoral communities' traditional social relationships, the economic nexus, and ecological factors are more interdependent.

The main factors influencing the livelihoods and typical relationships of the Afar people, as mediated by the traditional court system, result in social relationships, seasonal mobility, and cultural value practices. The relationship is meant to center on how people interact with their surroundings. In light of the findings of this study, it can be argued that social network ties are more frequently used to represent social relationships among individuals and social groups. Furthermore, networks are intended to signify the interdependence of cultural value practices for conserving, preserving, and using natural resources. Thus, the findings will assist governments and other stakeholders from various viewpoints in having structured and cogent discussions about interdependencies.

Accordingly, various initiatives shall be orchestrated to inform policymakers on how to give possible recognition for indigenous knowledge. Furthermore, purposely selected expertise was also suggested to strengthen the community-building process and provide recognition for cultural resource-utilizing practices. This would, in turn, increase the community's sense of belongingness and solidarity. Even other social groups will benefit more if projects use knowledge transfer and information exchange systems to organize, connect, and share experiences. Finally, the finding indicated the theoretical and methodological importance of social relationships in understanding the discourse and applications of social networks and cultural values concerning their impacts on utilizing and preserving scarce natural resources.

5. Conclusion

Pastoralists in remote areas adjust to changing weather based on their settlement patterns. It is an essential mechanism for coping with the effects of unpredictable rainfall, livestock diseases, and the overuse of finite natural resources. Conflicts over rangeland resources, migration, and livestock production difficulties are all consequences of the expansion of the Prosopis Julifera tree species. Even though the government has taken responsibility, it was discovered that poor resource management practices and insufficient monitoring systems are the primary causes of resource depletion. The existing gap between the government, concerned officials,

and stakeholders who should have provided seedlings of native plants and drought-resistant tree species was revealed by the study.

Furthermore, claims have been made that the timely decline in traditional court and law enforcement practices has worsened inefficient resource use. It was found that conventional social-relational processes and resource use behaviors together significantly contribute to coping and adaptation mechanisms for environmental degradation and climate change. According to the study, acknowledging traditional cultural value practices and social relationship processes in resource utilization will positively impact the use and preservation of scarce resources. It will also assist in preserving the pastoral communities' eroding socio-cultural values. Therefore, residents and government organizations should collaborate directly to protect and manage natural resources and traditional environmental management systems. Second, the neighborhoods should be aware of the ability to cut back on specific behaviors, like overusing the environment.

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Author contributions

The author proposed, designed, and evaluated the research proposals with methodological and conceptual approaches. Then, I conducted fieldwork and wrote the manuscript.

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Conflict of interest

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Institutional review board statement

All procedures performed in studies involving human participants were under the ethical standards of the author's institution with the international and national ethical guidelines and their amendments. The study was approved by the author's institution of post-graduate research committee [July 12, 2022; Ref. No: CAAS/104/2021–2022].

Informed consent statement

While conducting this research, informed consent was obtained from all participants. No participants were contacted without their permission and consent.

Data availability statement

Qualitatively collected data can be retrieved from https://osf.io/3957v, Ido identifier: DOI: 10.17605/OSF.IO/3957V or https://doi.org/10.5064/F6SVFXLN. QDR Main Collection. Thus, the qualitative raw data and analyzed sets during the current study are available from the corresponding author at any time, at the corresponding author's reasonable request.

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Chapter 3

Does Extensive Chatbot Interaction Affect Human Relationships?

Leon Sterling

Abstract

Artificial Intelligence (AI) systems have simulated conversations for over 50 years. With the greatly improved quality and prevalence of AI, and the emergence of generative AI in many applications, it is timely to take stock of whether conversations with chatbots and other AI systems will affect how people inter-relate. This paper presents a history of conversations with computers and whether those conversations cover non-textual elements of conversations such as emotions. The paper discusses emotions and how people instinctively anthropomorphise systems. It discusses some benefits touted for conversations with AI systems and points out some limitations. Although it is too early to form definitive conclusions about the effect of AI conversations on interpersonal relationships, the paper argues that there is a danger of a loss of skills by extensive computer usage. The paper advocates growing our conversation skills, a growth that cannot solely be provided by interaction with chatbots and generative AI systems more broadly.

Keywords: artificial intelligence, emotions, generative AI, chatbots, software agents

1. Introduction

Artificial Intelligence (AI) is a hot topic in 2024. There are many news articles about the latest developments, and many new companies are being launched touting AI products and services. Education providers, especially universities, face challenges in how best to instruct students to use AI. While there is a temptation for some to ban AI technology, most people appreciate the need to learn how best to use the technology productively.

Some people are wildly enthusiastic about the achievements of AI systems and predict a revolution in how we work, for example [1]. Other people are detractors and are concerned about fostering a reliance on big technology claiming, for example, that Artificial Intelligence is more ideology than technology [2]. Some people are sceptics and think the claims of General Artificial Intelligence are overblown, and still others just raise the question of what AI can achieve [3].

In spirit with the topic of this book, this paper speculates whether prolonged engagement by people with chatbots and other AI systems might impact interpersonal connections. Rather than reaching a definitive conclusion, I discuss benefits and disadvantages in increasing our conversations with chatbots and other AI tools, including the currently popular Generative AI systems built around large language

models [3]. The underlying question is "Is all the interaction with artificial agents such as chatbots, robots and software agents going to affect how people interact with each other."? If so, how will the effects be manifest?

To consider the underlying question this paper takes a non-standard methodological approach. It largely draws on personal anecdotal experiences. The rationale for the non-standard approach is essentially pragmatic. It is at best impractical, and arguably impossible, to scientifically treat the question of whether interactions with AI systems affect personal interactions. There is not enough time, nor enough evidence, nor enough research to allow this paper to be primarily evidence-based.

Much of the evidence published about the use of Generative AI systems is anecdotal. Reports in newspapers and social media are exactly that. There have been almost no long-term studies simply because the systems have not been around long enough to conduct a serious long-term study. To some extent, this paper provides a meta-review of the anecdotal evidence. The paper then predicts what may occur from long-term use, namely a loss of skills. The paper encourages people to develop their skills.

Note that it would be hard to do a proper controlled study. Such a study would be ethically questionable at best as we would need to restrict people's use of Gen AI which may be of benefit. So arguments are presented about the claims for and against continuing widespread dissemination of the technology. An analogy is drawn to the methodology used in another paper where technology has been extensively used in the context of communication for innovative solutions for older adults, for example Baker et al. [4].

The structure of the paper is as follows. The next section will present a selected history of our conversations with artificial intelligence systems. It will include a brief discussion of the current state of the art with Generative AI systems, admittedly a rapidly moving target. The following section will discuss the nature of artificial intelligence, people's tendency to anthropomorphise systems, and the nature of emotions. Genuine emotional engagement is lacking in AI systems. However an ability to engage emotionally with others is a capability we do not want to lose in the digital age. We continue with claimed benefits and limitations of the technology, and then comment on ensuring we develop our communication skills.

2. Conversations with AI: From Eliza to chat-GPT

Turing's seminal paper from 1950 'Computing Machinery and Intelligence' set the scene for conversations with computers [5]. In the paper Turing proposed an imitation game where a questioner had to determine the gender of two people just by asking questions and reading the answers with no visual or auditory cues. One of the two people was male and one female, and the female was trying to convince the questioner that she was male. An interesting task, though one that would perhaps not be politically correct to discuss these days.

Turing then proposed a second imitation game whereby the female was replaced by a computer. The questioner needed to determine which answerer was the person and which was the computer purely by asking questions and reading the answers. The computer was trying to fool the questioner. This imitation game is the original version of what is known as the *Turing test*. In my opinion, Turing was not proposing the test as an objective way to distinguish between people and computers. He was arguing that until machines could perform better in such a conversational test, there was plenty of research to be done on natural language understanding and natural language generation.

Progress was slow on improving language abilities. Early attempts in areas such as machine translation failed miserably. One of the more interesting attempts was the ELIZA program written by Joseph Weizenbaum in the mid 1960's [6]. Eliza loosely simulated the behaviour of a Rogerian psychologist. As reported in his book [7], Weizenbaum was horrified at the personal nature of the conversations that were had with ELIZA. The impression from the conversation was that people presumed that ELIZA understood them, whereas the program just matched keywords. Weizenbaum was prompted to develop a manifesto that certain tasks should be handled by people and not computers, such as legal judgements, because computers did not emotionally understand the human condition.

Weizenbaum's work led to the idea of a chatterbot, a term later shortened to a chatbot. Chatbots are widely deployed today in a number of service roles over the Internet. The early chatbots were rule-based following on from Weizenbaum's research. According to Wikipedia, "*Modern chatbots are typically online and use generative artificial intelligence systems that are capable of maintaining a conversation with a user in natural language and simulating the way a human would behave as a conversational partner. Such chatbots often use deep learning and natural language processing, but simpler chatbots have existed for decades.*"

A separate development was the emergence of parallel distributed processing (PDP) [8] as a research area. PDP greatly improved the performance of neural networks, simpler versions of which had been developed in the 1950s. A key application of improved neural networks was NetTalk [9] which, while learning, progressed from a babble to recognisable speech, a major improvement over what had come before.

Over the 1990s systems understanding text steadily improved and became usable for applications like automated phone responses. The applications were fuelled by extensive use of tagging of parts of speech and grammar rules. The applications treated conversation as effectively a sequence of speech acts requesting the computer to perform a task. Natural language processing improved considerably as a field, often relying on computational power, and tagging parts of speech, while building up large data sets for training programs.

In parallel with improved understanding of both text and speech came improved production of language and speech. Voice synthesis became common. Having a voice interface is important in many applications. People have become accustomed to a robotic voice quality which has persisted until now.

Language understanding systems worked better if people tailored their responses to the capabilities of the machine. People are able to do that almost effortlessly, adapting voices to what the machine could understand. As Hal Abelson quipped during a lecture, natural language interfaces were improving because people were 'computer friendly' and could adapt to the limited language abilities of the interface [10].

Robots also increased in usability, shifting from industrial pick and place robots to devices that could be in the same environment as people. There was an expectation that people may converse with the robot in their activities. As well as industrial robots, social robots were developed to interact with people. A leading social robot has been the NAO developed by Aldebaran Robotics, which is very engaging.

The emergence of smart phones and tablets over the past 20 years accelerated the need for better interfaces which were more conversation-like. The previous research on natural language led to the development of assistants like Siri introduced for Apple devices in 2011 and Alexa introduced for Google devices in 2014. Siri and Alexa attempt to recognise speech and perform requested tasks. By performing the task correctly they were understanding the request, though often

would make mistakes. People adapted quickly so they would be useful, and their use has increased.

Popular culture played a role in setting people's expectations about what technology can achieve. From the Terminator movie series to the hit movie 'Her,' robots and AI systems were capable of doing everything and being smarter than people. When I would challenge friends that the portrayal was unrealistic, they were largely of the opinion that such behaviour was only a matter of time. It has the consequence, in my opinion, of people overestimating the degree of understanding that AI systems have.

The current burst of interest in AI was initiated by the release of Chat-GPT, a large language model developed by Open-AI. It converses on any topic and provides a broad range of assistance from writing essays to developing code. Chat-GPT was quickly followed by other large language models developed by other major providers including Ollama, Co-Pilot and Gemini. Chat-GPT and its copiers are widely deployed and have changed the nature of interaction between people and computers for many tasks including writing routine letters, planning trips and learning languages.

3. Artificial intelligence, anthropomorphism and emotions

The previous section gave a selected history of conversations between computers and people. The conversations have ranged from interactions with simple chatbots where it was clear that the computer was effectively following a script and did not understand what was going on in any but the most limited circumstances, to the modern situation where one is interacting with a generative AI and it is much harder to tell the difference between a person and a chatbot in conversation. To tease out the difference, it is worth discussing what Artificial Intelligence is. A definition I adopted for teaching 25 years ago, and which is still current, is the following: *Artificial intelligence is an interdisciplinary attempt to build machines that mimic intelligent human behaviour* [11]. This definition gives artificial intelligence broad scope and makes explicit an interdisciplinary focus and the need for building and testing.

Two features are worth noting. The first is the emphasis on intelligent behaviour rather than intelligence. In my experience intelligent is better as an adjective than a noun. An intelligence test measures how different people with a similar background do on a comparable test. It is comparative, not absolute. The second feature is the stress on mimicking human behaviour. While some researchers use programs as models of human minds, the truth is we are wired differently from computers – literally. Digital assistants such as Siri and Alexa have a language model that can generate an appropriate answer, but do not understand in the way that a close friend or family member or another human being does.

To explain the difference requires a diversion into symbols and emotions. Early research in Artificial Intelligence focussed on symbolic reasoning. An early tenet now ignored is the Physical Symbol System Hypothesis which stated that a machine manipulating physical symbols has the necessary and sufficient means for intelligence [12]. In improving natural language processing, machine learning of neural networks has proved more effective than symbolic reasoning. The learning developments have led to the current generation of large language models. The models have millions of parameters and no particular symbolic representation [3]. It means that sometimes seemingly simple questions with obvious answers are not understood nor answered correctly. However the engineering of the LLM systems has improved the quality of conversations substantively so that they are adequate as conversation partners.

An important point however is that when people converse there is more than just an exchange of words. There is affect in how the words are expressed and body language which changes how we understand the conversation. Affect and body language were something Turing was careful to eliminate in his first version of the Turing Test as reported in [5]. However people are communicating on several levels. For example, flirting behaviour is not just the words.

The emotional context of our conversation with others is important. Emotions can and should affect our interactions with others, both positively and negatively. Currently emotions are not handled effectively by Gen AI systems. My recent conversation with the Spark GenAI system at the University of Melbourne speaks for itself. My prompts are in bold, and the responses are in italics [13].

3.1 Prompt: Are you happy?

As an artificial intelligence, I do not have feelings or emotions, so I do not experience happiness or sadness. My purpose is to provide information and answer questions to the best of my ability based on the programming and data available to me. If there's anything else you'd like to know or ask, feel free to do so!

3.2 Prompt: Can you tell if I am happy?

As an AI, I do not have the ability to perceive emotions directly. I do not have access to visual cues, tone of voice, body language, or emotional states. My interactions are purely text-based, and while I can analyse text for certain emotional indicators or sentiments, this analysis is limited and not always accurate. If you express your emotions through text, I can attempt to understand them based on the language you use. For instance, if you write "I'm feeling really happy today!" I can recognise that you are stating that you are happy. However, understanding complex human emotions requires nuanced perception that goes beyond the capabilities of current AI technology. If you would like to share how you are feeling, I can provide responses or information that might be relevant or helpful, but I will not be able to truly understand or feel your emotions.

So what exactly is an emotion? The nature of emotions is debated by psychologists. The prevailing view used to be that people worldwide experienced a universal set of emotions such as happiness and sadness. Moreover, that these could be detected by facial expressions and body language. A more recent view contests the universality of emotions. The Theory of Constructed Emotion advocated by Lisa Feldmann Barrett [14] suggests people learn emotion concepts by associating concepts with bodily sensations that have been experienced. In simple form, the theory claims that "*In every waking moment, your brain uses past experience, organized as concepts, to guide your actions and give your sensations meaning. When the concepts involved are emotion concepts, your brain constructs instances of emotion.*"

For text-based systems, the current attitude towards emotions is summarised with the response from the Spark GenAI system. AI systems do not directly perceive emotions, but can do sentiment analysis if requested. With robots, there is a physical aspect which allows some limited simulation of emotion. A NAO robot can flash its eyes with different colours. It can make sounds such as pre-recorded laughs or crying sounds.

Let me explain the difference of experience between robots and people with a personal anecdote. As new parents, my wife and I struggled with knowing how to

comfort our first child Danya, when she cried in the first several months of her life. It was distressing. Our experience is perhaps not uncommon for first-time parents. A surprising strategy that we happened upon was to hold up a toy rubber hammer in front of Danya. The toy was orange and squeaked if it hit a hard surface. The toy also had a smiley face painted on it. When seeing the face on the toy, Danya would start laughing. Many times this enabled her to settle. Danya's reaction was emotional, and over time she learned to associate the appearance of the toy as a way to settle. Interestingly, our two other daughters were not comforted by a similar toy when they cried in the first months of their lives.

A NAO robot has vision and sound capabilities. It could be reasonably easily programmed to laugh when it saw a face painted on a toy. I contend that the robot laughing on recognising the face on the toy would not be an emotional reaction. The laughing is of no benefit to the robot in terms of settling it down as was the case for my daughter. Holding up a toy in front of a robot would not be a method for it to deal with discomfort in the world around it. Nor would it be remembered by the robot as a comforting experience. It is important to appreciate that the robots are not having body sensations as people do. I do not believe it is helpful to describe the robots in emotional terms. Any identification of emotion concepts is by the programmer/designer, not by the robot. To relate it to constructed emotion theory, the robot can use an emotion word but is not participating in a similar emotional experience to the human.

Let us consider another example of a difference. Sometimes if a Gen AI system makes a mistake, it responds that it is sorry. I do not believe the AI system is sorry at all in any way that I feel. The response is just programmed. Admittedly, people are capable of giving apologies that are not sincere, and it is up to humans to appreciate the difference and challenge someone making an insincere apology. However there is a difference between a superficial apology and a heartfelt apology that AI systems are not capable of expressing.

People experiment with trying to insert emotions into conversations over computers. It is an interesting though tangential topic. The use of emojis in messages has flourished in recent years. Emojis are an interesting component of language and have their own usage conventions and rules. However they are not exact correlations of emotion.

Another important consideration when evaluating our conversations with computers is our tendency to assume other systems are like us. The tendency is built into our social behaviour which has developed over millenia. It is encapsulated by The Media Equation, a communication theory arising from the research of Clifford Nass and Byron Reeves at Stanford University in the 1990s. The theory is well described in their book 'The Media Equation: How People Treat Computers, Television, and New Media Like Real People and Places' [15]. The theory is that people cannot help themselves in presuming that computers have agency. One example describes an experiment at an art gallery, and counted how often people looked at a piece of art. They recorded numbers of people stopping to look at a particular painting under three conditions: when no robots were present, when robots were statically near the painting, and when robots were pointing at the painting. There was more interest in the artwork when a robot was pointing at it. A second example concerns evaluation of a task performed with a computer. Two groups were asked to evaluate how helpful the computer had been when working on the task. One group did the evaluation on the computer with which they had performed the task. The other group performed the valuation task on a different computer. The score of helpfulness was higher when the evaluation was done on the computer which worked on the task.

An obvious inference is that the higher scores are because people do not want to hurt the 'feelings' of the computer. We are more polite when speaking face to face with someone than talking about them behind their back. The claim is that such effects are at work when we interact with computers.

In the context of chatbots that means a predisposition to ascribe human behaviour to the chatbot. So people might be inclined to believe an AI system when it says that it is sorry, even if they knew that it has no emotion. It was this presumption of agency that horrified Weizenbaum as mentioned in the previous section. People assumed that the ELIZA program was being sympathetic. That happened even if Weizenbaum, the program's author told them it was not [7].

4. Potential benefits and limitations of conversations with AI systems

AI chatbots are now widely deployed by companies. A particular use is providing initial service support. With call centres or dedicated staff becoming too expensive, having a chatbot on call to answer routine queries makes sense. In many instances the chatbot works well enough. A bank chatbot presenting current interest rates for home mortgages or term deposits is no problem. There is no pretence of forming a real connection. The conversation is transactional, where the person has a query which the chatbot can answer. Generative AI can be used to improve the quality of the answer. Long term interaction with such chatbots is not likely to have much impact on people interactions.

When answering general speculative questions, the responses of current Gen AI systems are similarly not likely to affect how people inter-relate. The conversation snippet I had with Spark AI which was presented in the previous section about emotions is perfectly pleasant. Such an interaction will not cause any confusion or change in my behaviour.

It might be a different story when people become abusive, as has been a problem with social media. It is well known that people can be more abusive on email when they do not see the person directly than when they speak face-to-face. In fact people do not need to worry about emotional tone when speaking with a chatbot, as it will not be offended. It is also unclear whether that might encourage people to be more abusive to others. Ironically, some research has proposed to use Gen AI to improve the situation [16]. According to the paper, the problematic use of social media has numerous negative impacts on the daily lives of individuals, their interpersonal relationships, physical and mental health, and more. The paper proposes LLMs such as ChatGPT to play a positive role by serving as conversational partners and outlets for users, providing personalised information and resources, monitoring and intervening in problematic social media use, and more. Any impact remains to be seen.

Let us consider three domains where relationships are important and discuss where personal relationships must be preserved. The three domains are Health and Wellbeing, Mental Health, and Education. In all three domains robots have been proposed to help improve performance.

Loneliness and social isolation are growing problems. There are not the human resources to be able to solve social isolation. It is tempting to think that a conversation with a chatbot or a social robot might alleviate the situation. In my opinion, it is unlikely to work as a general solution, though it may help a few individuals. Unless the chatbot or robot can build an enduring connection, the underlying loneliness is unlikely to be improved.

Currently a robot interaction is more a novelty. Several years ago I was involved with a project to use a NAO robot to help young patients with rehab exercises. The project was successful and has been reported in [17]. The robot made the exercise with children more fun and interesting. However communication was essentially one way. The robot encouraged the children to perform the exercises and told jokes, but did not really converse with the patients. Older children were less keen than younger children in being guided by the robot and got bored by the similar routine of each exercise session. The long term effect is hard to ascertain.

Companion robots have been proposed for aged care settings. Older adults can spend long periods of time by themselves. An early offering was the Paro seal which was a cuddly robot that sat on an adult's lap, and responded when being petted or spoken to. Better language skills could make companion robots more useful. However there are ethical questions if such robots become a central part of a patient's care.

The second area where AI has been proposed as being useful is in mental health. An example paper is [18] which discusses the potential of chatbot-assisted mental health support. Two arguments are commonly given for why conversations with AI may be helpful. One argument is the anonymity, echoing Turing's original test. People may be more comfortable sharing difficult things with a screen rather than to an actual person. There is also an aspect that people may want a neutral non-judgmental response. Some mental health programs allow people to be represented by an avatar for this purpose.

The second argument is to address the expense. Having a chatbot perform an initial triage may allow mental health services to operate more efficiently. That argument was advanced 50 years ago after the appearance of Weizenbaum's ELIZA program. There are strong opinions for and against the argument.

A third area where AI has been introduced is education. Computer assisted learning dates back to the 1970s. Currently computer teaching programs are touting Artificial Intelligence as a way to customise learning. My wife and I are currently using the well-known app Duolingo to learn German. Duolingo has an AI feature that explains mistakes, a feature which we have investigated sporadically. We do not find the feature particularly helpful. Some of the explanations are mildly useful, others are more confusing. A more two-way dialogue would be more helpful.

Indeed I believe education is an area where the need for human interaction is essential. Most of the customised learning systems present you with the problems you have been having difficulty with. However just repeating the same lesson does not give insight. Students are often seeking an 'aha' moment which is certainly enhanced by the interpersonal skills of a teacher and an awareness of the emotions of the learner. AI systems have a long way to go.

Robots have been proposed in interesting ways for the classroom. It has been suggested that having a robot in a classroom changes the dynamic in a positive way. Having a child read separately to a robot that just listens and does not correct can be helpful for some.

To conclude this section, I mention an article recently printed in The Guardian (https://www.theguardian.com/technology/article/2024/jun/05/ai-researchers-build-future-self-chatbot-to-inspire-wise-life-choices). The article was entitled 'AI researchers build 'future self' chatbot to inspire wise life choices.' The article immediately raises two questions. One is whether the advice is any good and how we might ascertain that. The second is how we will be encouraged to act on the advice. There is a long way to go before such advice-giving chatbots are widely adopted.

5. Becoming good communicators

Basic communication is essential in everyday life. We need to be able to read, write, and converse. Will interacting with AI systems affect our ability to perform communication tasks?

There is potential for Generative AI to help make certain routine tasks more efficient. Colleagues have told me they have used Chat-GPT to help draft reference letters. A medical specialist said that he has a new product that helps draft a medical letter summarising a patient's medical condition suitable for sending to the patient's general doctor. Both these use cases make sense. For an experienced writer, having a tool available that produces a draft document that can be checked before being sent out is a positive.

However there is a problem for people less experienced to ensure that they have the requisite skills. Already use of other computer technology has demonstrated that people can lose skills. It is a problem to encourage reliance on a tool while not encouraging building basic capability. There is a real danger that we can lose our abilities if we hand over skills to machines. Arithmetic used to be stressed in primary school education. The emergence of calculators has changed that. Now many shop assistants are dependent on calculators for even the simplest calculation and can be confused if there is an error, or have no appreciation of what can go wrong.

An even more striking example is reading maps. Many people use technology to help with directions when driving or walking using a GPS system. So much so, that they are lost without one. We need to be able to read maps to find our way when GPS is not available, and to solve problems when a system makes a mistake.

In general we need to keep practising skills in order to retain them. The danger in using a chatbot for routine requests can be appreciated from a News story published by CNN.com on August 2, 2024. "*Google has pulled its controversial Olympics ad after critics blasted it for portraying what they called a bleak application of artificial intelligence. The ad showed a father using Google's Gemini AI chatbot to help his daughter write a fan letter to US Olympic track star Sydney McLaughlin-Levrone. But many online questioned why Google would want to replace a child's creativity with words written by a computer. Google initially defended the ad, which ran during breaks from the Olympics, saying it showed how Gemini could provide a starting point for a piece of writing. But on Friday, the company reversed course*" [(https://edition.cnn.com/2024/08/02/tech/google-olympics-ai-ad-artificial-intelligence/index.html)].

Students can ask a Gen AI system to generate a letter to a client. Such a letter can be a starting point as Google claims in the above news story. The situation is further complicated by the needs of non-native English speakers who are required to communicate effectively. Guiding people how to use Generative AI to help communicate is a topic that needs work and improvement. If we rely on Chat-GPT or similar programs for routine conversations we may lose the opportunity to learn and develop our own communication skills. Many conversations with chatbots are transactional, but people should be encouraged to think about the communication. Current systems give little feedback and do not explain what problems there may be in the communication nor how to improve the communication. It is a challenge to give feedback well but extensive use of Generative AI in its current form will not help.

There is another issue worth mentioning. Because of the nature of large language models, documents they produce represent the 'average' of what they have been trained on. They do not really provide any innovation in the writing. For people

wanting to improve their communication, there is a danger when using Generative AI that they will produce a document that sounds like everyone else's. That may be a good thing sometimes, but sometimes it is good to stand apart. The paradox is described in an article 'Chat-GPT and the Magnet of Mediocrity' by Prakhar Mehrotra [19]. In my experience when asking students to reflect on what they have learned from a project subject, responses that have been generated by AI often sound inauthentic. Students need to ensure that the voice in reflections is their own. That can be done, but it requires students not to use Gen AI tools blindly without taking the context into account.

A further consideration is how to moderate conversations that become heated. Being responsive to tone is something people need to appreciate. That does not happen without reflection. An interesting approach to mediating when conversations became difficult and/or heated is nonviolent communication, a theory described in [20]. The idea is that people discuss their feelings rather than accuse others of bad behaviour. The theory has been applied broadly. It was helpful for me in negotiating a dispute between a student team and a supervisor. Educators need to ensure that students are aware of the range of methods and approaches that are available, of which nonviolent communication is one example.

6. Conclusions

There is an old proverb "Fire is a good servant but a bad master." The same can be said for Artificial Intelligence. AI can be a good servant but would be a bad master in my opinion. We need to be continually aware of context, not only in how we apply AI, but how it affects our relationships. We need to be realistic in how artificial Intelligence is used, neither being overly optimistic not predicting a dystopian future.

In this paper we have discussed a history of conversations with computers. We have discussed what Artificial Intelligence is, emotions, and our tendency to anthropomorphise. We have discussed some potential uses where AI would help communication, but also some of the limitations. We ended with a reminder to maintain skills. While we will continue to chatbots and other natural language interfaces, we also need to keep growing in how we talk to people and develop our interpersonal relationships in the Digital Age.

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Conflict of interest

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Abbreviations

AI	artificial intelligence
Gen AI	generative artificial intelligence
LLM	large language model

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Chapter 4

Exploring the Evolution of Family Communication Patterns in Javanese Indonesia: A Qualitative Analysis of the Impact of Digital Technology

Rama Kertamukti

Abstract

This research explores the evolution of family communication patterns in Java in a digital context, focusing on the impact of technology on intergenerational interactions. The background of this research is based on the phenomenon of the development of information technology, such as social media and instant messaging applications, which has changed the way families communicate. Using qualitative methods, the research involved in-depth interviews with 15 Javanese families living in urban and rural areas, with the aim of identifying the stages of digital technology acceptance and the barriers they face. Thematic analysis was used to categorise the findings based on key themes, such as the role of parents in digital parenting, technology adaptation, and the influence of digital media on local cultural values. The results showed that Javanese families experienced five evolutionary stages of digital technology acceptance: incomprehension, exploration, adaptation, integration and active engagement. Although technology strengthens long-distance communication, challenges were found, such as vulnerability to hoaxes, changes in the quality of face-to-face interactions, and differences in the meaning of digital symbols between generations. In conclusion, digital technology plays an important role in maintaining family relationships, but there needs to be a balance between digital interactions and the preservation of cultural traditions.

Keywords: family, Java, evolution, digital technology, communication patterns

1. Introduction

Family communication plays an important role in shaping the dynamics of social life in society. In Java, Indonesia, family communication patterns have undergone significant changes over time, especially in the rapidly evolving digital world. Families in Java play an important role in maintaining cultural heritage and social values that have existed for centuries. The family is the smallest social organisation in society that

has an important role, especially in the stages of shaping and developing children's character during the early period of children's lives [1]. Families provide cultural influences to children in the formation of their first attitudes and interests in everything around them. In the city of Yogyakarta, one of the cities in Java, as the centre of the city and the centre for Javanese culture [2]. The daily life of families in Yogyakarta reflects a blend of rich traditions and social changes influenced by modernisation [2]. On the one hand, structured patterns of life, full of rituals and social interactions, are still visible in daily activities, but on the other hand, changes in the economy, technology, and culture have brought significant impacts on family dynamics [3]. Families try to interpret local culture as an identity and try to pass it on to their children [4]. What parents do is an attempt to communicate or enculturate local cultural values to their children. For example, Javanese families in Yogyakarta try to practice local cultural values in their daily lives [1]. But today, communicating local culture to children is not an easy matter; the challenges are heavy. Cultural influences on families in Java are no longer dominated by parents; mass media and new media such as the internet and social media also strongly influence family life in Java [4]. Whereas before the massive use of digital media, parents in Javanese families had a very important role in educating and shaping the child's personality before the child plunged into society. Parents in Javanese families are always willing to be a rock for the safety of their children [5]. The phenomenon of closeness is influenced by the intensive communication of family members in Java. In Java, family togetherness is the main foundation of social life. The philosophy of *"gotong royong"* upheld by the Javanese community is also reflected in the pattern of family life. Each family member is taught to help, respect and look after each other. Gathering together, especially on certain occasions such as slametan, family gatherings, or simply having dinner together, becomes an important moment to share stories, give advice, and strengthen relationships between family members. This tradition of gathering is not only done by the nuclear family but also involves the extended family, which includes grandparents, uncles, aunts, and cousins. This spirit of togetherness strengthens the wider social ties within the Javanese family structure, so that family relationships remain close even though members are scattered in various places. The Javanese family lifestyle is strongly influenced by strong traditional values, a culture of gotong royong, and respect for social order and religion [6]. Despite changes with modernisation and technological development, Javanese families still maintain many aspects of their traditional life. Respect for parents and elders is one of the main values in Javanese families [7]. In Javanese society, age hierarchy is highly valued. Children are taught from childhood to respect their parents and older family members, not only in their daily behaviour but also in making important decisions. Parents are often a source of advice and wisdom and are considered the moral leaders in the family [8]. This pattern is also seen in daily interactions, where children speak with polite and respectful grammar to parents or older family members. In addition, important decisions in the family are often discussed and agreed upon through deliberation, where the opinions of parents and elders are highly considered.

In Java, the family is a fundamental unit in society that plays an important role in shaping individual values, norms and behaviour [9]. Communication patterns in the family have a significant impact on the relationship between family members and the psychosocial development of family members. However, with the development of information and communication technology, especially in the current digital era, family communication patterns have undergone significant changes. The digital era has brought fundamental changes in the way humans interact and communicate [10].

A survey conducted by the Research and Development Agency of Kominfo and UNICEF (2011–2012) found that Indonesian children and adolescents rely on online communication to communicate with friends (89.3%) and family (56.3%).

Technological advances in Indonesia, especially in Java, such as the growing use of mobile phones, social media, instant messaging applications, and content sharing platforms, have changed the way family members communicate with each other [11]. Although in Indonesia local cultural values are still a determining factor in the communication patterns that occur. Domestic or household activities are an important part of daily life in Javanese families. In many traditional families in Java, household tasks such as cooking, cleaning, and caring for children are mostly done by the mother or women in the family [9]. But these roles began to change when communication technologies developed, especially in urban areas, where husbands and wives often share tasks in household life. Some studies provide results that there are changes in the family with the inclusion of communication technology in the interaction. Changes can include family leisure time, offline family bonding, and intense communication together being negatively affected due to the use of communication technology [12]. Also, communication technologies play diverse roles in family life across generations [13]. It even develops empowerment in rural communication technology in the form of community power in building in rural areas [14]. The basis of this research is the phenomenon that parents are naturally responsible for the development of children in all aspects of life. The positive use of gadgets is one of the media to help the development of cognitive, psychomotor, emotional and social aspects. Then how is the evolution of family communication patterns in Java as a result of the impact of digital technology? This is a question that must be described.

1.1 Research methodology

This research uses a qualitative approach with in-depth interview methods. 15 interviewees from Javanese families living in big cities and rural areas became participants in this study, randomly selected. Interviews were conducted in person and through digital platforms, according to the participants' conditions. Questions focused on how digital media is used in family interactions, its impact on traditional values, and the challenges faced in integrating digital technology in daily life. Data from the interviews were analysed using thematic analysis techniques, which allow for the categorisation of information according to themes that emerged from the participants' answers [15–17]. This included themes of communication between family members, the role of parents in digital parenting, and understanding cultural values in the context of technology.

2. Research results

2.1 Balancing digital and tradition in a Javanese family

In an increasingly digitalised world, it is important for Javanese families to find a balance between the use of technology and the preservation of the tradition of respect for parents and elders. Technology should be used as a tool to strengthen relationships, not replace physical interactions that are rich in cultural values. Some Javanese families try to keep the tradition of physical gatherings in important moments, such as Hari Raya celebrations or big family events, even though most of the daily

interactions happen digitally. At the same time, when technology is used, they still emphasise the importance of maintaining manners, such as speaking politely, not using harsh words, and always showing respect in communication.

In the data collected through in-depth interviews in Javanese families, almost all interviewees regularly use digital media, such as WhatsApp and social media, to communicate with family members. For families who live apart, digital media is the main bridge to maintaining relationships. One interviewee, Mr. Ahmad (45 years old), who lives in the city of Yogyakarta, stated: "I always use WhatsApp to communicate with my parents who live in the village. Every day I send a message or make a video call to ask how they are doing. This makes it very easy for us, even though we are not face-to-face." However, some interviewees also felt that while communication through digital media makes interaction easier, the intensity of deep and warm conversations as in face-to-face interactions tends to decline. Mrs. Rina (52), who lives in Sleman, Yogyakarta, said: "Kids nowadays would rather send a text message than come in person. It feels different, there is no warmth like before when everyone gathered at home." There are some notable differences in the meaning of digital media use between urban and rural families. In urban areas, digital media is seen as a daily necessity that supports mobility and productivity, while in rural areas, digital media plays more of a role as a basic communication tool and source of practical information. Urban families tend to be more engaged in social media and utilise it for various purposes, including entertainment, while rural families are more limited in their use of digital media due to infrastructure constraints. However, similarities were also seen in the concerns felt by both groups regarding the impact of digital media on in-person family interactions. In both urban and rural areas, parents realise that their children are starting to focus more on mobile phones and gadgets, which reduces the quality of family togetherness. This concern reflects that while technology brings many benefits, excessive use can disrupt traditional Javanese family values, such as togetherness and face-to-face communication.

The difference in the meaning of digital media use in urban and rural areas in Java lies in the context of use, purpose and infrastructure. In urban areas, digital media is seen as an integral part of daily life, whether for communication, entertainment or education. Meanwhile, in rural areas, digital media is more focused on basic needs such as long-distance communication and practical information. Limited access to technology in rural areas also affects the way families interpret the use of digital media. Rural families tend to still rely on face-to-face interaction in their daily activities, although they are starting to adopt digital technology for communication purposes.

Access to the internet and technology in urban, digitalised areas is almost seamless. Families in big cities usually have stable and high-speed internet networks. This allows them to use digital media in various activities, such as watching streaming videos, accessing social media, working from home (WFH), and others. For urban families, digital media is not just a communication tool but also a means of entertainment and daily productivity. For example, the family of Mrs. Anita (40), who lives in Bandung, regularly uses high-speed internet to watch films on streaming platforms such as Netflix or Disney+. For them, digital media has become an integral part of the modern urban lifestyle. In contrast, in rural areas, access to digital technology is still limited, especially in areas with inadequate internet infrastructure. Many rural families complain of slow or unstable internet networks, so digital media use is more focused on basic functions, such as making calls or sending short messages. Video-based or streaming applications are less likely to be used due to network limitations.

For example, in the village of Pacitan, East Java. Mr. Joko (47 years old) can only use the internet at certain times, when the signal is strong enough. He says that sometimes his children have to go to the village centre to get a good internet signal if they want to do school assignments that require internet access. In this situation, digital media cannot be fully utilised due to limited access.

There are some notable differences in the meaning of digital media use between urban and rural families. In urban areas, digital media is seen as a daily necessity that supports mobility and productivity, while in rural areas, digital media plays more of a role as a basic communication tool and a source of practical information. Urban families tend to be more engaged in social media and utilise it for various purposes, including entertainment, while rural families are more limited in their use of digital media due to infrastructure constraints. However, similarities were also seen in the concerns felt by both groups regarding the impact of digital media on in-person family interactions. In both urban and rural areas, parents realise that their children are starting to focus more on mobile phones and gadgets, which reduces the quality of family togetherness. This concern reflects that while technology brings many benefits, excessive use can disrupt traditional Javanese family values, such as togetherness and face-to-face communication.

2.2 Symbols as visual language in Javanese family communication

Symbols, such as emojis and stickers, have become a frequently used form of visual communication on instant messaging applications such as WhatsApp and social media. In Javanese families, symbols are often used to convey emotions, such as love, care or happiness, which are more difficult to express formally in Javanese communication culture. In Javanese culture, which heavily emphasises politeness and manners, symbols can help convey lighter and less formal messages. For example, young children in Javanese families often use the smile 😊 or heart 💙 emoji to show respect or affection to their parents. The use of these symbols is considered more casual but still shows care, which is sometimes difficult to express in formal language. Mrs. Dewi (40 years old), who lives in Surakarta, said: "My son often sends a heart emoji every time he says good morning. It's simple, but I feel it's his way of showing respect and care." This suggests that symbols can be an effective way to convey more informal feelings in family contexts that have formalised communication norms, such as in Java.

While symbols can be an effective communication tool, there are notable differences in the way they are used among different generations within Javanese families. Younger generations, such as Generation Z and millennials, are more accustomed to using symbols in everyday conversations, even in quite a large number in a single message. They use emojis, stickers and memes to add context or humour to their conversations. For them, symbols are part of their digital identity and a way to express themselves more creatively. Meanwhile, older generations, such as Baby Boomers and Generation X, tend to use symbols more conservatively. They use emojis less often and are often more literal in their use. The symbols used tend to be simple and formal, such as thumbs-up 👍 to express approval or a smile 😊 as a sign of courtesy. Mr. Budi (55 years old), a father of two in Yogyakarta, said: "I only use the thumbs up or smile emoji when replying to messages from children. For me, it's enough to show I agree or that it's okay." This difference often leads to misinterpretation or misunderstanding between generations. For younger generations, using too few or too literal symbols can come across as flat or inexpressive, while for older generations, overusing symbols can come across as unserious or disrespectful.

While there are differences in the way symbols are used and interpreted between generations, symbols can also serve as a communication bridge between them. In Javanese families, where respect for elders is very important, digital symbols can help younger generations communicate in a way that still honours tradition but is more in line with modern communication styles. For example, younger generations may find it easier to express concern for their parents or grandparents by using symbols, especially if they feel awkward expressing feelings directly through formal words. Using the heart symbol 🩶 or the hug emoji 🫂 can be an effective way for them to show affection without having to use overly formal words, which are sometimes considered stiff in everyday conversations. On the other hand, older generations are also starting to adopt the use of symbols in digital communication, albeit in a more limited number. They learnt to use emojis as a sign that they are engaged in a conversation, and this keeps them feeling connected to their children or grandchildren. For example, grandparents may send a smiley 😊 emoji in reply to their grandchildren, despite not actively using large numbers of symbols. Pak Harjo (65), who lives in Magelang, said: "My grandson taught me to use emojis. Now I often send a smiley emoji every time I reply to a message, and it makes me feel closer to them." This shows that symbols in digital media can be a tool to reduce the communication gap between generations, helping to create closer bonds despite differences in age and communication styles.

While symbols can help facilitate communication between generations, there are also challenges that need to be overcome. One of the biggest challenges is the difference in meaning of symbols between generations. An emoji or symbol that has a certain meaning to younger generations may not have the same meaning to older generations. For example, the laughing 😎 emoji is often used by the younger generation to express fun or even sarcasm. However, older generations may not understand the sarcastic context of the symbol and take it as literal laughter. This can lead to misunderstandings in family conversations. In addition, for the older generation, the overuse of symbols may be perceived as impolite or not serious, especially in Javanese culture, where politeness in speech is highly valued. Some parents or elders may feel that their children or grandchildren are not showing enough respect when using too many emojis in their messages.

Despite the challenges, symbols in digital communication also offer great opportunities to improve intergenerational closeness in Javanese families. With better education and understanding, older generations can be more open to the use of symbols, while younger generations can learn to be more sensitive to the cultural and generational context of using symbols. One way to bridge these differences is through open conversations in the family about how symbols are used and what they mean to each generation. Younger generations can help teach older generations about the meaning and use of symbols, while older generations can explain how they interpret symbols and how they want to communicate digitally.

2.3 Conflict in the meaning of symbols and emojis

Visual symbols such as emojis, stickers and GIFs are an important part of communication in digital media. However, different generations often have different understandings of these symbols. Younger generations tend to use emojis and stickers more expressively and creatively, while older generations often use them more literally and simply. For example, the laughing 😎 emoji for younger generations is often used in the context of sarcastic or not entirely literal humour. However, older

generations may not understand this context and perceive the emoji as an actual expression of laughter. This difference in understanding can cause confusion or even misunderstanding in communication between generations. Another example is the use of the thumbs-up symbol 👍. For many older generations, this symbol represents approval or support. However, for some young people, this emoji can come across as flat or even sarcastic in certain contexts. When Mr. Harjo (65 years old) sent the thumbs-up symbol to his granddaughter as a sign of approval, his granddaughter, Siti (19 years old), took it as a cold and inexpressive response. This caused Siti to feel less valued in the conversation.

One of the main sources of conflict in intergenerational digital communication in Javanese families is the difference in communication styles. Older generations, such as Baby Boomers and Generation X, generally tend to use a more formal, polite and respectful communication style, especially in conversations with their children or grandchildren. In contrast, younger generations, such as Generation Z and millennials, prefer to use casual, abbreviation-heavy and often informal language in digital conversations. This difference often leads to misunderstandings. Older generations may feel disrespected when their children or grandchildren use overly casual or informal language in text messages. In contrast, the younger generation may feel that their communication style is efficient enough and see no problem in using casual language. For example, Mr. Budi (55 years old) feels uncomfortable when his grandson, Andi (17 years old), sends messages with abbreviations and slang. Mr. Budi stated: "I feel that the messages from my grandson are too short and impolite. I was always taught to speak with manners, but now it seems like everything has changed." Andi, on the other hand, considers his communication style to be normal among his peers and does not realise that the language he uses could offend his grandfather.

Another conflict that often arises in digital communication between generations is the difference in response rate and response time. Younger generations who have grown up with digital technology tend to respond quickly, mainly because they are used to instant communication through messaging apps and social media. In contrast, older generations may take longer to respond, either due to technological limitations or their slower message handling habits. This often leads to frustration for the younger generation, who perceive the slow response as a sign of indifference or lack of attention. For example, 22-year-old Rani is annoyed that her mom often takes a long time to reply to messages on WhatsApp. For her mother, Mrs. Siti (48 years old), this is due to her busy daily life and habit of checking her phone only at certain times, but for Rani, her mother's slow response is perceived as a lack of attention to their conversation.

The technology gap is also a source of conflict in intergenerational communication. Younger generations are generally more adept at using technology and various digital media features, while older generations often find it difficult to understand or use digital devices. This can lead to frustration when younger generations try to teach technology to their parents or grandparents, and older generations feel uncomfortable or pressurised by the demands of understanding modern technology. For example, when Deni (20 years old) tried to teach his mom how to use a video calling app, she was confused and struggled to follow the instructions. Deni ends up feeling resentful that his mother cannot quickly understand how the technology works, while his mother feels depressed and frustrated at not being able to keep up with the fast-paced technology. Different priorities in using digital media can also lead to conflict. Younger generations tend to prioritise social media, entertainment and instant communication, while older generations often use digital media for more practical

purposes, such as basic communication, finding information or accessing news. This often leads to disagreements about what is considered important in digital conversations or activities. For example, Mr. Agus (50 years old) often feels annoyed that his daughter, Nia (18 years old), spends more time on Instagram and TikTok than replying to messages in the family group on WhatsApp. For Mr. Agus, responding to the family group is a priority, but for Nia, interacting on social media with her friends is an important part of her life. Conflicts in intergenerational communication on digital media in Javanese families are often caused by differences in communication styles, symbol meanings, response rates, technology gaps and priorities in digital media use. While these challenges can create tension in family relationships, solutions such as cross-generational digital education and increased understanding between generations can help overcome these conflicts.

2.4 Evolutionary stages of digital media acceptance in Javanese families

Based on the results of thematic analysis, digital media acceptance in Javanese families can be divided into five main stages: The incomprehension stage, exploration stage, adaptation stage, integration stage, and active engagement stage. Each stage shows changes in mindset, response to technology, and level of involvement in the use of digital media.

First, the incomprehension stage. The first stage in the evolution of digital media acceptance in Javanese families is incomprehension. At this stage, older generations (Baby Boomers and Generation X) are often unfamiliar with digital technologies, such as smartphones and instant messaging apps. They tend to rely on direct communication or traditional methods such as landlines and perceive digital media as complicated and difficult to use. The interviews show that at this stage, digital media is seen as a technology that is only relevant to the younger generation. For example, Mr. Budi (65), a retiree from Yogyakarta, said: "I don't understand new technology like WhatsApp. It's easier to use regular phone calls or meet in person." At this stage, there is a fear or apprehension to use digital media because it is considered too sophisticated or unnecessary in daily life.

The second stage is the exploration stage, which describes older family members starting to feel compelled to learn about digital media, often due to the need to communicate with their children or grandchildren who live far away or use the technology in their daily lives. At this stage, they are familiar with smartphones, instant messaging apps and social media, albeit at an early stage. Guidance from the younger generation is often a key factor at this stage. For example, Mrs. Siti (55 years old) from Surakarta started using WhatsApp after her son taught her how to send messages. She said: "My son taught me how to use WhatsApp, and now I can send messages or photos to him every day, although I still make mistakes." The exploration stage is characterised by growing curiosity, although the use of digital media is still limited to basic features.

The third stage is the adaptation process. Older generations become familiar with digital media and start using these technologies more regularly in their daily communication. At this stage, they have mastered basic features such as sending text messages, sharing photos and making video calls. Pak Rahmat (60), a farmer in Wonosobo, says he now uses WhatsApp to communicate with his son, who works in Jakarta. Although it was difficult at first, he is starting to feel comfortable using the technology. According to him: "At first I was confused with smartphones, but now I'm used to it. I can contact my children anytime via WhatsApp, and this is very helpful."

This stage signifies that the older generation is starting to accept digital media as part of their communication routine, although the use of technology is still limited to basic communication needs.

The fourth stage is the integration stage. Digital media begins to be integrated more widely in the daily lives of families. At this stage, the older generation not only uses digital media to communicate but also to access information, seek entertainment and participate in online communities. They feel comfortable using technology and begin to explore other features available. Mrs. Retno (62) from Semarang, who initially only used WhatsApp to communicate with her children, is now also active in community groups on Facebook and uses YouTube to watch cooking tutorials. She feels that digital media provides many additional benefits. She explains: "Now I not only contact my family, but also watch cooking videos and join Facebook groups to share tips with friends." At this stage, digital media is becoming a multifunctional tool in daily life, showing an increase in technology engagement and utilisation.

The last stage is active engagement, where older generations not only use digital media regularly but also become active and creative users. They are able to fully participate in the digital ecosystem, whether through social media, sharing content, or following digital trends. Mr. Agus (68) from Surabaya, who previously only used his mobile phone for phone calls, is now active on Facebook, joining extended family WhatsApp groups, and even sending funny stickers in his family group chats. He has also learnt to make short videos to share with his grandchildren. She said: "I can now be closer to my grandchildren through social media. I even learnt to send funny stickers, and they are happy." At this stage of active engagement, digital media has become an integral part of the older generation's social life, and they are able to interact fully within the digital environment. Key Findings from Thematic Analysis are shows that the acceptance of digital media in Javanese families does not happen instantly but through stages involving changes in perception, improved skills and increased comfort in using technology. Factors such as support from the younger generation, communication needs and the practical benefits of digital media are key drivers at each stage. Each stage in this evolution of acceptance reflects a process influenced by family dynamics, cultural factors and technological limitations. In many cases, this process is accelerated by the need to stay connected with family members who live far apart or to deal with situations such as the COVID-19 pandemic, which forces families to rely more on digital technologies.

In the evolutionary stages of digital media use in Javanese families, the older generation not only uses digital technology for communication but also actively participates in other digital activities, such as sharing content, joining digital communities, or even producing content on social media. However, despite their proficiency, new challenges arise. The need to keep learning in an ever-evolving technology. Despite being proficient in using certain devices, older generations still have to learn new features or emerging technologies, which can be tiring. Even older generations in Javanese families experience pressure from social norms. Some older interviewees felt that using too much social media or being too involved in digital activities was not in line with their social norms. Despite being actively involved, some older generations still feel that there is a gap in their digital media use styles compared to younger generations, especially in terms of creativity and self-expression. It is noticeable that older generations are starting to integrate digital media into their daily lives. Technology is no longer just for communication but also for finding information, entertainment, or even joining online communities.

3. Conclusions

This research shows that the evolution of digital technology acceptance in Javanese families takes place in stages, from the stage of incomprehension to active engagement. Each stage illustrates significant changes in the older generation's mindset, adaptation and engagement in technology use. In the early stages, the older generation had difficulty understanding the technology, accompanied by concerns about the changes brought about by digital media. However, with time and guidance from younger generations, they begin to explore, adapt and eventually integrate digital technology into their daily lives.

Common barriers at this stage include knowledge gaps, limited access to technology in rural areas, and unfamiliarity with advanced features that leave them still dependent on help from their children. While digital media has helped maintain long-distance relationships, especially in families living apart, it has also been found to potentially reduce the quality of face-to-face interactions and the warmth of relationships between family members. On the one hand, digital technology allows the younger generation to communicate more informally and quickly, but this is sometimes seen as disrespectful to more formal Javanese cultural values. Thus, it is important for Javanese families to find a balance between the use of technology and the preservation of traditions so that family relationships remain strong and harmonious in the digital era.

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Chapter 5

Teacher-Student Interpersonal Relationship in Digital Education: Issues and Implications for Pedagogy

John R.D. Adade, Patricia M. Amos, Theresa Antwi, Bernard M. Amoako and Samuel O. Danquah

Abstract

The digital age that permeated all spheres of human life has revolutionarily paved a rapid shift from traditional to digital technologies in education. Thus, digitalization has become a need in pedagogy. However, the digital tools and technologies that aid teaching and learning present complicated challenges to teachers and students as they progressively become excited to use them. Ostensibly, elements of teacher-student interpersonal relationships in digital education, a core condition in pedagogy, are equivocal. This chapter, therefore, will expatiate the nature, roles, challenges, and importance of teacher-student interpersonal relationships in digital education and its emerging issues and implications for pedagogy.

Keywords: digital age, digital education, digital pedagogy, interpersonal relationship, digital tools and technologies

1. Introduction

Digital technologies have acclimatized to the ever-evolving world. The use of the internet to soften existence has been a fundamental pathfinding era with numerous benefits, prospects, and achievements. Technological exploration and internet usage have been on the ascendency. Between 2018 and 2022, global internet use grew by 1.5 billion new users. The assumption is that the outbreak of the COVID-19 pandemic triggered the magnificent increase in global internet usage. Most new users were identified as from middle-income countries. In low-income countries, only 25% of their population used the internet in 2022. The unimpressive usage was ascribed to affordability due to low incomes, poor internet speed, and digital readiness [1].

Globally, digital technologies are becoming pivotal in education. Interestingly, this fascinating dive would gradually eradicate the traditional education models [2]. Digital technologies are subtle in expeditious development, processing, and knowledge transfer. Thus, it compels teachers to effortlessly integrate it into teaching and

learning to engage students in personalizing their learning experiences and accessing learning materials. Technological models have factored in and measured educational learning achievements [3]. Technology has made education more sustainable due to its pivotal role in inclusion and attendant diversity in teaching and learning, as well as teachers and students [4]. Digital technology has eliminated repetitive teaching while encouraging lifelong learning since it allows the retrieval and sharing of previously taught lessons [5].

Digital education is an ecosystem with integrated domains. The domains are digital learning technologies, instructional modality, personnel and support services, organizational policies and planning, instructor development, student development, and partnerships [6]. Thus, perfecting basic digital skills is a necessary hallmark to navigate the domains of the digital education ecosystem. Digital education provides insightful benefits and essential variations to teaching and learning in all aspects of education. Thus, it is the most comprehensive and effective tool for inclusive education. Digital education potentially solves current and future educational crises such as the COVID-19 pandemic that disrupted face-to-face teaching and learning from the basic to the pinnacle spaces of education [7–9]. Successful digital education implementation indicates that teachers and para-educational workers were thoroughly trained and well-informed on information and communication technology. Also, infrastructural facilities enhanced accessibility with specialized assistance readily available. Besides, support and coordination and stable power and network availability cannot be underemphasized [10].

Artificial Intelligence (AI) has rapidly grown into digital education for utilization toward academic success. AI interprets language prompts to generate texts, audio, images, and video content indistinguishable from human-made content [1]. Some notable AI technologies useful to education and pedagogy, and accessible online are natural language processing (NLP), speech recognition, image recognition and processing, autonomous agents, affect detection, data mining for prediction, and artificial creativity [11]. It is one of the cheapest means of teaching and learning because it processes data faster and makes it instantly available as a solution. AI-assisted digital education is adaptive, immersive, assistive learning and affection computing, role-playing, and gamification [12]. With a combination of learning science and AI, experts have created digital laboratories that allow experiments and analysis outside physical laboratories [13].

The argument is that AI techniques in digital education were generic rather than explicit to a particular learning domain. However, Limna et al. [14] established that a review of artificial intelligence adoption in learning and teaching during the digital era indicates that as AI provides students with varied learning materials, they specify their learning needs and subjects. However, educational experts have raised concerns about the robustness and efficacy of AI's approach to pedagogy [11]. AI delimits logical reasoning. Thus, teachers and students are prone to its fixation due to its effectiveness in prototypic-generic solutions. AI is deficient in ethical issues. It inappropriately exposes individual information. AI could widen inequality, erode privacy, intensify misinformation, and increase security vulnerabilities [1]. Forwardly, Miao et al. [11] argued that AI technologies should be able to drive lifelong learning companionships, enable continuous assessment, and keep records of lifelong learning achievements. Also, to ensure inclusive, equitable, and accessible education globally, AI technologies must be enhanced to support the education of people with special educational needs and those in marginalized or isolated communities [11, 15].

Invariably, prioritizing digital skills among teachers and students about equipping schools with digital technology resources perforates the problematic sack of digital

literacy [16]. However, other studies posit that though teachers have levels of pedagogical use of technologies, they demonstrate adequate technical digital competence [17]. Teachers use digital technology for teaching, communicating, meetings, daily administration, and research. Digital tools they use include stationary computers, laptops, tablets, smartphones, and smart boards. Teachers also use digital learning platforms, e-communication tools, e-meeting system tools, and mobile applications. Some tools and applications are Skype Business, Hangouts, Zoom, and Adobe Connect. The rest are Box, Google Drive, and Kahoot [18, 19].

Expectantly, socio-demography antecede attitudes, perceptions, and acceptance toward the costs, benefits, and effective use of digital learning resources. Willingness to develop digital skills toward education fundamentally lingered on its usefulness in pedagogy, professionalism, and its ability to assist students in improving their digital competency [4]. Their digital pedagogical competencies manifest in identifying and employing digital resources and how they use them to improve and innovate teaching [20]. Teachers would not sufficiently develop all components of digital competency and, thus, would not be ready for innovative activities that may emerge in digital education. Hence, educational institutions must create awareness of transprofessional competence and intermittent advanced digital competency training among teachers [21, 22].

Students have significantly accepted digital learning because of its usefulness, efficiency, attractiveness, and convenience. It is also effective in virtual accessibility, lesson delivery, arousing learning interest, and enriching learning experiences [23–27]. Students have no health, disability, or population segmental restrictions to study [28]. Students now have electronic books, AI-assisted project tools, and various software to make presentations, and can present assignments or write tests in the comfort of their hostels or homes [5]. Technology, resources, and intentions to access digital information perfuse attitudes toward digital learning. Thus, incorporating information and communication components and resources into instructional practices would elicit willingness and ability toward digital learning [20, 29]. To enhance students' quest and ability to access and utilize digital learning, teachers must collaborate with educational software designers to create specific apps that appeal to students' interests.

Integrating new technologies in teaching and learning and the endeavor to virtualize traditional classrooms are affected by numerous factors. Currently, structured teaching and learning necessitates using electronic or digital devices in face-to-face teaching and learning in classrooms and online aided instruction in virtual spaces. However, availability and access to digital technologies in schools do not equate to adequate and effective usage of varied technologies in the classroom. Ostensibly, students are eager to learn new technologies. However, teachers see new educational methods as less attractive and repulsive [2]. Educational technologies are easily prone to obsolescence, and upgrading or replacing them with emerging technologies could take a toll on educational resources [30]. Many educational institutions, especially in less developed countries that embraced digital education and invested in its structures are struggling to meet the pace of funding the acquisition of upgraded educational technologies. As many developing and middle-income countries strive to meet Sustainable Development Goal 4, which ensures inclusive and equitable quality education and promotes lifelong learning opportunities for all, governments are moving toward providing free universal education to the tertiary level. This act has cripple educational institutions from generating internal funds to acquire and manage educational structures such as digital structures.

Over the years, educational administrators have had challenges evaluating teaching and teacher performance in digital education. For example, a challenge in appraising digital teaching is distinguishing teaching from design [31]. Aside from seeing educational issues as challenging to digital education, digital education poses physical, emotional, and psychological threats to teachers and students [32, 33]. Similar to any other sociotechnical system, digital education succumbs to the quality standards within social boundaries that arbitrate the quality of beauty and competitive rules [34]. However, digital education suffers ethical concerns that have also been aggravated by artificial intelligence, which poses ethical issues such as bias, privacy, and fake information [35].

Thus, this chapter used a traditional literature review to discuss interpersonal teacher-student relationships in digital education as an essential condition of pedagogy, focusing on the digital age, digital education, digital pedagogy, interpersonal relationships, and digital tools and technologies. Given this, some subtopics such as digital pedagogy, immerging issues in digital pedagogy, teacher-student interpersonal relationship, pedagogical implications of teacher-student relationships in digital education, and fostering positive teacher-student interpersonal relationships in digital education, emerged to clarify the main topic, Teacher-student interpersonal relationship in digital education: Issues and implications for pedagogy.

2. Digital pedagogy

The emergence and incursion of technological innovation have permeated the principles of pedagogy and pedagogical skills. This has driven the use of digital pedagogy at all levels and standards of education. Thus, social and technological realities wave the era of pedagogy [36]. Designing digital pedagogical learning environments cannot be underestimated in the current dispensation of digital education. Thus, digital pedagogy is an imperative factor in the current technological transformation in global education. Digital pedagogy is teaching in an online platform with the help of internet-connected digital tools. Being the core of education, pedagogy may render education meaningless when its principles are neglected. Thus, the cradle of the current era of technological innovation in education is to be able to develop an infused digital pedagogy that will at its best not violate the tenets and principles of pedagogy. Digital technology in full potential to support pedagogical activities has compressively broadened the learning process, allowing a broad spectrum of communication. Eminently, higher technological and pedagogical abilities in education are reflected in higher learning outcomes [3].

Digital pedagogical models play a major role in determining and factoring students' learning achievements in education [3, 36]. However, standardizing integrated digital pedagogical models is a prominent emerging challenge in education due to the solidity of didactic and pedagogical principles. Thus, there is a need to integrate technology into education from a robust pedagogical approach. Bearman and Ajjawi [34] established five steps in standardizing a digital pedagogical model. They are: (a) engaging with professional or disciplinary guidelines; (b) designing rubrics for ambiguity and complexity; (c) discussing the limits of standards; (d) promoting meaningful interactions with digital systems; (e) developing critical digital literacies; (f) providing tasks that develop evaluative judgment through digital interactions; and (g) acknowledging emotions. Homan [19] canopied digital pedagogies as facilitative and integrative digital pedagogies. Santoveña-Casal and Pérez [37] grouped digital pedagogical models

into (a) collaborative, which encompasses class group collaboration and small group collaborations; (b) social/participatory, which includes short-term discussions and medium-term discussion; and (c) Independent and independent/autonomous models that incorporate theoretical work and technical and practical work.

Digital pedagogy outshines traditional classroom instruction and encourages modern student-centered pedagogical practices. Thus, a blended learning approach could effectively enhance learning outcomes [38]. Digital pedagogy allows teachers to tailor interesting learning activities to motivate student participation. Technology in pedagogy makes teaching and learning materials handy, expressive, easily accessible, and easily replaceable or modified. This makes learning cohesively contextual and reciprocally communicative. Digital pedagogy has improved the learning culture through the numerous web platforms available for teaching and learning. Such platforms empower students to be autonomous in learning with the availability of varied educational resources and unlimited access [38, 39]. The easy accessibility of such platforms has eliminated the use of orthodox teaching and learning aids. Thus, digital pedagogy practically solves the problem of hardcopy textbook shortages in classrooms [40]. What is required of the teacher and the learner is digital competency.

3. Immerging issues in digital pedagogy

Students' accessibility to digital learning environments is a major hindrance to the use of digital pedagogy in digital education. Many factors may account for this assertion. Accessibility of digital learning environments lingers on the ability to afford technological instruments or their free availability in schools, flair, and willingness to use. When digital learning environments are structured and designed with inclusivity in mind, physical accessibility, cultural, and linguistic considerations are not overlooked by educators. Thus, there is a need for a universal framework of a culturally responsive and disability-friendly digital pedagogy that will ensure a globally responsive and culturally-centric digital learning environment. Institutions should ensure that educators are continually exposed to adequate technical training to gain expertise in digital pedagogies, ensuring that a universal digital learning environment serves the student's purpose [41–44].

While some studies have argued that digital pedagogy has greatly enhanced teacher-student relationships, other studies have indicated emerging challenges in teacher-student relationships associated with digital pedagogy. Studies have raised concerns that digitally designed textbooks and learning materials require an adaptation to local contexts, easily readable and readily accessible by learners to encourage domestication in a global context [45].

Currently, digital pedagogy is considered to be an optional pedagogy, especially in the context of teaching and learning in less developed countries and under-resourced learning institutions. Looking at the role that digital pedagogy is playing in the current wave of digital education, infusing it into the teacher education curriculum is not optional in teacher training. Thus, there is a need to make technological infrastructure available and easily accessible in teacher training. Also, regular in-service training for teacher educators could focus on emerging technological pedagogy-related competency skills [45, 46].

Though some teachers may be competent in digital skills, others find it difficult to build digital learning environments due to their low digital competencies. It is more problematic when such teachers cannot infuse pedagogical knowledge with digital

technology [18]. Though teachers could have high techno-pedagogical competencies, individual innovativeness among the teachers could be a descriptive factor to their levels of techno-pedagogical competencies [47].

Some challenges in digital pedagogy could be the lack of physical connectedness and interactions between the teacher and student, intermittent destructive lessons due to gadgets and internet failures, lack of group cohesion, and digital and digital pedagogy incompetency [40]. Digital pedagogy has suffered rapid innovation challenges due to the volatile nature of technological environments. Technology is inevitably dynamic as it evolves within a twinkle of an eye. Educators face the challenge of constantly learning and unlearning new digital tools, software and updated software versions to mitigate the path of developing a pedagogy. Finally, emerging strategies for teaching and learning have tasked educators to leverage digital tools and software in pedagogy.

Educators are concerned with ethical concerns in digital pedagogies. Teachers increasingly, rely on digital platforms in education for lesson plans and teaching methodologies. Teachers can now request software programs like ChatGPT for a lesson plan within 30 seconds. Software like ChatGPT, teaching and learning platforms like Learning Management Systems (LMS), and other educational technologies have the potential to collect, store and distribute teachers' and students' data. Permissible and proper usage of such data mediates the appropriate sharing of data. However, it poses a risk of data misuse and ethical breaches. Thus, there is a need for educational institutions and other stakeholders to formulate ethically transparent structures, policies and regulations when adopting technologies in pedagogy.

Nonverbal cues are prominent in effective rapport-building, meaningful interpersonal connections, and positive learning outcomes. In a face-to-face interaction, nonverbal cues influence the effective flow of the communication channel thereby fostering trust, empathy, and connection to enhance social interactions and learning outcomes [48, 49]. Due to the absence of physical presence, nonverbal cues are considered ineffective in communication in virtual learning environments. Nonetheless, modern educational technologies have proven otherwise as facial expressions, gestures, and body language are now visible on digital learning platforms such as Zoom, Microsoft Teams, Google Classroom, etc.

Though modern technologies allow living videos where nonverbal cues are overt, learners are not obliqued to audio and video functions because they can use written texts or pre-recorded materials in their interactions. Also, asynchronous learning management platforms lack the immediate richness of nonverbal communication. This leads to student detachment and an ineffective rapport-building process [50]. In instances where nonverbal cues complement digital teaching and learning to substantiate the effectiveness of teacher-student interpersonal relationships, factors such as cultural differences in nonverbal cues and the use of unneutral discourse community nonverbal cues could pose the danger of varying interpretations of nonverbal cues which may impact hinder the smoothness of the online education rapport-building process.

4. Teacher-student interpersonal relationship

A quality relationship between a teacher and a student illuminates numerous academic benefits to students as teachers circumvent pedagogy to professionally provide different emotional roles such as care, support, and trust to foster student engagement and collaborative learning [48]. Such a quality relationship in a pedagogical

context in interpersonal relationships is a valuable pedagogical resource that needs to be acknowledged by educators [51]. Though the quality of a teacher-student relationship might depend on pedagogical, personal, and contextual indicators, the appropriateness of providing emotional care to support academic achievements hinders the non-negotiable implementation of a quality teacher-student interpersonal relationship.

Shih [52] asserted eight tenets of teacher-student interaction which could create a quality relationship to humanize education. They are a student-fit instructional model, differentiated talents specifics, connected instructional models to learning experiences, and paramountcy of student's interest. The rest are knowledge of student nature, oppressive-free teacher-student relationships, learning through discoveries and experiences, and a humanizing attitude of teachers. Promoting closeness and minimizing conflict foster positive teacher-student interpersonal relationships. Building closeness and minimizing conflicts require teachers to value relationships, foster distinctiveness among students, use inclusive and culturally responsive language and self-disclosure of experience in teacher-student communications [53].

In the digital space, the interpersonal relationship between a teacher and a student has been described by studies [39, 54–57] as a complex phenomenon due to social adaptability, limited social constructivism, and nonexistent physical connectivity. Digital pedagogical effectiveness significantly relates to positive teacher-student interpersonal relationships in digital education. Lawrence [58] identified an emerging model for culturally responsive teacher-student interpersonal communication in a digital pedagogy. Though teacher-student interactions in digital space are complex and wider than mere interactivity, they foster motivation and empowerment and create a positive learning environment and satisfaction among students [59].

Establishing a good teacher-student relationship in a digital pedagogy requires that teachers create adequate rapport with close bonds of trust and mutual respect with students while valuing their autonomy and diversity [51]. High-level teacher-student cohesion, specified and timely feedback, and synchronous and asynchronous communication improve students' emotional literacy which is healthy for participation and performance [39]. While considering relational and task-related teacher-student communication, nonverbal cues, human-to-human communication scripts, and affirmative communication enhance students' self-efficacy and motivation, self-regulated learning, and the perception of social presence, immediacy, and relatedness [60].

The model is a personal, communal, instructive, and authentic communication formulation. The model suggested that teachers must engage students in frequent individual dialog through emails, short message services, phone conversations, and individualized feedback on student assignments to learn about students' lives, individually. The outcomes of student and family surveys would inform teachers about students' historical growth to enhance continuous dialog and personal connections with students. Also, teachers could communicate with students as a community by using academic and non-academic content in their digital pedagogies to create a sense of inclusion, participation, collaboration, and belongingness among all students. Teachers' communication in a digital pedagogy could be instructively flexible with revised and varied contents, customized remediation and extended assignments for specified students, and supplementary teaching. Finally, a teacher's digital pedagogy must communicate authenticity through hypostasis and existential learning activities with recourse to adopted and adapted formal and informal language.

Garrido et al. [59] argued that apart from formal digital teaching and learning platforms, social media platforms such as Facebook which allows forums, informal

working chats, and focalized group sessions, encourage collaborative communication which is healthy for the growth of teacher-student relationships. Such platforms support teachers and students to be in touch to establish rapport, share thoughts and feelings on academic issues, and discuss specific learning tasks. Zoom Polls, videoconferencing, chat box responses, and microphone and video conversations could elicit connective communication that will enhance the interpersonal relationship between teachers and students [39].

5. Pedagogical implications of teacher-student relationships in digital education

Garrido et al. [59] argue that due to the notable educational challenges associated with the teacher-student relationship in digital education, there is a need for a significant change in teacher-student relationship theorization. Vázquez-Cano [36] indicated that while efforts exist to approach digital education with a strong pedagogical approach, educators should not lose sight of students' emotions and appropriate values. Thus, dynamic teacher-student relationships that foster students' social, emotional, and academic success are a critical integration of digital pedagogy. Sun et al. [61] propounded the chain mediation model of teacher-student interaction level's influence on student learning effects in online education. The model indicates that a good teacher-student interaction influences students' learning, psychological atmosphere and learning engagements.

Students in online education have a considerably higher attrition rate than on-campus students due to isolation, technology challenges, academic expectations, and student challenges [62]. Keasberry [63] indicated that students who experienced both orthodox classroom and online studies reported feeling intimidated by their teachers and colleagues in the orthodox classroom than in the digital space. Teachers also found their students more open and collaborative in the digital space than in the orthodox classroom.

Digital pedagogy has distorted the professional distance in teacher-student interpersonal relationships. Due to the flexibility of online education and digital pedagogy, students initiate communication that requires immediate feedback from teachers beyond standard working hours thereby distorting the boundary of formality in a teacher-student relationship [39]. Teachers also worry about non-academic issues emanating from students. To teachers, such non-academic communications could establish a "platonic" rather than a formal teacher-student interpersonal relationship. Students could not distinguish between formal and informal requests and discussions on digital educational platforms.

Monitoring students' behaviors in digital pedagogy might be a frivolous journey that marred teacher-student interpersonal relationships, due to the lack of face-to-face interpersonal contact in communication. Students could use AI generative and auto-response messages that do not reflect their inner feelings and actual intended communication. They could also pretend to be in classes while they are absent-minded or disinterested.

The unavailability of unified and hierarchical communicative guidelines could hinder teacher-student interpersonal relationships. Clear rules and guidelines on the chain of command and communication, appropriate communication tools to use, and clear methods and forms of communication can effectively enhance relationships and student outcomes.

6. Fostering positive teacher-student interpersonal relationships in digital education

Garrido et al. [59] study findings that reviewed 111 peer-reviewed full-text academic articles indicate that digital education promotes interpersonal connections, interactions, and relationships among students and teachers, creating adequate room for positive learning environments that influence students' performance. Teacher-student interpersonal relationships serve as a social and psychological tool that supports the comprehensive growth of students and fosters positive changes in their attitudes [64, 65]. Via interpersonal relationships, teachers assist students to address their mental health needs and build emotional resilience. Where there is a need, teachers refer students to other specialists like counselors and psychologists to assist them.

The total well-being of a student is a reflection of a supportive learning environment. A quality relationship between teachers and students enhances remote teaching activities by bridging the physical separation gap. Thus, efforts by effective online educators to improve teacher-student interaction and connection are pectoral in addressing students' psychological and communication challenges, notably described as transactional distance, posed by the geographical distance gap associated with virtual learning environments [65]. Effective implementation of social and collaborative models is positively associated with a positive learning experience. Thus, social and collaborative learning fosters a feeling of belonging, strengthening inter-student and teacher-student relationships [37].

To ensure an effective teacher-student interaction, connection, and relationship, digital educators must devise a comprehensive guideline to promote accountability, standardized supervision, and continuous evaluation of digital learning sessions. In that way, students' academic and psychological needs could be identified by the digital learning system and addressed by educators. Teachers should discuss their expectations, boundaries, assessment methods, and honest uncertainties regarding the courses to be studied and technological teaching and learning platforms to use with students. Ignoring the affective domain in digital education is a recipe for breeding mental health challenges among digital students. Each student has diverse strengths, weaknesses, achievements, and challenges. Thus, knowing them individually and identifying their affective needs will assist the teacher in acknowledging their diverse challenges to tailor their emotional needs.

Akram [66] reiterates that adequate communication between a teacher and a student, an individualized support system established by the teacher, and creating a collaborative and harmonious virtual platform where students develop a sense of belonging could elicit students' intrinsic and extrinsic academic motivations and lead to effective online learning engagement. For effective communication between a teacher and a student, the teacher must institute a clear communication channel with multiple online application preferences that students are conversant with and can easily use.

Other factors include a supportive and engaging learning space to drive student self-directed learning and optimized and diverse interactions between the teacher and learners. Finally, an enthused curriculum, a teacher's sovereignty, perceptions and achievements, and ability to eschew conflicts are a cradle to effective teacher-student interaction. An online classroom should provide a haven community for students. Aside from teaching and learning, teachers should host physical and virtual social events to reduce boredom, neglect, and isolation. Teachers could also put students in groups based on proximity and physical location and encourage them to once in a while gather for healthy fun discussions or participate in co-curricular activities.

7. Conclusion

Teacher-student interpersonal relationships have evolved because the concept is complex and dynamic. The evolution resulted from advancements in educational methodologies, social dynamics, global pandemics, and technological improvements. Though the challenges of teacher-student interpersonal relationships are enormous and piercing, their derived prospects are significantly impactful to pedagogy. Issues and implications of teacher-student interpersonal relationships in digital education reflect the broader pedagogical landscape. When digital communication in teaching and learning does not have a personalized component, students may feel lonely, disengaged, unsupported, isolated, and have limited interpersonal bonds with teachers.

A rebirth of new dynamics in digital teaching strategies and approaches by educators would present significant implications for pedagogy. The emphasis must encompass virtual interpersonal relationships, student-centered teaching strategies tailored to individualized support systems, and personalized communication. The rest are online student community engagements, structured peer collaboration, 24-hour virtual support offices for students and feedback channels for enquiries. Also, teachers must demonstrate high levels of emotional intelligence and empathetic disposition when dealing with students in an online environment. Teachers striving to improve their technological and pedagogical skills must include enshrined nurturing and supportive relationship skills.

While digital teaching and learning are becoming a hub for isolation and quality mental health deprivation, emphasis on teacher-student interpersonal relationships would balance immersively virtual teaching and learning with adequate human elements of education that support emotional, social, and intellectual growth. Where there is a need, educators must blend face-to-face and digital teaching to mitigate the barrier of inconvenience in personal connections. Students must not only be engaged in academic and intelligence skills but also be supported and motivated to have a sound mind and a good mental health status. Intermittently, intellectual and personal growth support each other to thrive for success. The gap between technology-assisted education and effective student interaction lingers on thriving interpersonal relationships in virtual classrooms.

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Chapter 6

Perspective Chapter: Technologies, Time, and Disintegration: A Cyborg's View of *Leave the World Behind*

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Abstract

This creative perspective chapter examines the impact of digital technologies on human interactions, using the 2023 film "Leave the World Behind" as a case study. By juxtaposing the film's themes with contemporary discussions on digital sovereignty and technological anomalies, the analysis employs a Cyborg perspective as its theoretical framework. A Cyborg, in this context, refers to the blending of human and technological elements to explore the evolving interface between people and technology. The exploration unfolds across five discrete themes, reflecting the film's structure, to look into how digital technologies reshape family dynamics, employment, education, and social interactions. While grounded in the film's narrative, this chapter extends its relevance to a broader audience interested in postmodernist motifs such as technology anxieties, the "body without organs" concept, and the dynamics of digital interactions. Ultimately, the analysis highlights the critical role of digital technologies in shaping relational dynamics and their broader implications for mental and psychological health in the digital age.

Keywords: digital sovereignty, cyborg perspective, technology anxieties, body without organs, postmodernism, human interactions

1. Introduction

> *Amanda: We fuck each other over all the time, without even realising it. We fuck every living thing on this planet over and think it'll be fine because we use paper straws and order the free-range chicken. And the sick thing is, I think deep down we know we are not fooling anyone. I think we know we are living a lie. An agreed-upon mass delusion to help us ignore and keep ignoring how awful we really are.*

The 2023 psychological thriller film *Leave the World Behind* (**Figure 1**) was created by Sam Esmail, who served as the producer, writer, and director. Adapted from Rumaan Alam's 2020 novel of the same title, the movie features a cast including Julia Roberts, Mahershala Ali, Ethan Hawke, Myha'la, and Kevin Bacon. The storyline revolves around their attempts to comprehend a gradual breakdown in

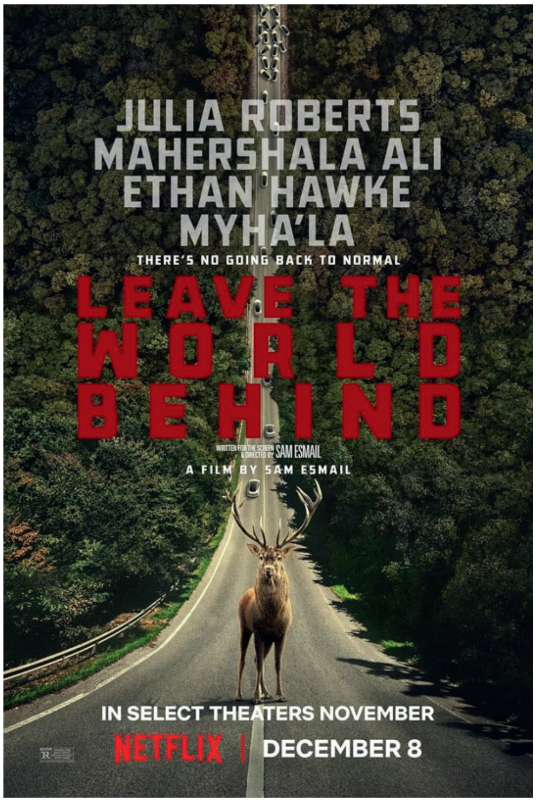


Figure 1.
The poster design for Leave the World Behind.

communication devices, television, and other commonly used technologies, hinting at a potential cataclysm. Premiering at the AFI Fest on October 25, 2023, *Leave the World Behind* subsequently had a limited theatrical release on November 22, 2023, followed by its availability on Netflix starting December 8, 2023. Critically, the film garnered generally positive reviews from critics.

Providing a concise background to the movie plot, in New York City, Amanda Sandford organises a spontaneous weekend getaway for her family (comprising her husband, Clay, and their children, Rose and Archie), aiming for quality time together. They drive to a rental house on Long Island, where they encounter peculiar events: witnessing an oil tanker incident, a blackout affecting TV and Internet, and unexpected visitors (a father, G.H., and daughter, Ruth) claiming ownership of the house. As the family navigates the unfolding mystery, including encounters with deer, a language barrier, and unsettling pamphlets, they grapple with a nationwide connectivity disruption and growing chaos. The situation intensifies as they confront a series of disturbing events, including Archie's strange dental issue, Rose's disappearance, and revelations from G.H. and Ruth. The family embarks on a quest for answers, uncovering a three-stage military campaign that destabilises the country. As they strive to navigate the chaos, Amanda and her family face unexpected challenges, leading them to a neighbour's bunker where they discover dire warnings of armed forces attacks and radiation levels. Simultaneously, Rose finds refuge in a nearby house, culminating in a surreal moment as she watches the series finale of *Friends* amid the unfolding chaos.

In the 1980s, teenagers exploring sexuality would face "punishment" in horror films; in the 1990s, one's best friend would turn out to be the killer plotting against others; and in the 2000s, horror movie villains would torment people in various ways [1]. Horror films serve as mirrors to modern society, reflecting the societal fears and moral critiques of each era [2]. The Mandarin translation of *Leave the World Behind* to "Disconnected" vividly underscores the central theme—the overwhelming information upon which we all depend. Beneath this movie title, thought-provoking questions emerge: What unfolds when 1 day, this lifeline vanishes—no streaming platforms, no social media, and no news outlets? How do we navigate survival in such a scenario? The film authentically depicts a contemporary society severed from information, portraying the inevitable collapse that ensues.

The core of *Leave the World Behind* lies in its depiction of the current societal landscape, where every element becomes a potential threat. From cinematography to stellar performances (Amanda's suspicion, G.H.'s evasiveness, and Clay's ambivalent attitude), the apocalyptic scenario crafted by the film is convincingly portrayed. The film could have easily looked into the typical bloody conflict scenes common in many movies by the second act, escalating the narrative into an irreversible next stage. Yet, it calmly illustrates the contrasting reactions of the adult "social establishment" and the younger "TikTok generation" when faced with this communication breakdown. Noteworthy references to alternative right-wing groups (the neighbour in the latter part of the film) and Hispanic communities (the Spanish-speaking woman seeking help) add richness to the diverse portrayal of the apocalyptic community in the film. For the digitally native younger generation, a group unfamiliar with war experiences, the impending disaster holds a different significance—or perhaps, they never held expectations for a future that calamity could obliterate. Rose, the youngest in Amanda's family, cares only about the finale of *Friends* she cannot stream. Archie is intrigued by G.H.'s stylish daughter, capturing her poolside allure on his phone for personal solace. On the other hand, Ruth, G.H.'s daughter, worries about her missing mother, slowly coming to grips with the possibility of her mother's tragic fate.

For Clay, Amanda, and G.H., the apocalyptic scenario merely elevates their existing predicaments. Amanda's initial sense of existentialism intensifies into vehement resistance when faced with G.H.'s sudden visit. She questions G.H.'s motives persistently, and her defensiveness extends to everyone, even the young Ruth. Much like her initial sense of existentialism, she detests everyone—including herself. G.H. emerges as the character closest to the harsh reality of this group, yet he does not revel in any superiority. On the contrary, he harbours fears and aversions towards his own identity and the truths he knows. The progression of the film's plot unfolds like his nightmare gradually materialising, evolving into dire circumstances beyond his imagination. As for Clay, he occupies the weaker side of the marital relationship, accustomed to giving up on communication and unilaterally receiving instructions from Amanda. This leaves him unable to articulate the entire situation clearly after exploring and witnessing unusual events on his own, even getting lost during his expedition.

While this piece does not function as a movie review or a discussion on movie characters, I intend to pivot from the initial quote and refocus on the film's theme—examining how we, as humans, engage with technology, digital spaces, and our environments. Amanda's poignant words delve into the uncomfortable truths of human behaviour, offering a reflection on our actions and their consequences. Her candid assertion encapsulates a harsh reality often veiled by societal norms and pretences. This acknowledgement of unwitting harm hints at the subconscious, pervasive nature of our actions, highlighting the disconnect between our intentions and their actual

impact. Furthermore, Amanda's critique extends beyond interpersonal relationships to our broader interactions with the planet. Her observation about our environmental consciousness, symbolised by using paper straws and opting for free-range chicken, underscores the superficiality of many well-intentioned gestures [3]. The juxtaposition of seemingly eco-friendly choices against the broader context of environmental degradation reveals the inadequacy of such individual efforts in addressing the larger, systemic issues at play.

The crux of Amanda's statement lies in her indictment of a collective self-deception (**Figure 2**), a shared illusion that allows us to conveniently overlook the darker aspects of our nature. The term "agreed-upon mass delusion" suggests a societal pact to perpetuate a narrative that shields us from confronting the inherent flaws within ourselves and our societal structures. This coping mechanism, Amanda argues, is a mechanism to suppress the acknowledgement of our true, often unpleasant, nature. In examining Amanda's perspective through the lens of human interaction with technology, digital spaces, and the environment, her words illuminate a broader societal trend. The reliance on technology and the allure of digital spaces often serve as a means to escape, providing a virtual sanctuary where we can selectively curate and project our preferred versions of reality. This digital escapism, coupled with token environmental gestures, becomes a testament to our collective inclination for self-delusion and avoidance of the uncomfortable truths that lie beneath the surface. Amanda's words, therefore, offer a sobering commentary on the human condition, urging us to confront the dissonance between our professed ideals and the often harsh, unspoken realities of our actions. In the context of the film's theme, her perspective underscores the knotty relationship between humanity and its chosen tools—technology, digital spaces, and environmental practices—and prompts a critical examination of how these interactions shape our understanding of ourselves and the world around us.

Ruth's compelling response, in the succinct phrase "this is the part of the Venn diagram where we overlap," serves as an acknowledgement of a shared understanding in response to Amanda's unfiltered reflections. In this resonant moment, we witness a convergence of perspectives, a meeting point within the metaphorical Venn diagram of their thoughts. It underscores a shared recognition of the elaborateness and contradictions inherent in human behaviour, particularly as it intersects with the



Figure 2.
Amanda's statement reveals her critique of a shared form of self-deception.

pervasive influence of digital technology on our lives. This phrase becomes a symbolic bridge between Amanda's raw assessment of human nature and Ruth's recognition of a common resonance in their perceptions. The intersection in the Venn diagram suggests a shared experience, a collective realisation that extends beyond the characters themselves and implicates a broader reflection on the impact of digital technology in shaping our contemporary human condition.

Ruth's concise yet potent reply resonates with a sense of digital-age camaraderie, indicating a mutual awareness of the dynamics that underlie our interactions with technology and the evolving landscapes of digital spaces. It becomes emblematic of the film's broader exploration of individual and collective responses to the dissonance between our professed ideals and the often uncomfortable realities we confront in the era of rapid technological advancement. In this context, the overlapping portion of the Venn diagram becomes a symbolic space where shared consciousness emerges, transcending the characters and reflecting the broader societal dialogue about how humans grapple with the consequences of their actions in the digital age.

2. The cyborg

> *Clay: Drive away to what? All the roads are blocked. We're in the middle of God-knows-where. There's no one else around. I have no idea what I am supposed to do right now. I can barely do anything without my cell phone and my GPS. I am a useless man. But my son is sick. And my daughter is missing. And I do not know what to do.*

Using *Leave the World Behind* as a catalyst for exploration, this piece uses a Cyborg perspective to explore themes presented in the film. A Cyborg, short for cybernetically enhanced organism, refers to a being that incorporates both organic and biomechatronic components. Coined by Clynes and Kline [4], the term encompasses living organisms whose functions are restored or whose abilities are enhanced through the integration of artificial elements or technology that relies on feedback. In Donna Haraway's "*A Cyborg Manifesto*" [5], she challenges the concept of rigid boundaries between humanity and technology. Haraway argues that, with an increasing dependence on technology, the interweaving of humanity and technology has reached a point where drawing distinct lines between them is no longer feasible. According to her, the advancement of machines and technology, which humans have allowed and created, should be embraced without fear, as cyborgs have become integral to human identities. Despite her advocacy, Haraway also expresses apprehension about the contradictions in scientific objectivity and the ethical considerations of technological evolution. She contends that scientific accounts of the world have political consequences, prompting a critical examination of the ethics associated with technological progress.

As Clay, the father, comes to the realisation and acknowledges his helplessness amidst the malfunction of communication devices and other frequently used technologies (**Figure 3**), a sense of vulnerability washes over him. In this state of technological disarray, he grapples with the inability to assist his family, amplifying his feelings of powerlessness and exposing the fragility of their situation. This circumstance serves as an exemplification of the deepening integration of technology into the fabric of human existence, aligning with the theoretical framework proposed by Haraway. The escalating intertwining of technology with individual identity becomes evident as the failure of these devices leads to a tangible disorientation and a consequential



Figure 3.
Clay confronts the reality and admits his vulnerability in the face of communication breakdowns.

loss of agency. Haraway's seminal Cyborg perspective challenges conventional demarcations between humanity and technology, advocating for a recognition of the evolving symbiotic relationship between the two entities. Clay's reliance on his cell phone and GPS underscores the extent to which technology has become intrinsic to his navigational and decision-making capabilities. The collapse of these technologies not only renders him helpless but also disrupts established norms of masculinity associated with self-sufficiency.

Furthermore, the theoretical construct of digital sovereignty assumes relevance within this context, denoting the capacity for autonomous action within the digital realm. The character Clay's incapacity to employ his cell phone and GPS serves as a poignant illustration of compromised digital sovereignty, wherein technological dependence becomes a determinant of individual agency. The obstruction of roads, the desolate surroundings, and the pervasive uncertainty underscore the formidable challenges individuals face when digital tools, conventionally perceived as indispensable for autonomy, undergo dysfunction. As Clay grapples with a pronounced sense of ineffectuality, the cinematic narrative prompts a scholarly contemplation of the ramifications of technological breakdowns on individual agency, particularly in responding to exigent circumstances. The confluence of Haraway's Cyborg perspectives with Clay's predicament invites reflection on the fragility of human agency when enmeshed with technology, emphasising the nuanced dimensions of digital sovereignty in critical situations.

Addressing Verbeek's inquiries [6] regarding the existence of "technological intentionality" and its relationship with human intentionality provides a pertinent lens through which to contemplate Clay's dilemma in the cinematic narrative. Verbeek's exploration of technological intentionality prompts a consideration of the inherent agency within technological entities and their capacity to act independently of human input. The disruption of Clay's communication devices accentuates the question of technological intentionality. The cinematic portrayal unveils how these technological artefacts, designed with specific functionalities in mind, assume a degree of autonomy when their intended purposes are obstructed or compromised. Clay's situation serves as a prism through which to analyse the interaction between technological and human intentionality. The character's reliance on his cell phone and GPS presupposes a specific intentionality designed by their creators to facilitate communication and navigation.

However, when these technological artefacts cease to function, a disjunction emerges between the human intentionality to employ these tools and the technological intentionality embedded within them. The disrupted technological intentionality, as mirrored in Clay's struggle, necessitates a recalibration of human intentionality. The character's perceived helplessness highlights the interdependence between human agency and technological artefacts. In this scenario, the symbiotic relationship between human and technological intentionality becomes evident, unravelling the layers of dependence and autonomy entwined within their interaction. Verbeek's questions propel contemplation into the evolving nature of technological agency and its dynamic relationship with human intentionality. Clay's narrative serves as a cinematic tableau, inviting ones to delve into the philosophical nuances encapsulated in moments of technological breakdown, offering insights into the interconnection of intentionality within human-technology coexistence.

In the age of advancing technologies, including computers, the Internet, and biotechnologies, questions arise about the nature of humanity and human consciousness. The scholarship has demonstrated that as computer technologies progress, expanding their cognitive capacities, it prompts a reassessment of lay definitions distinguishing humans from machines. The concept of humanness undergoes a narrowing redefinition as computers gain the ability to think [7]. Simultaneously, advancements in the study of animal behaviour necessitate a reconsideration of what is distinctively human. The attribution of emotions to animals, once dismissed as anthropomorphism, is now acknowledged as animals are recognised to experience emotions once considered exclusively human [8]. The notion of "exclusive humanness" appears to be diminishing.

In this context, the disabled body becomes an intriguing focus for cultural reflection and projection. Historically, individuals with severe impairments were overtly deemed non-human, with severe mental impairments pejoratively labelled as vegetables. While remnants of this stigmatising discourse persist, the disabled body now garners renewed attention, highlighting fundamental questions about the nature of humanity in the face of difference and otherness. Postmodernity and emerging technologies challenge conventional notions of humanness, and disabled bodies draw attention to the evolving boundaries of self-identity. Similar to historical forms of segregation, such as the racial ideologies of Nazism and apartheid, policies that isolated disabled individuals from the broader population served a fundamental purpose in imposing order on perceived chaos and diversity. The classification of people as disabled facilitated control over those whose existence was viewed as potentially unsettling or threatening to societal norms. This control endures, even in seemingly positive statements like "Disabled individuals demonstrate exceptional courage in confronting their challenges" or "People with Down's syndrome are often characterised by happiness and friendliness." Policies advocating inclusion disrupt established categorical frameworks, challenging the comfort derived from clearly delineated boundaries [9].

Clay's situation underlines society's reliance on technology and the inherent vulnerability arising from disruptions to this infrastructure. The breakdown of communication devices in his narrative becomes a lens for scrutinising technological intentionality and human dependence, contributing to the discourse on the evolving nature of humanness in a technologically mediated world. This prompts an exploration of the delicate balance between human agency and technological dependency, broadening the concept of disability beyond traditional notions. Viewing the malfunctioning of technologies as societal disability challenges conventional

understandings, suggesting limitations on human engagement extend beyond individual impairments. Clay's words highlight technological fragility and prompt a reconsideration of disability in an increasingly interconnected and technologically driven society.

3. The fear

> *Archie: Hey. Isn't that room you were sleeping in? Just imagine. It's all dark out here. Your little bedside lamp is glowing. He could just follow that light right up to you. Ah!*

In a particular scene (**Figure 4**), Archie playfully taunts his sister Rose by fabricating a frightening scenario and then abruptly shouting at the end to startle her. Drawing on the framework of evolutionary psychology, humans have evolved to be sensitive to potential threats as a survival mechanism. Even though the scenarios are fake, the brain's threat detection system [10] may activate, leading to a fear response. Moreover, social cognitive theories suggest that individuals learn from the reactions of others, and the portrayal of fear-inducing situations in media or storytelling can elicit similar emotional responses through observational learning. Additionally, the suspense and anticipation inherent in scary scenarios can trigger the release of stress hormones, contributing to the overall experience of fear.

Within the realm of digital sovereignty and Cyborg perspectives, fear takes on a complexity, intimately connected with the renegotiation of human hybridity in the public space. The exploration of cyborg villains (**Figure 5**) in mainstream cinema reveals a constant negotiation of this new form of hybrid existence concerning aspects such as religion, morality, emotions, and gender. These cinematic representations provide a lens through which we can decipher societal perceptions of humanity, shedding light on what it means to be human in the context of postmodern society [11]. The very idea of technoculture challenges human dominance and disrupts the notion of an essential, natural world, instigating a deeper fear that technologies might fundamentally alter the essence of humanity itself.

Technology anxieties, as unveiled through the lens of Cyborg perspectives, expose a central problem rooted in the belief that humanity occupies a pivotal role in the



Figure 4.
Archie teases his sister Rose with a playful prank, inventing a scary scenario.



Figure 5.
Examples of cyborg villains: (Left to right) Shrapnel, a formidable entity of organic metal endowed with super-strength, endurance, and self-sustainability, portrayed as a crazed, rampaging murderer in Doom Patrol. Gizmo, also known as Mikron O'Jeneus, a brilliant inventor making his debut in New Teen Titans. Cyborgirl, a young girl whose nearly-destroyed body was salvaged through cybernetic upgrades, as featured in Wonder Woman.

universe. The fear emanates from the notion that any alteration or questioning of the idea of humanity could cast doubt upon our place in the cosmic order. The traditional belief in human centrality faces a challenge, inviting contemplation on whether we are specially placed by god(s) to rule over everything, whether there is a predetermined order to history, and whether earth should be viewed as an unlimited resource for human exploitation. This scrutiny of our humanity gives rise to the concept of posthumanity, where the very essence of what it means to be human is under scrutiny and subject to transformation [12]. Furthermore, grasping the prevailing technophobic spirit necessitates observing not only academic discussions but also popular narratives, especially in cultural studies and technology. In recent times, widely circulated media narratives have disseminated apprehensions, as seen in the assertion that entities such as Google are "dumbing us down" [13]. This popularised unease mirrors a broader societal preoccupation with the implications of technology on human cognition, prompting a reassessment of the repercussions tied to our evolving engagement with digital tools. The convergence of Cyborg viewpoints with societal concerns highlights an ongoing dialogue concerning the reshaping of human identity in an increasingly technology-dominated era.

The delineation of boundaries within any discourse weaves itself into the make-up of culture, constituting a cultural identity project inseparable from language, location, and historical context. Present discussions on human boundaries pivot on the relationship between humans and their technologies. This investigation extends from the cognitive aspects, such as thinking machines and Artificial Intelligence, to the status of virtual reality, shaped not solely by technological prowess but also by cultural underpinnings. Delving into the creation of virtual spaces, which may not physically exist but nonetheless resonate within our sensory experiences, this examination underscores the personal and shared dimensions of human experiences in the digital sovereignty era. Technology, as the quintessential source of transformation in the contemporary world, prompts individuals to constantly reassess and adapt, illustrating a dynamic interaction where humans and technology intersect.

This interconnection occurs at the crossroads of scientific advancements and cultural expressions, embodying the paradoxes observed by Barthes et al. [14], who astutely discerned the coexistence of contradictory attitudes towards technology. The paradoxical relationship manifests in the mundane phenomena of everyday life, managing to evoke both wonder and horror [15]. Within this tapestry of human-tech dynamics, we find that although our fears regarding technology may take on a personalised hue, they paradoxically converge when technologies break down, reverting us to a shared, primitive status.

In digital sovereignty, where individuals navigate a landscape shaped by their unique interactions with technology, the confluence of personal and shared fears becomes particularly pronounced. The breakdown of technologies, often perceived as a modern malaise, paradoxically strips away the layers of sophistication, revealing a shared vulnerability reminiscent of primordial states. In these moments of technological breakdown, individuals are confronted with a commonality that transcends personal nuances, as the struggle for survival and the reversion to elemental instincts echo a collective human experience. Thus, while the contemporary discourse on human boundaries grapples with the complexities of technological advancements, the shared vulnerability exposed during technological breakdowns brings us back to a shared, primitive essence, highlighting the paradox innate in our modern technological journey.

4. The being-happy

In the throes of a world teetering on the brink of chaos (mirroring the depicted scenarios in the movie), individuals often instinctively gravitate towards the principles of hedonism and existentialism as guiding philosophies for navigating their tumultuous reality. Hedonism, with its emphasis on the pursuit of pleasure and happiness as the ultimate good, manifests in the deliberate seeking of joy amid uncertainty. Engaging in activities that bring immediate satisfaction becomes a means of asserting agency and momentarily transcending the prevailing chaos. Simultaneously, existentialism offers a philosophical framework through which individuals confront the existential challenges of a chaotic world. The pursuit of happiness, even in the face of impending doom, can be interpreted as an existential choice—a defiance against nihilism and an assertion of individual freedom to find meaning and joy amidst the uncertainties of existence [16]. Together, hedonism and existentialism address the enduring human quest for happiness, even when confronted with the daunting prospect of a world in disarray.

In the film, the young daughter Rose harbours a persistent desire to watch the finale and discover the ending of the television sitcom *Friends*, an activity that brings her genuine happiness. In one scene (**Figure 6**), when she inquires with her brother, who dismisses her pursuit, about whether she will ever learn the conclusion of *Friends*, she delivers a poignant line:

> *Rose: They (the characters in the television sitcom Friends) make me happy. I really need that right now. Do not you? If there's any hope left in this fucked up world, I wanna at least find out how things turn out for them. I care about them.*

Rose's relentless quest to find joy in the small pleasure of watching *Friends* amid tumultuous circumstances reflects a hedonistic perspective. The sitcom serves as



Figure 6.
Rose approaches her brother, questioning whether she will ever get to know the ending of Friends.

a source of pleasure, a temporary escape from the surrounding chaos, and a way for Rose to prioritise her individual happiness. On the other hand, Rose's statement reflects an existentialist yearning for meaning and hope in the face of adversity. The insistence on knowing the fate of the *Friends* characters becomes a symbolic anchor for her, a small but meaningful pursuit that allows her to grasp onto a semblance of order and continuity in a world that seems to be unravelling. Rose's plea captures the essence of existentialist thought by highlighting the human need to find purpose and meaning, even in seemingly trivial pursuits, amidst chaos. The juxtaposition of the malfunctioning technologies, emblematic of the broader societal breakdown, with Rose's focus on a source of personal happiness raises profound questions about the human experience and the ways individuals navigate their pursuit of pleasure and meaning in the midst of existential uncertainty.

The relationship between hedonism and cyborgs within digital sovereignty is a nuanced exploration, invoking the theoretical framework of "body without organs" (BwO) [17]. Contrary to its seemingly self-explanatory name, the BwO does not denote a body stripped of organs but rather an assemblage of organs liberated from conventional, instinctual organisation, challenging the traditional understanding of the organism. Deleuze and Guattari posit that the BwO signifies the potentialities and capacities of a body before being structured into an organism, emphasising the limitations imposed by the latter's homeostatic self-regulation processes. In the context of digital sovereignty, the BwO takes on a transformative significance, suggesting a departure from the predetermined functions of organs within the confines of an organism. The ethos lies in liberating the body's capacities to engage in activities unrestricted by the predefined roles assigned by conventional configurations. This theoretical perspective prompts an inquiry into the possibilities of treating the body and its organs as machines capable of generating novel experiences and events. It challenges the normative understanding of bodily functions and encourages unconventional uses, echoing the principles of hedonism, where the pursuit of pleasure becomes a subversive act against the constraints imposed by societal norms.

Furthermore, the Deleuzian injunction to "use our bodies and our organs in ways which are not in thrall to the overarching plan of the organism" ([18], p. 107) aligns with the hedonistic pursuit of pleasure and self-indulgence. In the digital age, where cyborgs blur the boundaries between human and machine, this conceptual

framework invites a reevaluation of how pleasure is sought and experienced. The interaction between hedonism and cyborgs, as informed by the BwO, becomes a dynamic discourse within the evolving landscape of digital sovereignty.

The Deleuzian and Guattarian emphasis on the priority of creation and a preference for the new unfolds as a theoretical system. Their departure from conventional symmetries between the concepts of function and form propels a valorisation of the machine while vehemently critiquing the organism. This departure generates an asymmetry, wherein the universality of the "machine" encompasses everything, juxtaposed against the restricted scope of the "organism" confined to a specific type of body. More significantly, this theoretical orientation directs attention to the concept of BwO, representing a non-mechanical mechanism and a vitalism of the inorganic. This conceptualisation shifts the focus from the actual form or structure of bodies to their virtual capacities, the inherent potential to diverge from established norms. In the intersection of hedonistic pursuits and the cyborg's becoming-machine, the body without organs epitomises the transformative process when a segment of the body collaborates with another machine, liberating it from the organism's normative processes. Consequently, the previously construed organism, now unfurling to embrace a multitude of novel connections, transforms into a domain where each interaction may catalyse the creation of an event. This metamorphosis resonates with the being-happy ethos, embodying the pursuit of pleasure and novel experiences amidst the ever-evolving landscape of digital sovereignty.

5. The temporal dimension (and its sway)

In *Leave the World Behind*, various cinematographic techniques use the "God's-eye view," capturing scenes from a top-down perspective with fluid camera movements akin to that of an omniscient observer, probing into every action of the characters. The visual design often incorporates symmetrical compositions, symbolising peace and harmony. However, as the narrative unfolds and situations take a turn, the camera angles tilt and spin, accompanied by a backdrop of quiet or suspenseful sounds, creating a captivating experience aligned with the plot and character dynamics, all meticulously orchestrated.

The temporal dimension plays a crucial role in the film's visual narrative, evident in the oceanic backdrop of the master bedroom, subtly mirroring the initial scene of a stranded oil tanker on a beach. The shifting waves in the painting gradually intensify, conveying heightened anxiety and tension with each scenario transition. The white pillars in the living room artwork, initially symbolising a foundation, progressively shatter as the plot unfolds, losing its stability. Additionally, the map with intertwining red and green colours suggests the unrest on land, depicting a fragmented state. The depiction of a house with different floors becomes a vessel for individual worries and responses. Remarkably, in the face of a collapsing world, the portrayal of "family" becomes a unifying force rather than succumbing to disintegration, offering a beacon of hope amidst the societal breakdown [19]. *Leave the World Behind*, with its narrative authenticity, steers away from providing a typical cinematic conclusion, challenging the audience with an implication that it cannot offer a cure for the pressures and disintegration of our current society. The film seems to convey that amid the ongoing turmoil in our highly charged and disintegrating society, even cinema cannot provide a "happy ending." The narrative hints at the insurmountable challenges faced by the characters mirroring the complex geopolitical issues of our world, suggesting that a

resolution may remain elusive, emphasising the bleak reality that even cinema cannot escape. In a moment, as the protagonists believed they were successfully eluding the impending disaster, Amanda articulates the following sentiment:

> *Amanda: We'll look back on this one day and laugh, I guarantee you. [...] Things get funnier with time. Isn't that what they say?*

Amanda's words, uttered in the midst of uncertainty and catastrophe, beckon us to delve into the temporal dimensions, especially within digital malfunction. Her assertion that "we'll look back on this one day and laugh" encapsulates the temporal elasticity in human experiences. From a Cyborg standpoint, time is not a linear progression but a dynamic, multifaceted entity that entwines with human consciousness. Amanda's guarantee of future laughter hints at the transformative power of time, suggesting that, as events unfold and memories mature, perspectives on the present calamity will shift. In Cyborg thinking, the temporal dimension becomes a fluid canvas upon which experiences are painted. The promise of laughter in the future introduces an element of resilience, reflecting the Cyborg's adaptive nature to changing circumstances. It echoes the Cyborg's ability to navigate disruptions, including digital malfunctions, and emerge with an evolved understanding. The notion that "things get funnier with time" aligns with Cyborg perspectives, stressing the dynamic and evolving relationship between individuals and their technological surroundings. As the digital landscape falters, Amanda's words invite contemplation on the malleability of time and the Cyborg's capacity to find humour amid chaos.

The experience of embodying a temporal cyborg unfolds as a journey characterised by the continuous interplay of "dys-appearance" ([20], p. 83). This term summarises the awareness and focus on temporality as a techno-organic hybrid, particularly in digital sovereignty. For instance, following implantation and post-activation, the temporal cyborg, equipped with a heart device, undergoes a unique process of acclimatisation within the temporal landscape. Initially, there is a heightened consciousness of their hybrid status in the digital realm, but over time, this awareness recedes, and the temporal cyborg seamlessly integrates back into their living life with the implanted device, navigating the shifting currents of digital sovereignty [21]. The relationship between technology, time, and organism within the temporal cyborg's body carries a distinctive rehumanising effect, rendering them potentially more vulnerable within the temporal dimensions of the digital era [22]. The paradox lies in the temporal intimacy created by the implanted device—situated within the temporal fabric of the digital world, almost inseparable from it, yet simultaneously distant and beyond the temporal control of the temporal cyborg [23]. The internalised cybernetic device, while enhancing temporal intimacy, introduces a paradoxical element of temporal distance (as it remains elusive within the digital temporal landscape) and a lack of temporal control (as its functioning eludes alteration by the temporal cyborg).

Within the tapestry of a digitally sovereign world, the reappropriation of the term "cyborg" assumes implications, resonating with the narrative depicted in *Leave the World Behind*. As I draw parallels with the family's endeavour to escape the upheaval wrought by technological malfunction, my discourse delves into the exploration of the essential temporal requisites of cyborgs aspiring to achieve contentment within the framework of digital sovereignty. This examination transcends the realm of mere technological assimilation, extending to encompass the support structures, the pivotal role of temporal information, and the imperative comprehension necessary for navigating the ever-shifting techno-organic hybridity within the dynamic temporal

dimensions of digital sovereignty [24]. This contemplation serves as a clarion call, urging a moral and political commitment not only to recognise but also to exalt the temporal hybridity intrinsic to each singular individual, mirroring the family's odyssey as they seek refuge amidst the tumultuous currents of a digitally sovereign society.

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Chapter 7

The Promise of Digital Wellness to Promote Youth Well-Being and Healthy Communities

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Abstract

The chapter explores how digital wellness can enhance youth interpersonal skills and relationships to contribute to their well-being and community wellness. A literature review was conducted to investigate how digital wellness influences individual well-being, mainly through developing interpersonal skills, and how this may, in turn, support community well-being. The findings suggest that digital wellness is vital in enhancing youth well-being by fostering essential interpersonal skills such as emotional intelligence and empathy, addressing key developmental needs, and nurturing positive emotions. This promotion of individual well-being, in turn, promotes community well-being; youth engage with each other in more optimistic, ethical, and inclusive ways. Digital wellness should be explored further as a key skill for healthy interpersonal relationships in a digital age.

Keywords: digital wellness, youth, community, well-being, technology use

1. Introduction

Adolescence is a critical developmental period marked by key tasks, such as establishing meaningful interpersonal relationships [1]. This requires empathy, conflict resolution, collaboration, and social awareness [2–5]. Youth will use these skills to form relationships in various settings and stages of their life, including family attachments, school-based friendships, romantic relationships, and work partnerships [6].

Healthy relationships foster individual and collective well-being [7]. At the personal level, healthy relationships and social networks can support individual mental health, including reducing stress and increasing subjective happiness [8]. At the collective level, positive relationships between community members can foster community resilience and encourage inclusivity and a sense of belonging [9, 10].

The digital age brings new opportunities and challenges for youth to develop interpersonal relationships in online environments. Technological devices and digital platforms are central to youths' lives, with nearly 97% of youth using the internet daily, 45% reporting near-constant online activity, and 95% owning smartphones [11]. Smartphones and social media provide spaces for youth to nurture friendships

and connections and engage with broader communities [12]. However, there are also risks for online problems such as cyberbullying or social comparison [13, 14]. Therefore, youth need to understand how to balance the risks and benefits of technology to support interpersonal relationships and individual and collective well-being.

Digital wellness (DW) is developing a healthy relationship with technology to flourish in a digital world [15]. This is especially important for youth today as they navigate online environments. DW requires developing self-awareness, mindfulness, self-regulation, and conflict resolution skills [16, 17]. For example, mindful and purposeful technological use is associated with positive mental health, improved relationships, and productivity [13, 18, 19]. On a broader scale, DW practices can foster healthier online communities by promoting constructive interactions, ethical technology use, and reducing socially ill technological consumption [16, 20, 21]. Therefore, DW has the potential to support the development of interpersonal skills and interpersonal relationships that youth require during this stage in life.

In this chapter, we draw on psychological research to explore this relationship: how DW can enhance youth interpersonal relationships to enhance their well-being and the wellness of their communities. First, we examine youth's unique developmental needs, including identity formation and interpersonal skills and relationships. These skills are then associated with youth mental health. Then, we explore the role of technology in youths' lives and the need for DW. We then examine how DW can help youth navigate digital worlds and tools to develop healthy interpersonal relationships, thus leading to increased individual and collective well-being.

2. Background

2.1 Interpersonal relationships

Adolescents, often defined as between the ages of 15 to 24 years old [22], are faced with a series of developmental tasks promoting healthy cognitive, emotional, and physical and social development [23]. One key task is developing healthy interpersonal relationships, especially focusing on social acceptance from their peers [24]. This is partly due to the increased time spent with peers as they seek independence from their parents and spend less time with them [25].

Peer relationships can contribute to youth development in positive and negative ways [24–26]. Roach [27] found that positive peer connections were a protective factor for youth against suicide, depression, and anxiety, and increased self-esteem. In addition, Montecillo et al. [28] found that high-school students with positive and supportive peer relationships felt a stronger sense of belonging, self-worth, and purpose.

However, it can also be challenging for youth to navigate interpersonal dynamics, such as developing and sustaining friendships or healthy social circles [29]. Youth groups may promote risk-taking behaviors, such as substance use or defiance of social norms [26, 30]. Youth quickly learn what behaviors and attitudes are favorable within their peer groups and will often adjust their behavior accordingly to fit in and feel accepted [31]. There is also the risk of peer rejection, harassment, and harmful conflicts, which lead to loneliness and lower self-worth [28].

Since the COVID-19 pandemic, many youth have experienced increased difficulties in interpersonal relationships, including heightened social anxiety and gaps in social skill development during formative years due to social distancing [32]. Research suggests that many young people continue to avoid in-person interactions

and are more comfortable communicating digitally because they did not practice face-to-face social skills throughout the pandemic [32]. Over-engagement of online interactions can lessen youths' satisfaction with in-person connections and impair interpersonal skills such as emotional intelligence and communication [33]. However, in-person interactions are essential for youth mental health and experiencing a sense of belonging [34].

If youth do not develop healthy interpersonal relationships, this can lead to increased risks for mental health issues such as loneliness, anxiety, or depression [35, 36]. To navigate these relationships effectively, youth must develop communication, socio-emotional learning, empathy, conflict resolution, and emotional intelligence skills [28, 37]. Communication skills such as active listening, respectful language, and perspective-taking are essential for youth to manage relationships. These skills can improve social interactions for youth, particularly those who are at-risk, vulnerable, or marginalized [38]. In addition, youth who can effectively communicate their views or challenges constructively increase emotional resilience, well-being, willingness to problem solve, and quality of life [39].

Empathy, the ability to feel and understand the emotions of others, equips youth with the requisite skills for building relationships [40]. Empathy is recognized as an essential element of resilience; by attempting to view situations from others' perspectives, individuals cultivate the capacity to handle challenges that may arise [41]. Through this understanding, youth can develop resilience without directly going through the stressful situation themselves [42]. Empathy is positively associated with higher levels of well-being, positive relationships, and healthy identity [43].

Conflict resolution skills focus on effective communication and problem-solving skills to mediate and resolve individual conflicts [44]. For example, active listening, emotional regulation, empathy, and critical thinking can help youth manage conflicts [45]. Youth with strong conflict resolution skills can build connections rooted in respect, trust, and empathy for others' perspectives and feelings.

Emotional intelligence (EI) involves the capacity to regulate, express, and understand emotional responses effectively. It also involves understanding other people's emotions and reactions to develop and sustain positive relationships [46]. Youth with high EI are likelier to demonstrate high social competency, prosocial behavior, cooperation, and fair leadership competencies [46–48]. EI supports youth's healthy transition into adulthood and is associated with positive health, mental health, and resilience indicators [49–51].

2.2 Youth mental health and well-being

Developing interpersonal skills aids youth in navigating complex social interactions and promotes individual and community well-being [52, 53]. The World Health Organization (WHO) defines mental health as a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community [54]. During adolescence, youth are particularly vulnerable to mental illness and substance use, with approximately 70% of these issues emerging during this developmental stage [55]. Mental health concerns, described by health officials as a global crisis, frequently include anxiety, mood, attention, and behavior disorders, with suicide being the second leading cause of death among adolescents [56, 57]. Research suggests positive peer relationships and a strong sense of identity are protective factors that enhance youth's mental health and well-being [29, 58]. Supportive peer relationships and social acceptance have

been found to act as buffers against mental health issues, while identity resolution promotes emotional stability and psychological health [58, 59]. Conversely, negative peer relationships and identity confusion increase the likelihood of problematic behaviors, substance use, and mental health issues [54, 59, 60]. When youth are experiencing individual mental health, their interactions with others become more positive and healthier. This promotes collective well-being.

Collective well-being is defined as the overall health and wellness of a community [61]. Roy et al. [61] emphasized that "collective well-being is bidirectional" and "incorporates individual community members' perceptions of life in the community" (p. 1801). This relationship between individual and community well-being demonstrates a ripple effect in which healthy individuals can contribute to stronger collective well-being. If individuals experience mental health problems, they may contribute to poor community well-being [61]. Similarly, if the community is thriving as a group, this can support individual well-being, too [61].

Interpersonal relationships in a community are an essential component of achieving collective well-being. To flourish in life, people need to feel a sense of belonging, which can be fostered through positive relationships with others and engaging with their community [62]. Some researchers have claimed that "social connectedness and a sense of belonging–the feelings of being a part of a larger group of individuals–are considered basic human needs" ([63], p. 2).

The Council of Ministers of Education in Canada (CMEC) defined a set of attitudes, skills, knowledge, and values critical for youth to learn as active citizens in their local and global communities [64]. These global competencies include (1) critical thinking and problem solving, (2) innovation, creativity, and entrepreneurship, (3) learning to learn and be self-aware or self-directed, (4) collaboration, (5) communication, and (6) global citizenship and sustainability [64]. These competencies align to develop global citizenship, in which individuals understand that we are all connected and can influence positive local, national, and international change [65]. Global citizens are also essential in digital environments to foster healthy online communities and promote digital citizenship [65].

2.3 The role of technology

What has become apparent in recent years is that digital tools and spaces affect youth's individual and collective well-being. Technological devices and digital platforms have become integral in youth's daily lives [66]. Youth engage with technology on a near-constant basis, with 95% owning smartphones and 90% active social media users [11]. The most popular social media platforms youth use include YouTube, TikTok, Snapchat, and Instagram [67].

Recent research suggests correlations between the increased rates of technology use and youth's mental health challenges [33, 68]. This relationship may be mediated by factors, such as quality of technological use, individual traits, and cognitive styles, that may promote positive or adverse effects [69]. Excessive technology use is found to be associated with reduced psychological well-being and mental health symptoms through socio-emotional mechanisms such as social comparison and emotional contagion [13, 14, 70]. Passive technology use, cyberbullying, harassment, and exposure to harmful content have been associated with anxiety and stress [71]. Some scholars warn that technology may impair communication, cognitive skills, and EI compared to previous generations [72]. Youth may find it challenging to develop an authentic online persona, as they feel they need posts based on likes instead of more realistic posts about their lives [73].

Conversely, technology use was found to have significant benefits, including enhanced communication skills, social connectivity, and the development of technological proficiency [74]. Digital platforms were found to be a space to offer and receive critical support and peer communities that exchange social capital and collective well-being, especially for vulnerable youth [66, 74, 75]. The complex relationship between technology use and youth mental health highlights the necessity for DW, with some describing it as the rallying call of our time [17].

2.4 Digital wellness

DW has emerged as a critical concept that seeks to explore the impact of technology on individuals' quality of life [16]. DW emphasizes the balance between technology's benefits and risks through conscious choices and self-awareness to maximize positive experiences while minimizing feelings of loss of control or functional impairment [17, 76, 77]. For example, DW practices that encourage mindful and purposeful technological use are linked to positive mental health, improved relationship quality, and overall productivity [13, 18, 19].

Within education, DW is often linked and defined with the development of digital citizenship, which focuses on the safe and responsible use of technology, including the skills required to navigate technologies effectively and engage in positive online participation [78, 79]. Digital citizenship can foster healthier online communities by promoting constructive interactions, ethical technology use, and reducing digital inequality and ill consumption [16, 20, 21]. Youth with strong digital citizenship knowledge and skills can engage in online environments safely and responsibly and contribute positively to their online communities [65, 78]. Knowing digital etiquette and expectations in different online environments can allow youth to build healthy digital communities and foster collective well-being.

Beyond digital citizenship, models of DW focus on holistic approaches to DW and the required skills. For instance, the Digital Flourishing Model [80] emphasizes the importance of digital flourishing across eight dimensions: productivity, relationships, tech-enabled health, environment, mental health, digital citizenship, communication, and physical health. This model focuses on the need to balance technology use by increasing self-awareness, assessing DW in our workplaces, and thinking critically about how to use technology to help us thrive [80]. The Boston Children's Digital Wellness Lab developed "The 5 M's of Digital Wellness" framework for supporting DW in children and youth [81]. In this framework, adults are encouraged to *model* healthy DW skills and behaviors, *mentor* youth to use technology intentionally and responsibly, *monitor* their DW and online behaviors, build *mastery* by empowering youth to make healthy choices and learn from mistakes, and create a sense of *meaning* by encouraging youth to develop an authentic and balanced relationship with technology [81]. Within this model, adults would need to foster DW skills to promote youth DW. For example, they would need to be able to model critical thinking skills and EI through self-awareness and empathetic online interactions. They would also need these skills to mentor, monitor, and promote mastery and meaning as they engage in conversations with youth about DW and provide support.

An emerging model of DW is the Psychological Digital Wellness (P-DW) model, [77] which examines DW not from a sociological or educational lens, but a psychological lens that focuses on healthy human development and growth. DW allows a person to flourish with technology because they can mitigate the risks and reap the benefits technologies offer. The model examines DW as both a process and an outcome. It is a

continuous process because we constantly grow and enter different life stages; thus, our DW needs will differ. Laffier et al. [15] found that essential skills are required for sustaining DW: mental health literacy, self-awareness, reflection, self-regulation, EI, critical thinking, and mindfulness. These skills can help youth consider how they use technology, understand the mental health effects, and manage their interactions with technology.

Although multiple models of DW exist, the research on this topic is in its infancy. Many experts call for a multi-model approach to address DW in communities, including education and skill development, proactive policies, and ethical tech design [76]. More research is needed that explores DW, including the required skills, how DW changes over the lifespan, effective interventions, and how DW promotes well-being [4, 82–85]. An area with little exploration is the correlation between DW and interpersonal relationships, especially on the individual and collective levels [15].

3. Methodology

To explore how DW promotes youth interpersonal skills, enhancing personal well-being and community or collective well-being, we conducted a multiphase literature review involving many forms of literature, peer-reviewed studies, and reports from educational, health, or mental health sectors [3, 19]. Our focus was literature describing "*youth digital wellness,*" "*youth interpersonal skills,*" "*youth well-being*," and "*community well-being*" to understand how they were connected in existing literature or to develop a hypothesis of their connection [86]. These keywords were entered into databases such as PsychARTICLES, PsychINFO, EducINFO, Springer LINK journals, and Google Scholar. Our inclusion criteria of articles focused on youth, published in the last 20 years, and connected to at least one other central concept yielded 136 articles. First, we reviewed this literature to understand each concept separately. Then, we examined whether any previous research had connected the four concepts. We explored the literature again for possible theoretical connections [86]. We logged this information on an Excel Google Document under four headings: youth digital wellness, interpersonal relationships, and collective well-being. Their subheadings included definitions, key factors, skills, youth development, youth wellness, community wellness, existing connections, and theorized connections. Finally, we created a concept map, a powerful way to organize a large or varied research domain [86], to explore the intersectionality and multi-directional relationships of the four concepts.

3.1 Findings: Promoting interpersonal relationships and well-being through digital wellness

Considering the digital lives of youth, it is important to explore how DW can support their interpersonal relationships and individual and collective well-being. An extensive review of the literature on youth DW, interpersonal relationships, and individual and collective well-being was conducted and highlights that DW can be pivotal in enhancing youths' individual and collective well-being by fostering interpersonal skills and relationships. This can be a cyclical relationship, nurturing youths' development over time (**Figure 1**).

When youth enhance their DW, they can improve their mental health [77, 80]. This translates into healthy and ethical technology engagement [16, 77, 80], which in turn can promote interpersonal relationships and collective well-being. Consider a

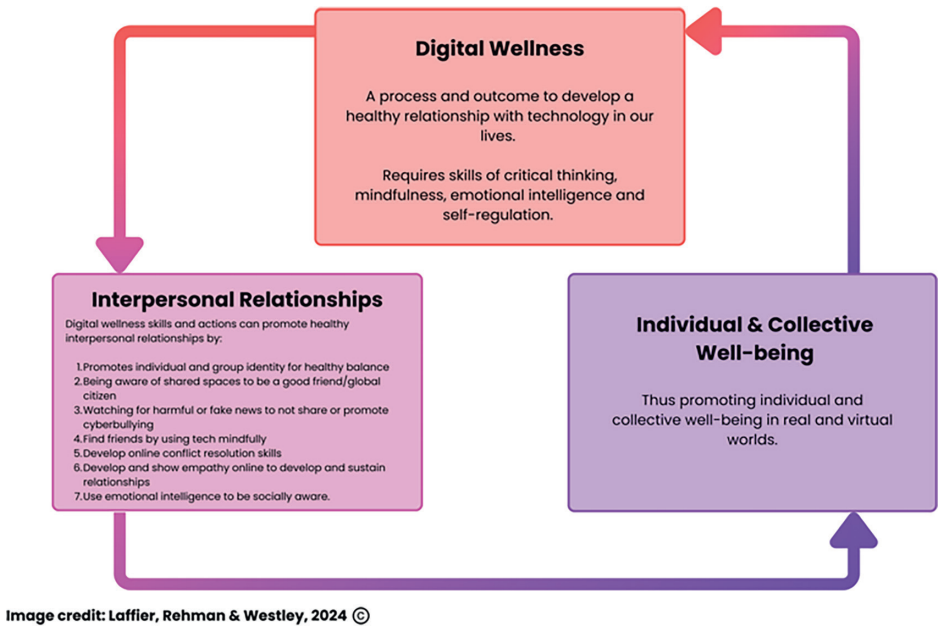


Figure 1.
The relationship between digital wellness, interpersonal relationships, and well-being.

teenage girl who is an active social media user with her friends. She is educated in DW and has developed skills such as EI, including self-awareness and regulation, social awareness, and empathy. These skills help her use technology in healthy ways, such as limiting her time online, choosing social media platforms that make her happy, using social media for creativity and self-expression, and recognizing the mental health struggles of her peers. As her mental health improves, she engages in further healthy technology use that supports the mental health of her peers. For example, she is kind on social media and empowers her friends, which promotes collective well-being for the entire friend group. As the well-being of the peer group improves, they develop DW further, using skills such as effective communication and mindfulness of their actions. Cyclically, this further develops healthy interpersonal relationships.

An exploration of the literature suggests several themes of how DW can promote interpersonal relationships, leading to improved individual and collective well-being. These themes include identity development, mental health literacy, critical thinking skills, EI and empathy, conflict management and resolution, and cultivating positive emotions. Each of these themes is examined to identify their defining features and how they connect DW to interpersonal relationships and the well-being of individuals and groups.

3.2 Identity formation

For youth, DW can play an essential role in their identity formation, leading to interpersonal relationships [15, 87]. Developing a sense of self and group identity is a critical task for youth [88]. Self-identity refers to how we define ourselves and forms the basis of our self-esteem. Research suggests that high self-esteem leads to more positive interaction with others [89]. For example, youth with strong identities and self-esteem may provide positive feedback and empowerment for peers online and

constructively share their interests and opinions [90]. Digital spaces offer unique opportunities for self-expression and personal growth, particularly for youth who may find it challenging to fit in in offline environments due to perceptions of their physical appearance, race, or gender identity [87]. However, a poor sense of identity can result in more conflicts and negative, anti-social behaviors online. For example, research has shown that individuals who engage in cyberbullying behaviors typically have low self-esteem and lack a sense of identity [91, 92].

Youth must also achieve a sense of belonging within their social world to transition positively into adulthood [93–96]. This social identity is essential to youth. Technologies such as social media, iPhones, and gaming allow youth to stay connected and develop individual and group identities. Approximately 80% of teens say that "what they see on social media makes them feel more connected to what's going on in their friends' lives" ([97], p. 3).

Social media has been found to provide a healthy space for identity exploration, where youth can experiment with the aspects of their personality and build a sense of belonging with others [29, 98]. Smith et al. [99] found that Black and Latino youth who had high amounts of connection with same-ethnic group friends online had more positive ethnic-racial identity (ERI) outcomes as they explored their ERI more and experienced a stronger sense of ERI. These online friendships were "intimate, positive, and included sharing in their ethnic culture, these friendships may have fostered a sense of belonging and positive feelings about their ethnic-racial group membership" ([99], p. 12). Interpersonal relationships are strengthened as youth develop their identity.

3.3 Mental health literacy

As youth increase their DW, they increase their mental health literacy (MHL), which is the public knowledge and recognition of mental health, including risk factors, mental health problems, signs and symptoms, and knowing how and where to seek help [100]. According to Laffier, [77] MHL is a key component of DW. People need to understand mental health, including signs and symptoms, to recognize how technology is affecting them and make appropriate choices. Kutcher et al. [101] stress that with mental health literacy, we can learn how to take better care of ourselves and our communities and are empowered to build better lives and a better society.

A critical component of MHL also involves reducing mental health stigma because when we have a better understanding of mental health, we approach the topic with empathy, refrain from judgment, and are better able to provide support for others and ourselves [101]. A non-judgmental approach to mental health is important for people to feel accepted and supported [102]. For example, youth with MHL may use respectful and unbiased language about well-being, leading to open and authentic conversations that promote individual and collective well-being.

Youth with MHL would be able to recognize how technology impacts their mental health, including the signs and symptoms. They could make healthy choices for technology engagement and be more aware of their online actions. This mindfulness leads to greater chances of positive behavior corrections and purposeful behavior [15]. Young people could also develop self-advocacy and help-seeking behaviors [103, 104]. These adjustments and actions would further improve individual and collective well-being.

Heightened awareness of signs and symptoms can also help youth identify when their peers or community members are struggling and make appropriate choices to

help them. Youth can recognize the signs and have open conversations with their peers or interact more patiently and empathically [105]. This fosters trusting interpersonal relationships [105]. For instance, a teen with MHL might notice his friend's text messages or social media posts have gone from optimistic to hopeless. He recognizes there might be a mental health problem and reaches out to his friend with an understanding and non-judgmental approach. He might even notice signs of a crisis and take steps to get help, such as reporting self-harm or suicidal ideation to the online platform. With DW, the online community becomes a support network strengthening interpersonal relationships.

A critical piece of MHL is understanding cultural perceptions of mental health and how this influences symptoms and interventions [106]. When youth develop cultural competency, they can support their peers in culturally responsive ways. They understand that their friends' choices for support or coping might be different based on culture, religion, or family history. For example, a Canadian Indigenous student highlighted how his high-school peers would recommend the guidance counselor or school psychologist as professional support. However, this was not his idea of professional support from a cultural perspective; his Elder was viewed as appropriate and professional support. MHL, from a cultural lens, further strengthens interpersonal relationships.

3.4 Critical thinking skills

Critical thinking skills are essential in achieving DW and developing healthy interpersonal relationships online. Critical thinking skills involve analyzing, validating, and interpreting information, considering alternative methods or outcomes, and using these analyses to better understand a problem or make decisions [107]. To develop DW, youth need to analyze and evaluate their relationship with technology critically. For example, they would benefit from evaluating how many hours they are on screens each day, what technologies bring them happiness, or how engagement with social media and iPhones affects their well-being.

An important element of critical thinking is the ability to consider other perspectives and be open-minded to others' viewpoints that may differ from ours [108]. This is essential for healthy interpersonal relationships. When people can think critically about their assumptions, beliefs, and opinions and remain open to the perspectives of their peers, they learn to respect these differences and see them as opportunities for growth [108]. For example, if youth are in disagreements with friends online, they can engage in critical thinking to consider their perspective, ask clarifying questions, and communicate respectfully to arrive at a solution or mutual understanding. Critical thinking also prepares youth to recognize harmful exchanges online (e.g., posts, comments, messages) and manage these social interactions.

Several studies have emphasized the importance of critical thinking skills for youth to assess and process misinformation and disinformation online [109–111]. Misinformation is information that is accidentally shared with false or inaccurate information, whereas disinformation is false information that is shared with the intention of spreading misleading information [112]. Researchers have described misinformation as a "global harm," especially with the rapid rate at which social media can spread "fake news" or false information to millions of users ([112], p. 1). Critical thinking skills allow youth to assess information they view and share online. By reducing false, harmful, or misleading information online, youth can create safer and healthier online communities, thus promoting collective well-being.

For example, cyberbullying often includes the sharing of misinformation and disinformation that is harmful to others. If a classmate posts a hateful message about their peer in a group chat, a youth could use critical thinking skills to analyze and interpret the message as harmful, consider the perspective of their peer who is the subject of this message, and advocate for the peer online to promote a safer environment. Using critical thinking skills to evaluate and promote safe online spaces fosters healthy interpersonal relationships and well-being for everyone [113].

3.5 Emotional intelligence and empathy

EI is perhaps the most comprehensive interpersonal skill fostered through DW, integrating self-awareness, emotional regulation, empathy, and social competence [99]. EI has long been defined as an individual's ability to recognize and regulate their own emotions and recognize the emotions of others [114]. Early research identified four domains of EI: self-awareness, self-management, social awareness, and relationship management [115, 116]. EI and empathy go hand-in-hand, as individuals with high EI usually can empathize with others, meaning they can find something within themselves that connects to what the other person might be feeling or experiencing (e.g., excitement or sadness) [117]. Both empathy and EI support individual and collective mental health as these skills help build positive interpersonal relationships, which, in turn, fosters a sense of belonging [118]. For example, if a high-school senior recognizes and communicates to her teammates that she is feeling sad that her final basketball season is coming to an end, and her teammates can empathize with this feeling that this chapter of their lives is coming to a close and support each other through that milestone. This can foster stronger relationships between the student-athletes as they exercise self-awareness, social awareness, empathy, and relationship management through this shared experience.

According to the P-DW model, [77] people need EI to be self and socially aware of their and other's technology engagement and mental health impacts. They need self and relationship-management skills to foster healthy technology use, individually and in groups. Research has found that DW significantly enhances social awareness and empathy in youth and contributes to stronger interpersonal relationships and inclusive online communities [119, 120]. Youth with higher EI are better equipped to manage the emotional challenges associated with digital interactions, as they are more likely to adopt healthy coping strategies when faced with online stressors and set boundaries to protect their emotional well-being [121, 122]. In contrast, youth with lower EI were found to struggle with emotional regulation in response to online stimuli, leading to problematic technology use and exacerbation of various mental health symptoms [123].

DW can also provide opportunities for youth to build EI and empathy as they engage in mindful technology use and practice social awareness and perspective-taking through online interactions [21, 124]. This can enhance interpersonal relationships and contribute to collective well-being. For example, Romero-Lopez et al. [124] found that self-regulation, social awareness, and intentionality in online interactions improved youth's empathy, strengthened social bonds, and fostered inclusive online communities. Similarly, youth with high social awareness and empathy can recognize the impact of their digital behavior on others, promoting more thoughtful and compassionate communication [125]. DW thus enables individuals to navigate online spaces with greater EI, fostering positive interactions and reducing harmful behaviors such as cyberbullying or exclusion [15, 126, 127].

3.6 Conflict resolution skills

Research has demonstrated that DW skills can enhance youths' ability to manage conflicts in ways that support emotional well-being and contribute to healthier interpersonal relationships online [128]. Conflict resolution skills focus on strong communication, empathy, emotional regulation, problem-solving, and critical thinking to help youth manage and resolve interpersonal conflicts [44, 45]. It is well-documented that interpersonal conflicts can reduce our mental health and contribute to symptoms of anxiety, stress, and depression [129, 130]. However, when we can manage conflicts effectively and lessen the amount of conflicts in our environment, we can promote individual and community well-being [131]. For example, youth, who can calmly communicate a problem, actively listen to the other parties, critically think about possible solutions, and engage in collaborative problem-solving can mitigate the impacts of conflict and tension, which fosters wellness and healthier interpersonal relationships.

DW can equip youth with skills to manage their digital interactions thoughtfully and positively, enabling them to maintain interpersonal relationships and build positive connections with others in their online communities [132, 133]. Effective communication skills are of the utmost importance when considering conflict resolution and prosocial behaviors in digital environments, especially with the absence of non-verbal cues (e.g., body language, facial expressions), making communication more challenging [133]. For instance, youth who can regulate their emotions and engage in respectful dialog online are better equipped to de-escalate tensions and navigate conflicts that promote mutual respect and understanding [134]. Furthermore, DW promotes awareness of how digital technologies can both facilitate and hinder communication, encouraging youth to develop strategies to prevent misunderstandings and address issues such as cyberbullying or online harassment [16]. For example, youth may use digital media such as emojis or memes or send video messages to ensure that their tone is accurately portrayed by using visuals that support their text. They may also use their conflict resolution skills to confront incidents of cyberbullying to diffuse the situation and promote safe online communities with their peers. Not only do these skills and strategies help foster individual wellness by reducing stress, anxiety, tension or symptoms of depression, [134] but they also build community well-being, as youth DW can foster collective action and accountability (e.g., everyone agreeing on etiquette, ethical practices, or rules for building inclusive spaces) and encourage social cohesion [135].

3.7 Positive emotions

DW provides youth opportunities to experience positive emotions such as joy, gratitude, and happiness, which are essential for the flourishing of individuals and communities. Seligman [62] suggested that flourishing occurs when we have opportunities for positive emotions, engagement, relationships, meaning, and accomplishments. Experiences of positive emotions contribute to psychological well-being [136] and cognitive functioning, including memory, attention, and problem-solving [137]. People must be able to integrate positive emotions into their daily life and visualize these opportunities in their future to promote resilience and hope [138]. Experts have long discussed the contagious aspect of positive emotions; positivity can spread throughout groups, which contributes to collective well-being [139]. Therefore, interpersonal relationships that include spending time with people we care about or those

that provide us with opportunities to share their positive emotions are beneficial for wellness [140].

As youth develop DW, they learn how to choose and engage with technologies that allow them to experience and share positive emotions [77]. Digital spaces like social media or gaming platforms can unite youth to share excitement, encouragement, inspiration, and joy [16, 141]. For example, during the pandemic, researchers found that social media was positive for youth because they could combat negative emotions such as sadness and loneliness by being online and experiencing positive emotions such as humor and joy with each other [142]. Other research has found that sharing positive stories on social media or good news can inspire and uplift others and foster interpersonal relationships [143]. For instance, Angelini et al. [144] explored expressing positive emotions in digital interactions. They found that using emojis, shared emotions, and supportive messaging significantly fostered validation, intimacy, and emotional support among peers. These positive exchanges can strengthen social bonds, promote a sense of belonging, and help youths sustain healthy relationships and communities while also mitigating risks associated with harmful interactions (i.e., online harassment and bullying) [133, 144–146].

4. Conclusion

In this chapter, we explored how DW can help youth navigate digital worlds and tools to develop healthy interpersonal relationships, thus leading to increased individual and collective well-being. A review of the literature revealed a cyclical relationship between these concepts. The development of individual DW may promote youth interpersonal relationships by enhancing (1) individual and social identity formation, (2) mental health literacy, (3) critical thinking skills, (4) conflict resolution skills, (5) EI and empathy, and (6) opportunities for positive emotions. When youth have DW, this fosters healthier online communities by promoting constructive interactions and ethical technology use [16, 20, 21]. Healthy interpersonal relationships allow youth and their communities to flourish. Youths' mental health is increased, leading to greater satisfaction with life and resilience and healthier interactions with each other. As social capital is enhanced, collective well-being is promoted [66, 74, 75]. The cyclical relationship continues as we see how individual and collective well-being would encourage further development of DW. Youth engage with their digital worlds differently when they experience positive well-being [142]. They can also utilize the necessary skills for DW, such as EI and critical thinking [142]. The digital age presents terrific opportunities for youth to develop healthy interpersonal relationships and promote their mental health and the well-being of their communities. However, this opportunity may depend on developing digital wellness, a key skill for the emerging century.

Conflict of interest

The authors declare no conflict of interest.

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Edited by Jorge Ferreira

In this book, teachers, researchers, students, professionals, policymakers, and citizens will find meaningful reflections on the (re)construction of human relationships in today's society. The work encourages critical thinking and dialogue about interpersonal relationships across various contexts, social groups, and realities. Each chapter offers a thoughtful analysis of current issues impacting public life and reflects the broader social and digital transitions shaping our global society. The book's interdisciplinary nature, rooted in the social and human sciences, allows for a holistic understanding of interpersonal relationships. It contributes to the development of knowledge essential for fostering inclusive and democratic communities and supports person-centred approaches grounded in human rights. Human beings are inherently social. Their ability to build and maintain relationships is vital for promoting coexistence and solidarity. However, the nature of these relationships is evolving—now deeply intertwined with digital practices that reshape how we interact, communicate, and connect. As society transforms, so must our understanding of relationships, requiring ongoing analysis and reflection to ensure they align with core social values and promote well-being. The transition to a digital society poses opportunities and challenges for individuals and businesses, as well as the fabric of human and social relationships. It raises important questions about equal access, human connection, and preserving meaningful family and community bonds. Ultimately, life in a 21st-century democracy depends on promoting healthy lifestyles and reinforcing solidarity from a humanized perspective. This includes active engagement in community life and the work of civil society organizations whose fundamental purpose is to nurture cohesive, compassionate, and inclusive societies.

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