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Digital Literacy of Older Women with Smartphones: a Dialogic Approach to Overcoming Barriers

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Abstract

The scientific literature provides evidence that the use of mobile devices with internet access by older adults contributes to their autonomy, capacity for independence, and staying connected, impacting a better quality of life and health. There is also evidence that digital exclusion in smartphone use mainly affects older people, especially women with low academic skills. However, there is very little research on successful dialogical experiences in digital literacy for older women with smartphones. This case study will help fill that gap by collecting the perceptions of female participants (aged 74-90) and female educators of a digital literacy course with smartphones that ran for two academic years. The impact on autonomy and social relationships in the framework of dialogic learning is analyzed, in addition to identifying characteristics that could be transferable to other contexts. The main results show that the dialogic approach of the course has contributed to creating a learning environment based on interactions of mutual support, overcoming the initial fear of using smartphones, developing essential skills for their daily use, and allowing participants to be more connected with family and friends.

Keywords

Digital literacy, older women, smartphones.

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Alfabetización Digital de Mujeres Mayores con Teléfonos Inteligentes: Un Enfoque Dialógico para Superar Barreras

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Resumen

La literatura científica proporciona evidencia de que el uso frecuente de dispositivos móviles con acceso a Internet por parte de las personas mayores contribuye a su autonomía, capacidad de independencia y a mantenerse conectados, lo que repercute en una mejor calidad de vida y salud. También existen evidencias que la exclusión digital en el uso de teléfonos inteligentes afecta principalmente a las personas mayores, especialmente a las mujeres con habilidades académicas limitadas. Sin embargo, hay muy poca investigación sobre experiencias dialógicas exitosas en la alfabetización digital de mujeres mayores con teléfonos inteligentes. Este estudio de caso ayudará a llenar ese vacío, recopilando las percepciones de las mujeres participantes (de 74 a 90 años) y de las educadoras de un curso de alfabetización digital con teléfonos móviles que se desarrolló durante dos cursos académicos. Se analiza el impacto en la autonomía y las relaciones sociales en el marco del aprendizaje dialógico, además de identificar las características que podrían ser transferibles a otros contextos. Los principales resultados muestran que el enfoque dialógico del curso ha contribuido a crear un ambiente de aprendizaje basado en interacciones de ayuda mutua, superando el miedo inicial al uso de estos dispositivos, desarrollando las competencias básicas para su uso diario y permitiendo a las participantes estar más conectadas con la familia y amistades.

Palabras clave

Alfabetización digital, mujeres mayores, smartphone.

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The literature has firmly established the considerable benefits of digital literacy for the elderly. There is ample evidence supporting the assertion that access to the digital world is a social determinant influencing health and various societal aspects. This impact is particularly significant across all age groups, with a heightened effect on demographic segments vulnerable to the digital divide (Arthanat et al., 2019; Tsai et al., 2017).

Technology plays a pivotal role in extending the independence of older adults by aiding them in doing routine activities, monitoring their health, and managing their daily schedules (Barrie et al., 2021). Older adults' use of Information Communication Technology (ICT) devices has positively influenced mental health and well-being, reducing loneliness and enhancing autonomy (Chang et al., 2023). Regular internet use contributes to maintaining autonomy and social connections, resulting in improved quality of life and self-esteem, reducing the risk of depression by 40% (Barrie et al., 2021; Caidi et al., 2020). Integrating digital technology into their lives broadens their digital landscape, enhancing digital literacy and potentially contributing to improved mental health and overall quality of life.

However, evidence suggests that not all elderly individuals have equal opportunities to access technology and its positive impacts due to a lack of digital literacy. UNESCO defines digital literacy as the ability to access, manage, understand, integrate, communicate, evaluate, and create information safely and appropriately through digital technologies, encompassing computer skills, ICT, information, and media literacy (Law et al., 2018). Notably, this definition, dating from 2018, does not explicitly include older people, reflecting an ageist approach.

Despite this ageist definition, UNESCO (West, Kraut, & Ei Chew, 2019) acknowledges that older people, especially women, are among the most vulnerable to the digital divide. Those with lower income and educational levels emerge as particularly vulnerable (Kondo et al., 2021; Iñiguez Berrozpe et al., 2020).

Ageism, whether internalized or externally imposed, significantly influences individuals' self-confidence, self-concept, and receptivity to learning, potentially leading to instances of social exclusion (Caidi et al., 2020). "Self-directed" ageism, manifested as a sense of ineptitude or considering oneself too old for certain endeavors, can hinder the learning process and diminish life satisfaction (Morrison et al., 2023). This self-imposed ageism, coupled with shame about the aging process, is recognized for its impact on well-being, quality of life, and increased cognitive decline.

In addition, women tend to undervalue their competence in ICT compared to men (Kuo et al., 2013). Jimenez-Cortes (2015) indicates a connection between women's well-being and their Internet utilization for educational, training, health, and social welfare purposes. The extent to which women experience well-being and satisfaction with their lives appears influenced by engagement in online activities geared towards education, training, health, and social welfare. Positive emotions play a transformative role, enhancing satisfaction with developmental aspects, personal growth, social connections, and the acquisition of behavioral insights.

Limited research investigates the digital literacy experiences of older individuals (aged 74 and above) using smartphones, especially in Asian countries like Singapore and South Korea (Ngiam et al., 2022; West et al., 2019). Singapore stands out as a country prioritizing digital literacy for older individuals of all socioeconomic levels. A study with older adults of low socioeconomic status in Singapore (Ngiam et al., 2022) concluded that a volunteer-led, one-

on-one, and home-based digital literacy program contributed to increased digital literacy. This research suggests the need for future studies to develop older adult-friendly digital spaces and technology designs to encourage sustained digital adoption and, ultimately, impact health-related outcomes.

The case study presented in this paper addresses a research gap regarding digital dialogic learning environments, specifically focusing on smartphone utilization by women over 74 with low academic skills. The study explores digital literacy in a communal group rather than through individualized approaches. The research questions are as follows: What perception do participating women have of the impact of the course on their digital literacy process with smartphones? What impact has it had on your social relationships and autonomy? What features of this course can be transferable to other contexts?

ALL WOMEN Project

ALL WOMEN is a project funded by the State Research Agency of the Ministry of Science and Innovation of the Spanish Government. The project has a general objective: to identify actions in adult learning and education (formal and non-formal) that are contributing to the empowerment of women in a situation of more vulnerability, providing evidence of their social impact, and identifying those characteristics that make them replicable and transferable to other contexts.

The study presented in this article is one of the 10 cases that is part of the work carried out in phase 3 of the project “Impact and characteristics of adult learning and education actions for the empowerment of all women”, the goal of which is to analyze the social impact of adult learning and education actions on the empowerment of the most vulnerable women, their participation in the development of their communities as well as to study the characteristics of adult learning and education actions with social impact that can be replicated and transferred. The criteria employed in the identification of case studies for the ALL WOMEN research project were delineated as follows: a) the presence of antecedent indications of social influence in attaining a minimum of one objective outlined in United Nations Goals 4 “Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” and 5 “Achieve Gender equality and women’s empowerment”; b) the implementation of formal and non-formal programs or initiatives in adult learning and education overseen by public entities or non-profit entities; c) explicit orientation towards women from vulnerable cohorts, encompassing individuals of advanced age and those characterized by low skills.

Methods

The participants’ perception of the impact of the digital literacy course with smartphones, the impact on their social relationships and autonomy, and the transferable characteristics were studied through two communicative focus groups (CFG) and two communicative daily life stories (CDLS).

The Study Context and Participants

This investigation took place in two digital literacy courses in a working-class neighborhood of Barcelona, Spain, involving the participation of 30 older women aged between 74 and 90, all of whom lacked prior experience in ICT skills. The digital literacy courses were created after the total confinement due to the COVID-19 pandemic. One of the women's associations in the neighborhood reported to FACEPA, the Federation of Cultural and Educational Associations for Adults, that many older women were asking for training in the use of smartphones to be more connected with their environment, especially with their families and friends through video calls. FACEPA managed to organize the course initially for only six participants because of restrictions to prevent the spread of the virus. But on the day of registration, 21 older women applied. The federation sought the resources and space to respond to all the applications. Finally, in the academic year 2021-2022, it was possible to start the course with three groups on different days. The 21 women were divided into these three groups, following the criterion of friendship among them as far as possible. In the academic year 2022 - 2023, when the restrictions due to the pandemic were lifted, the women who wanted to continue learning did so in a single group. In that academic year, new women joined the course. All women participated voluntarily in the free digital literacy courses. Most of them have no basic education and no previous ICT skills.

The ALL WOMEN research team has been collaborating with FACEPA on a regular basis for more than 20 years. Some of the team's researchers are volunteers in different activities organized by this federation. From the ALL WOMEN project, FACEPA was asked to participate in the research. The federation accepted, and together with the research team, it was decided to select the case study of digital literacy with smartphones for older women. The women of the course who wanted to participate in the research did so on a voluntary basis. The researchers communicated to FACEPA and the participants that engagement in the research would not entail any form of compensation or reward. Every participant was provided written and verbal details concerning the project and endorsed a consent document indicating their participation agreement. Four women decided to participate in the research. They were given the opportunity to participate in a daily life story or in a focus group; all of them preferred to participate in a focus group. An interview was conducted with each of the two educators responsible for the course. Educator 1 has five years of experience working with the most vulnerable women in community associations. Educator 2 has a long experience as a kindergarten and primary school teacher and has spent the last ten years as an adult educator. The profiles of all participants can be found in Table 1.

Table 1*Participants' profile*

Pseudonym	Profile	Technique Code	Gender	Age range	ISCED*
Cristina	Participant 2	CFG1	Female	75-80	NBS
Isabel	Participant 3	CFG1	Female	81-85	NBS
Francisca	Participant 3	CFG2	Female	75-80	L1
Juana	Participant 4	CFG2	Female	86-99	NBS
Sofia	Educator 1	CDLS1	Female	30-35	L4
Olivia	Educator 2	CDLS2	Female	40-45	L5

*International Standard Classification of Education (UNESCO Institute for Statistics, 2012): NBS= No basic studies; L= Preprimary education; L1= Primary Education 1-6; L2=Lower Secondary Education 1-4; L3= Upper Secondary Education 1-2; L4= Postsecondary nontertiary education; L5= First stage of tertiary education 1-3/4; L6= Second stage of tertiary education ½.

The Intervention: Digital Literacy with Smartphones

The courses were implemented in the school years 21-22 and 22-23, both October to June, for two hours once a week. The courses were designed with the participants' interests in mind. The priority for all of them was to develop basic skills to be more connected with their environment, family, and friends, especially through video calls and WhatsApp with their smartphones. The educators gradually introduced different applications according to the interests expressed. The sessions have worked on developing skills to use WhatsApp (make video calls and send text messages, audio, photos, and videos), take photos and videos with the smartphone camera, use Google to search for information of interest, handle Google Maps to move to a place, search for videos on YouTube of music they like, museums, countries or cultural places of their interest and cooking recipes, among others.

The courses have followed the dialogic learning approach (Flecha, 2000; Ruiz-Eugenio et al. 2021, 2023). Dialogic learning was theorized by Ramón Flecha after almost two decades of creating dialogic learning environments such as Dialogic Gatherings and in line with mainstream learning theories that are interdisciplinary (Bakhtin, 2010; Bruner, 1997; Freire, 1970; Mead, 1934; Vygotsky & Cole, 1978). Two of the criteria of dialogic learning are egalitarian dialogue and solidarity. Egalitarian dialogue is when the contributions of the participants are valued based on arguments and not based on power position. In the digital literacy courses with smartphones, egalitarian dialogue was promoted by the educators. The educators were not the only ones who explained how to use the applications to the participants, but the educators encouraged the participants to explain to each other how to carry out the different challenges that were proposed. At the same time, solidarity among the participants is promoted. The encouragement of these dialogical interactions by the educators between participants also fostered relationships of solidarity between them. To optimize these dialogic learning interactions, the educators organized the participants into small heterogeneous groups in terms of skills in the use of smartphone applications. One of the most important criteria of the courses was to create a learning environment in which the women always felt supported.

As for technical aspects, considering that some of the participants have difficulties in reading, writing, and vision, the educators used large icons printed on paper and laminated for

the applications they were working on in their explanations, and the smartphones were configured to show the applications and the font in the largest possible size.

Communicative Focus Groups

The development of communicative focus groups involves an ongoing reflective dialogue between the researcher and the individuals taking part in the investigation concerning their life experiences regarding the digital literacy course. The researcher presents evidence from previous scientific knowledge within this dialogue while participants contribute aspects of their life experiences. This collaborative process fosters joint reflection and interpretation of everyday life. The interpretations deemed valid are those unanimously agreed upon by the entire group (Gómez et al., 2011; Puigvert, 2014; Redondo-Sama et al., 2020). The communicative focus groups were held in May and June 2023. The first communicative focus group comprised four learners, while the second had five participants. For this study, we have only used the testimonies of the participants who signed the informed consent form.

Communicative Daily Life Stories

Professionals of adult education participated in two communicative daily life stories. The primary goal of these conversations was to pinpoint the characteristics of actions that positively influence the social impact on women and their surroundings. The communicative approach fosters collaborative interpretation during the dialogue between the interviewee and the interviewer (Gómez et al., 2011). The communicative daily life stories were held in May and June 2023.

Analysis Categories

Several themes emerged through inductive thematic analysis of the two communicative discussion groups on the digital literacy courses with participants and the two communicative daily life stories with the educators. The researchers independently analyzed and categorized the communicative discussion groups and communicative daily life stories data. Afterward, the analyses underwent triangulation, and consensus was achieved in instances where discrepancies were present. The themes are presented as they emerged in the analyzed data: first, the impact on the participant's digital literacy, their social relationships and autonomy, and finally, transferable characteristics. The data collected was shared with the women in the communicative discussion groups and communicative daily life stories to ensure accuracy in the collective interpretation.

Results

Impact on Their Digital Literacy

Loss of Fear of Using Smartphones

Both the testimonies of all the participants and those of the educators indicated a notable reduction in smartphone apprehension among the participants. They are women who initially express sentiments such as 'I do not know' and 'this is not me,' and their perspectives underwent substantial transformations. There is a noticeable shift from self-doubt to a more assertive stance, as reflected in statements like 'I do use it and it works wonderfully for me', instead of positioning themselves as not worthy or capable of it.

The transition from non-usage to active integration into their daily routines was evident, particularly with WhatsApp, Google, and YouTube applications. Juana argues that:

In general, it has gone well for me because I didn't know anything about the smartphone. I was influenced by the fact that I was afraid of it. (...). Now, what works very well for me are messages (WhatsApp) because I didn't send messages before. And now I do use it and it works wonderfully for me.

Juana elaborated on incorporating these technologies into her lives, while Francisca expressed a desire to further explore and acquire knowledge, specifically for cultural enrichment. Francisca stated:

When I learn a little more, I would really like to get into cultural things (on Google and YouTube), to learn things, for example, about a beautiful city and see all its important buildings, the history of that. I love that. (...) I think I will end up learning.

The initial fear and lack of knowledge are transformed into interest and willingness to discover.

They Acquire Skills to Use the Applications

The testimonies of the participants and the educators provide many examples of how they have acquired the basic skills to use the applications they are most interested in. Some participants who had more difficulty writing explained that now Cristina has learned to use the audio search on Google Maps to find a street or on YouTube to search for a cooking recipe. She argues:

Since I can make a mistake when writing, I use it with the voice. And I say "I want to look for that street" and then the map appears and it looks for it. Because maybe when I write, I write it with mistakes or something, and I don't get what I want. Or the recipe "I want a smoked salmon recipe" and I say "I want a smoked salmon recipe." I say it, and then it comes up.

These newly acquired skills transform their experiences, leading to a perceptual shift. Families subsequently alter their preconceived notions about participants' capabilities in utilizing technological devices. Participants articulate instances of familial joy upon their inclusion in family WhatsApp groups, signaling a significant shift in familial perceptions. When asked about sending the first WhatsApp message to her son, Juana stated that he said: “Hey mom, soon you're going to have to teach me.” The first time Cristina sent an audio message via WhatsApp she recalls that “They congratulated me; they told me that thank goodness you have already decided (...) for them it was a nice thing that I started using it, even if it was very little” Now, she is proud of herself for using the apps on her smartphone.

Differentiate Between Hoaxes and True Information

One of the main concerns discussed in the digital literacy course was learning to differentiate between hoaxes and true information online. Through cultivating digital literacy, the educators contributed to the discernment between misinformation or fallacious content and reliable information, particularly distinguishing content grounded in scientific evidence. Platforms such as Sappho and maldita.es were central in educating participants about the prevalence of misinformation disseminated through WhatsApp, emphasizing the necessity of critical evaluation. Participants were previously unfamiliar with effective differentiation strategies. Introducing the concept that research is actively addressing misinformation across various domains, including education, broadened their perspective on the potential negative impacts of hoaxes. Participants learned to identify potential misinformation by evaluating unsolicited information, detecting persuasive rhetoric aimed at manipulation, and employing search engines or cross-referencing with others to verify the accuracy of information.

In addition, the educators, Sofia and Olivia, revealed that after adopting digital and fact-checking skills, at least two or three participants showcased their acquired knowledge. Engaging in discussions with their grandchildren has become a recurring practice, where the intergenerational exchange often reveals instances where the participants possess information that their grandchildren also acknowledge. This validation contributes to a transformative shift in the participants' perceived status as they transition from being viewed as outdated or uninformed to individuals with relevant knowledge and understanding.

Impact on Their Social Relationships and Autonomy

More Connected with Family

All participants articulate increased familial connectivity in the routine exchange of written or audio messages and video calls via WhatsApp with their children and grandchildren. When asked by the researcher about changes in their relationships with family after starting to use WhatsApp. Francisca stated: “I communicate with them a lot more now, and I send text messages and make video calls”. At the same time, Juana indicated that she “really likes making voice messages. I send them a voice message (to the family), and as they listen to it and I hear it, it seems more intimate than just typing, more beautiful”. This new reality of connectivity with their families allows the women to experiment with being together

differently. One of the participants, Juana, who happens to be a great-grandmother, states that she likes to receive pictures of her grandchildren and nephews. But also pictures from her great-granddaughter, who is eight months old. Juana states:

I feel loved, and I also give affection, and I love it. I never dreamed in my life that I could have done that, seeing her in my house without having to go where she is. I love that; it unites me more with the family, I admit it. We are more united; we talk to each other more, and we see each other more.

The participants highly appreciate the sense of proximity that the technology brings. As they explain, they are more in touch with family members who are far away, with video calls with granddaughters who are studying or working in another country, for instance. Francisca explains the emotion that comes from seeing a life video of a floral decoration from the corpus celebration of her hometown; she says: “It’s happening right now; it was like returning to my childhood”. This experience of being able to see and be (virtually) in faraway places prompts them to state that they have more communication with those who are far away. “It is as if you were with them”. Juana states that using the smartphone and the new skills lets her be more in touch with family members who are far away, like her granddaughter, who lives in the Netherlands. She does so by video call or by audio.

More Connected with Friends

Taking part in the digital literacy course has changed their daily life routine. Cristina states that she likes going to the digital literacy course with smartphones because

I learn what we are doing, and I’m having a wonderful time. Not being locked in my house. In addition, Isabel stated: I also want to learn the more, the better (...), and coming here, which is a joy, is something else.

The participants feel more connected with friends and can overcome unwanted loneliness. Some explained that they now communicate more with friends or have turned to friends with whom they hardly communicated before and now write to each other daily. They stated that communication via smartphone allowed them to feel together but be apart and not feel alone and isolated when unaccompanied. For example, Juana explained that she has more communication with her friends:

Yes, there is a friend who sends me one of those things every day; what’s the name? She means an emoticon. And she continues: Yes, every day, every day. The day she didn’t send it to me, I said how strange, Josefina, that she hadn’t sent it to me. She sends it to me, and I reply with another one. We have more contact than normal; we both recently became widows. When she goes away because she has an apartment on the outskirts (...) the way of communication is with the smartphone.

The participants also improved their friendship networks among themselves. The educator, Sofia, states that the participants

talk about everything in class. Many times, before class, they explain what they have done the previous days. Many go to other classes and explain to you what they have done in other classes... This also generates a bond between them, making the class easier and more fluid.

The relationships and friendships developed among the participants set the learning process at ease.

The Feeling of More Freedom and Autonomy

All the participants explained that they feel more connected to others but freer and more independent. They do not have to depend on anyone to be able to contact whoever they want when they want. The participants recognized that participating in the digital literacy course benefited them. Juana explained that: “I have learned something that benefits me (...) and gives me freedom”. Francisca stated that:

I recognize that it is very useful (...) and gives you more freedom. A freedom at the moment you feel like doing it, at that moment. Things are done when you feel them or when you remember because it also solves a lot for you, and that is very important, very beautiful. At a time when you remember that you want to do something (and you can do it independently), I am more in communication (...) Before, it was always with my husband's cell phone, and now, since I have one, they send it to mine. And when I answer, I answer with mine.

The educator, Olivia, states that the participants use the cellphone to be in contact with their environment, above all, and that they feel communicated: “They also use it to have that autonomy of being able to contact someone and not depending on another person to be able to contact, well, with the family, with the environment, among others”.

Transferable Characteristics

Start from Their Interests and Needs

The educators, Sofia and Olivia, stated that they began by listening to the participants, and from there, they started the work. Above all, they wanted the participants to feel supported and assured that if something has to be repeated many times, it will be repeated. Participants feel in total confidence. Although there was written material about the different applications, they mostly did everything orally and from practice.

The participants felt at ease since the educators aimed to fulfill the participants' needs and cover their interests. The educator would go around the tables helping individually, but participants were helping each other. The educators would recognize that mutual help is precious and needed. In addition, the educator found that the participants were completely confident and calm in class, as it is a safe space. It is a place where they can make mistakes; there is no problem; they know that by making mistakes, you learn.

Dialogical Interactions to Overcome Barriers to Learning

Learning through dialogue, creating a climate of trust in which they can ask questions whenever needed, and having helpful interactions between them are essential. One of the participants has her granddaughters at home telling her how to use technology, and then when in class, she is the one who helps the others the most in the group.

In the digital literacy course, participants and educators engage in an egalitarian dialogue based on validity claims. Besides, everyone shares and recognizes all individuals' universal capacity for communication and knowledge creation. The participants highlight how important it is to have someone you trust by you to learn. In the following case, Isabel explains how another participant is next to you, willing to collaborate:

We always have the person next to you, a person who gives you a hand and who makes your way. If you pay attention now, maybe for next time you already know. We asked Cristina who knows the most. We have her dizzy.

Moreover, the family members hold elevated expectations for the participant's success in discussion regarding the digital literacy course. Isabel explains that:

I have had my granddaughters explain things to me, and I push all the buttons to see what that is for and what the others are for. The granddaughters taught me the most important things, but then I saw that button, and what is that for? And I say: Ah! Then I tell my granddaughters, today I discovered something new. I've played here and seen this.

The granddaughter replies that she will teach her more things the next time she visits her.

Another participant, Francisca, indicates that although she loves to search online on Google and YouTube, she needs encouragement. She says:

They have to push me (...) If I have someone next to me (...) without asking them, they approach me out of a desire to help you; that's another thing. In addition, she values: Having a person next to you whom you know; if you are going to ask them, they will answer you willingly because if you are already afraid, but with a person of your trust, you can ask them, and they are not going to laugh at you because you do not know. That shame thing is essential because it also makes you feel embarrassed.

Participants talk with the family and reach agreements on how to use the cell phone. One of the participants, Juana, had a text message from her granddaughter asking her if she could go to lunch that day at her house after leaving the university. The grandmother saw the text message long after her granddaughter had sent it. Juana decided to call her granddaughter and told her that she was welcome to come to her house for lunch. The granddaughter replied that as she had not replied to her WhatsApp message, she had already made other plans and would not be coming to her house for lunch. Juana stated: "You know that at home, I leave my cell phone in the dining room, and I am in the bedrooms. I am not always there to see who sends me a WhatsApp". Finally, they agreed that the next time the granddaughter wants to go to

grandma's house for lunch, she will call her, and I will not send her a WhatsApp message. Several participants agreed that granddaughters and grandsons assume they will be looking at their smartphones all the time. They agreed in the focus group that if the grandchildren want something from them, they must call them if it is important. The focus group participants agreed that just as they already know that they cannot call their children or grandchildren when they are at work or at university, they need to know the best way to contact their grandmothers when they want a quick response. Juana said: "I do not call them if they are at work or university; I message them and tell them I will call you later. They also have to think about how best to contact me".

Discussion

In this study, the effects of the use of smartphones on autonomy and social relationships in the framework of dialogic experiences in digital literacy were studied in older women over the age of 74 in an urban area, besides identifying characteristics that can be transferable to other contexts. The dialogic approach to learning transforms the groups traditionally considered recipients of ICT to become protagonists of their education mediated by technology.

Our study revealed that participating in a digital literacy course with a dialogical approach increases the participants' self-confidence as learners since they experienced a transformation in their self-image and self-identity. Participants went from being older women who did not have certain digital skills and experiencing fear or shame of asking to become individuals who decide what, when, how, and with whom they want to exchange or search information over the smartphone. They recognize the value of the learning process in collaboration from an equal stand with other participants and educators. Research points out that the key to understanding how learning works lies in the concept of interaction (Oro & Díez-Palomar, 2018; Mercer et al., 2016). Interactions characterized by an egalitarian dialogue, founded upon the reciprocal exchange of participants' justifications to substantiate their responses to assigned tasks, demonstrate more efficacy in the context of learning compared to non-dialogical interactions of alternative forms (García Carrión & Díez-Palomar, 2015) where validity is vested in the merit of argumentation (Habermas, 1984) and not in the position of power. According to authors such as Hutchins (2006), cognition is distributed among all the people participating in the interaction episode so that it is precisely through said interaction that they manage to develop their learning collectively.

The necessary acquisition of digital competencies is indispensable for meaningful engagement in contemporary society characterized by technological advancements and the proliferation of knowledge, as Van Laar et al. (2017) underscored. However, the process of developing such competencies is also relevant. The main results show that the dialogic approach of the digital literacy course has contributed to creating a learning environment based on interactions of mutual support, overcoming fears of using smartphones, and developing essential skills for the participants' daily use, besides allowing the participants to be more connected with family and friends.

The findings of the investigated case transcend the determinism inherent in studies positing a direct correlation between elevated educational attainment and more digital skills (Kondo et

al., 2021; Nguyen et al., 2017). The research demonstrates that, through educational interventions exemplified by the two digital literacy courses delineated in this article, older women with basic or no levels of education can learn and apply digital skills at the same level as the rest of the population.

Results of this case study through the impact of the digital literacy courses, such as the loss of fear of smartphones, the acquisition of new digital skills to use internet applications and tools as well as learning how to differentiate between hoaxes and true information, corroborates the contributions of Barrie et al. (2021) and Jimenez-Cortes (2015) on the promotion of self-empowerment, fostering social engagement, enhancing emotional and mental well-being through connections with friends and family, definitely being more active in social, cultural and civic participation.

Conclusion

No other studies published in scientific journals have been identified that have analyzed the impact of digital literacy with a dialogical approach using smartphones on women over 74 years old with no previous ICT skills and no basic education. Some studies have evaluated the impact of individualized attention to learning with smartphones on older people from all social classes by a volunteer (Ngiam et al., 2022). This study has gone further, being the first to be based on the analysis of the impact of an intervention that is not individualized but, in a group, and with a dialogical approach, as well as focusing on older women without basic education. These women have developed a successful digital literacy process through their smartphones. They have acquired skills for their use, including the ability to search, select information, and use it, having a direct impact on improving communication with their family, friends, and other people in their community, feeling more connected and autonomous, which has repercussions on their well-being.

This case study contributes to theoretical comprehension of digital literacy and instructional practices by providing valuable insights into the digital literacy course's needs, experiences, and impact on older women learners and educators. The dialogic approach of the course studied here has contributed to creating a learning environment based on interactions of mutual support, overcoming the initial fear of using smartphones, developing essential skills for their daily use, and allowing participants to be more connected with family and friends.

Limitations

Limitations must be considered in the interpretation of this study's findings. First, this study was conducted on a small number of people aged 74 to 90, some of whom were friends and all living in the same neighborhood in Barcelona. Therefore, more research is needed on the impact of digital literacy through smartphones with people over 74 years old with a dialogical approach and in different territories.

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