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The uses of digital technologies in dissertation writing: Perspectives of Argentine graduate students in social sciences and humanities

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Abstract

Digital technologies have transformed both the working practices of postgraduate students and the textual production for scholarly research communication. However, little is yet known about the role played by these technologies in dissertation writing. The aim of this study is to further the understanding of dissertation writing in the digital age from the perspective of Argentine graduate students in Social Sciences and Humanities. Based on a sample of eight doctoral students from Argentine national universities, we conducted a qualitative study drawing on in-depth interviews and documentary analysis. The findings provide insights into digital technologies, their uses, associated benefits and challenges, and ways of learning about them. The study concludes that dissertation writing activities are currently mediated by digital technologies and that these technology-mediated activities are conditioned by individual routines and practices, and by the role played by others in the progress of the manuscript. Additionally, we show that engagement with digital technologies in the dissertation writing process has intensified with the pandemic, becoming a critical skill for building knowledge in the 21st century. Our small-scale study contributes to initiating an understanding of the topic in Latin America and to broadening the global body of knowledge in the research area.

Introduction

Many postgraduate programs around the globe currently face the challenge of low graduation rates (e.g., Castelló et al., 2017; Devos et al., 2017; Rotem et al., 2021; Valencia Quecano et al., 2024; Wainerman & Matovich, 2016). Wherever research is conducted, writing appears to be one of the factors that can work against the successful completion of a degree, especially when students struggle to meet the demands associated with the dissertation writing process (Calle-Arango & Reyes, 2023; Conde, 2013; Odena & Burguess, 2015). Various challenges faced by graduate students have been documented, some which are related to the production and completion of the dissertation. These include time management issues, sometimes due to activity overload (Gardner & Gopaul, 2012); negative feelings, such as loneliness and isolation (Ciampa & Wolfe, 2020), or the impostor syndrome (Kumar et al., 2021; Nori & Vanttaja, 2022); and lack of sufficient knowledge about research genres and scientific writing (Castelló, 2020; Ley & Hu, 2019; Shahsavar & Kourepaz, 2020; Yuvayapan & Bilginer, 2020).

Dissertation writing and the problems associated with its completion need to be examined in light of the new technological context. In recent years, the advent of digital technologies (DTs) has transformed both the working practices of graduate students (Carpenter, 2012; Gouseti, 2017; Lupton et al., 2018; Limna, 2023; Okere, 2024; Rainford, 2016) and the written communication of research, including the dissertation (Andrews et al., 2012; Guerin et al., 2019; Kuhn & Finger, 2021). This trend appears to have been intensified by the widespread use of DTs resulting from the COVID-19 pandemic.

Although studies focused on graduate research and textual production are not lacking, little is yet known about the circumstances in which the students adopt DTs in the process of writing the dissertation, i.e., the text conveying postgraduate research. In addition, no published studies on the subject have been found in Latin America at the time of this research. The aim of this study is to further the understanding of dissertation writing in the digital age from the perspective of Argentine graduate students in Social Sciences and Humanities. Based on a sample of eight doctoral students, we carried out a qualitative study drawing on in-depth interviews and documentary analysis.

Throughout the study, we intend to address the following questions.

(1) What DTs do graduate students use for dissertation writing, and how do they use them?

(2) What are the benefits and challenges of using DTs?

(3) How do students learn to use DTs for dissertation writing?

The results of this study may not be generalizable; however, they represent an effort to build a transnational community of students, researchers, teachers, and program administrators about writing, a community in which individuals and small teams can benefit each other (Thaiss, 2012). In this way, our small-scale study would contribute not only to initiate understanding of the topic in Latin America, but also to broaden the global body of knowledge in the research area.

The paper is divided into seven sections. This section introduces the study, highlighting its relevance, goal and research questions. Following that, a comprehensive examination of prior literature is undertaken. The third section outlines the conceptual framework. The fourth section delineates the research methodology utilized for gathering pertinent data. The fifth section presents the research findings. In the subsequent section, an exhaustive discussion takes place guided by the research questions. The last section outlines the conclusions drawn from the research, addresses any encountered limitations, and offers suggestions for future research endeavours.

Literature review

Several studies address the transformations that DTs have generated in the research practices of graduate students. The Vitae Researcher Development Framework (2011) outlines several "knowledge, intellectual abilities and techniques to do research", including the use of digital resources for information seeking and management. These practices are also underscored in a study carried out by the Joint Information Systems Committee (JISC) on research activities among doctoral students in 'Generation Y' (Carpenter, 2012). According to this study, which is based on surveys with PhD scholars, applications for information retrieval are more widely used than other technology tools. More recently, however, it has been recorded that DTs, particularly social media, are involved in various scientific tasks, including data analysis, peer collaboration, academic networking, dissemination of research findings, etc. (e.g. Gouseti 2017; Osimo et al., 2017; Limna, 2023; Silberzahn & Uhlmann, 2016; Stein et al., 2022; Stewart, 2015). In fact, based on in-depth interviews with twelve PhD students, Gouseti (2017) has shown a shift from paper to online resources and tools in the research practices of doctoral students. The study concludes that guidance received from supervisors and peers is key in promoting engagement with these technologies. Additionally, the author identified dissimilarities in usage among students from different countries based on their prior access to and familiarity with digital technologies. While students value the tools offered by the institution and the library services, they recognize that familiarity with these resources is not achieved overnight but through an ongoing process. Along the same line, Beetham et al. (2012) argue that the use of digital technologies to support intellectual work represents a set of integrated, life-wide practices rather than a number of skills and that such practices cannot be incorporated through a single training session. Digitally literate supervisors and other professionals, such as specialist librarians, are required.

Among the studies exploring DTs in research, only a limited number focus on the impact of these technologies in dissertation writing (Andrews et al., 2012; Guerin et al., 2019; Kuhn & Finger, 2021). Andrews et al. (2012)

suggest that digital technologies have become a part of the whole thesis or dissertation process, from conception, planning and composition through to supervision and publication, transforming both the text itself and the actions associated with its production, such as the interactions among researchers. The authors highlight that thanks to digital technologies, dissertations are increasingly put into institutional repositories or in some other location accessible to Web users, allowing more readers to access these texts through search engines. Other studies (Guerin et al., 2015, 2019) have also documented shifts in graduate textual production by analysing the profiles and frequent accesses of the users of a blog designed to support doctoral writing with posts covering various topics (writing practices, identity and emotions, the dissertation, grammar, style and voice, publication). The study reveals that a wide range of international readers find support for research development and, particularly, for written communication beyond institutional boundaries. The study has recorded blog readers from across the world who access posts mainly about the dissertation and search for terms such as plagiarism and doctoral writing.

Regarding the impact of DTs in the dissertation as a text type, Kuhn and Finger (2021) reflect on digital dissertations –i.e., dissertations that are not just word-based traditional texts– by examining nine first-person narratives of PhD students in the arts and humanities who had created and defended digital dissertations. The narratives show that digital dissertations and the scholarly practices associated with them represent new ways of knowledge production. Accordingly, the authors suggest that there should be more room and openness to use tools available to scholars insofar as any transformation is tied to the technical parameters in the environment of production. However, they also point out that at both graduate and faculty levels, institutional policies and attitudes towards digital scholarship are still undergoing change.

The literature review demonstrates the significance of digital technologies today in the development of scientific activities of graduate students. A small group of studies address the role of DT in dissertation writing and its publication, highlighting changes in these processes as well as in the dissertation format itself. Since research is still very limited and there are no works in Latin America, we consider it relevant to deepen the work in this line to understand, among other aspects, which DTs are used by doctoral students and how, what are the benefits and complications of theses uses, and how students learn to use DTs.

Conceptual framework

Two fields are connected to the conceptual framework of this study: research writing and digital technologies. In relation to research writing, this study assumes that creating a text that scholarly communicates research, such as a dissertation, involves several types of writing and, also, reading practices (Mirás & Sole, 2007): from exploring scientific publications by other authors or drafting intermediate and transitional texts, such as descriptive commentaries based on raw data, through to the production of the text by means of which a graduate student submits their research in writing to the scientific community (Castelló, 2022a). In this last case, textual production can be described as a recursive process involving planning, textualization and revision for the purpose of editing the text (Mirás & Sole, 2007).

Moreover, as writing of any kind is a culturally, socially and historically situated activity (Castelló & Donahue, 2012; Prior, 2015), dissertation writing practices evolve alongside changes both in disciplinary communities and in the ways in which research is performed, and findings are disseminated (Castelló, 2022b). Accordingly, in order to understand the current processes of doctoral writing, we need to identify not only what students do when they write and the role played by others in this process (Burford et al., 2021) but also how DTs transform this intellectual activity.

In fact, DTs have evolved as part of everyday social practices and cultural and communicative routines (van Dicjk, 2013; van Dijck et al., 2018). In research activities, these technologies include but are not limited to, social networking (Facebook, Academia.edu, Research Gate), social bookmarking and reference management (Zotero, Mendeley), social data sharing (SlideShare), video (YouTube), wikis (Wikispace), blogging (Wordpress), and microblogging (X) (Sugimoto et al., 2017). More recently, artificial intelligence technologies have gained popularity (Ouyang et al., 2022; Sullivan et al., 2023), most notably ChatGPT (Chat Generative Pre-trained Transformer), an application that can generate human-like texts based on context and is therefore sometimes used for writing (Barrot, 2023; Escalante et al., 2023; Su et al., 2023) including academic and scientific writing (Dergaa et al., 2023; Pigg, 2024).

In this study it is assumed that DTs establish conditions from a social, technical and economical point of view (Nichols & Le Blanc, 2020). Moreover, the use of these technologies involves not only potentialities and benefits, but also limitations and risks (Burbules & Callister, 2001).

Methodology

This qualitative research was conducted between late 2022 and early 2023 using a purposeful sample (Creswell, 2013), which allowed us to assess various experiences of DT use in dissertation writing.

Participant sample

Considering that a minimum of six interviewees represents an adequate number to achieve data saturation in qualitative studies (Francis et al., 2010; Namey, 2017), we worked with eight doctoral students (six female and two male) enrolled in Social Sciences and Humanities programs at four highly recognized Argentine national universities. Four were pursuing a PhD in linguistics and another four in education. All of them were either writing a dissertation or had completed it and graduated within a maximum of two years before the study. Informed consent was obtained from all participants, and the data was anonymized. Interviewees were thus identified with codes.

Data collection

The work with the doctoral students was based on in-depth open interviews lasting between 45 and 90 minutes, conducted and recorded using the Zoom platform. An instrument was designed with a guiding outline of topics relevant to our research: experience in writing academic texts, especially the dissertation, use of DTs at different stages of the writing process, their potentialities and risks, and ways of learning about these technologies. Additionally, in order to expand the sources of analysis, the study participants were asked to collect and inform the resources they considered significant with regard to the use of digital technologies in the dissertation writing process. As a result, a variety of materials were made available (websites, blogs, materials shared through social media and virtual learning environments, etc.), all of which contributed to an enhanced approach to the research problem, favouring triangulation, dialogue and comparison between interviews and documents. The interviews were transcribed in full and verbatim, while materials were stored and systematized based on interviewee and resource type.

Data analysis

The analysis of the interviews and materials was initially carried out using codes based on the research questions. These codes were generated and refined as the work with the data progressed (Saldaña, 2013). During this process, the lead researcher read and analysed the interviews and documents thoroughly, identifying codes that reflected the uses of DTs in writing, their benefits and challenges, and ways of learning about these technologies. A combined linear and recursive analysis was conducted, enabling the understanding, synthesis, and theoretical exploration of the data in dialogue with concepts from the literature. Finally, the codes generated were reviewed by the second researcher and both investigators discussed any uncertain or problematic cases before the final version of the categorization was established.

Findings

Guided by the research questions, the analysis resulted in the description of three main themes: 1) digital technologies and their modes of use in dissertation writing, 2) the role of these resources in addressing both old and new challenges of dissertation writing, and 3) ways of learning about the digital technologies used during the writing process. Along with the systematization of the categories, we have included quotations from the interviews. As the interviews were conducted in Spanish, interview excerpts were translated into English by a specialized translator and reviewed by the authors. The identification number of the interviewee is provided in brackets at the end of each quotation. We use three periods enclosed in brackets to indicate that a fragment within the quotation has been omitted. Square brackets indicate additional wording to clarify the meaning of the quotation.

Digital technologies in dissertation writing

Digital resources, such as applications, websites, and materials vary among interviewees. The majority of students mention Google Docs or Word, usually in combination with other resources, such as Pomodoro technique timers and "Study with me" videos based on this technique. In this method, time is broken into Pomodoros, which are 25-minute intervals separated by five-minute breaks; after completing four Pomodoros, longer breaks are allowed. The interviewees also mention Google for synonym searches, synonym dictionaries, digitized dissertations, sites, videos, podcasts, and digital or digitized books on writing. In connection with these last five types of resources, their analysis reveals that they have been crafted by scholars or researchers specializing in writing or, even if they are not specialists in the field, have utilized digital resources for the sake of their own textual production.

Additionally, several students reported using reference managers or specific websites for creating bibliographies. One student prefers to manage a bibliography using an Excel spreadsheet. Two interviewees mentioned having explored the use of artificial intelligence for textual production but did not report any impact on the actual text. As we will examine in more detail in the following section, they do, however, point out the precautions that need to be taken when using this type of application in research writing.

For communication and interaction with others (supervisors, other experts, peers), which occurs frequently during the text revision phase, all participants mentioned email, Google Docs or Word, a video call application (primarily Google Meet), and, in some cases, also WhatsApp. The following excerpts from the interviews show how strongly the use of specific technologies is coupled with individual routines and practices:

> I plan; in planning I don't use a paper planner, but Google Calendar and, since I block out time slots in the week, all the dissertation-related hours are in the same colour… When working alone, I always use the Pomodoro technique: I set a timer to focus and work in 25-minute intervals with breaks. I always keep Zotero open, I use it a lot. I like to store everything in Google Drive and keep different versions labelled with the date; I name the files version 1, version 2, final version. I really enjoy planning, creating little notes on paper, so I always have paper nearby. (IE4)

> [Together with my supervisor,] we have a shared drive: one of the folders contains the dissertation, and it is progressing. I add side notes to remember the questions I want to ask her on the day of our meeting. We meet every Wednesday on Zoom, and every Zoom day, we set goals for the next meeting. This is truly helpful; it forces me to commit. With these goals set, I stay from 10 to 12 pm, which is the time of the day when one of the computers in the living room is available and family is not around… I tell myself "I'm going to work on the dissertation" and I just stay there working. (IE3)

In these examples, variations in writing practices appear to be influenced by individual routines and practices, as well as by commitments to others in order to make progress. In this regard, it is worth noting that differences in writing methods can also be identified in various situations involving other actors in the academic field, such as supervisors, other experts, or peers, particularly during text revision phases. These differences become evident, for instance, in the account of one interviewee who describes the revision practices adopted by some students and their supervisors.

> One of the girls sends her work to her supervisor in Word and it comes back with comments in Word... I usually share the files with my supervisor. She reads them, I review her comments, and we always schedule a meeting to discuss comments that might be unclear to me or that I don't fully understand or know how to address. (IL4)

Also, in relation to situations involving other actors in the dissertation process, five interviewees mentioned their participation in writing groups (Haas, 2014), in which several students meet virtually or face-to-face to support their writing. All five students describe virtual meetings with self-managed groups, some of which are aimed to help members make progress in their writing, while others focus on text revisions.

> With one group, we would get together to write. We worked with the Pomodoro technique: we wrote in 40-minute intervals. This group had some sort of structure and regulation, with meetings every Tuesday, Thursday, and Saturday. Later on, a bond was created between those participating. A WhatsApp group was created and now writing kind of happens through WhatsApp. People will text when someone wants to get down to write and needs support. (IL2)

> We send the initial document by email and everyone downloads and edits it on their own computer. We then upload all versions to a shared folder in Google Drive. We use Meet, we record the meeting and the person whose text is being edited can go back to the recording to review what was discussed. (IL3)

The findings described above show that the writing practices of all students interviewed are currently mediated by digital technologies. However, seven participants reported that digitization is still an ongoing process that began a few years ago and has intensified due to the pandemic.

> As an undergraduate, I used to go to the cybercafe. It was only a year before I graduated that I got Internet at home. I didn't have internet before, it wasn't that easy... The link with digital technologies is now more binding, especially with the whole process of the pandemic. It's tighter, because one connects to the computer every day. (IL1)

Additionally, some interviewees emphasize the changes in DT usage due to the specific tasks encountered at the postgraduate level.

> [As an undergraduate], besides the word processor, I used Google Docs for collaborative writing, the whole comments and suggestions stuff, and search engines for scholarly articles. I did use those kinds of things, but later on, I've learnt many others. (IE4)

Digital technologies in the face of old and new challenges in dissertation writing

Doctoral students find both benefits and challenges in using digital technologies in the dissertation process. The benefits are associated with the possibility of minimizing or solving challenges that, according to the literature, have been hindering writing practices.

Students report on the challenges they faced in managing the time allocated to writing. In response to these challenges, as we have seen in the excerpts quoted in the first section of the Findings, participants highlight the use of various scheduling applications, such as Google Calendar, as well as resources used to control time in individual or group writing sessions (e.g. Pomodoro technique timers or "Study with me" videos).

> Students also emphasize that DTs can simplify tasks, thereby making them easier to perform. "Certain technologies, such as reference managers, can help us simplify some tasks" (IE4).

Moreover, digital technologies help to mitigate feelings of loneliness or frustration, which, according to specialized literature (e.g., Calle-Arango & Reyes, 2023; Ciampa & Wolfe, 2020; Conde, 2013; Devos et al., 2017; Nori & Vanttaja, 2022)., complicate or hinder the dissertation writing process. In this regard, as noted above, students report using digital technologies (email, video call applications, and instant messaging) to communicate with both supervisors and peers to discuss different aspects of their research, as well as to meet with colleagues in order to write, review their last additions to the dissertation, and to share their progress and the challenges they face.

> Last year, together with some colleagues from my research group, we met through Meet. We held dissertation seminars to discuss our work. This connection allowed us to share all the things we had been working on. (IL1)

In addition, students describe a range of resources used to learn about the characteristics of the dissertation and the processes involved in its creation and the lack of awareness of which has been identified as a conditioning factor for non-completion (e.g., Castelló, 2020). The cited resources include digital or digitized books, copies of digitized dissertations, podcasts, blogs or websites on writing.

> I read a book recommended to me by a friend, which basically offers tips on how to get organized when it comes to sitting down to write. The book is not digital, but it circulates through digital media. (IL4)

According to the document analysis, the book mentioned in the quote is a printed text that has been digitized, as indicated by the participant herself. It is a practical guide for academic writing that presents a series of barriers as well as strategies for writing various genres.

Along with the benefits derived from the use of digital technologies, students report a number of complications encountered when drawing on these resources while writing the dissertation. These issues are sometimes addressed with digital technologies themselves. Several students describe situations in which they lost files or parts of their writing. In response, they have chosen to create duplicate copies of the documents in various applications and devices. Thus, they often store backup copies in "the cloud" or on external hard drives or open email accounts solely for the dissertation.

> [My supervisor] once thought that she had already revized a document and deleted it, but I didn't have a copy of it anywhere else. So what I did then was to create duplicate folders in a different email account, not my private email. (IE3)

Similarly, some students often find devices distracting, an issue they sometimes address with applications that, as shown above, are designed to control the time dedicated to work and distractions, such as the Forest app.

> I downloaded the Forest app, which is very simple: you set a timer that tracks the time you stay away from your phone; during that time, a small plant grows, and when you leave the app, it dies. The truth is that it has helped me to stay away from my phone and focus a bit more. (IE4)

A significant number of students also mention the high costs associated with accessing certain applications or purchasing their licences. This means that they will not use certain resources unless they can get access through unofficial versions or with the help of supervisors or the university.

> There is a software called Nvivo that my supervisor is going to lend me; she has a licence that she pays for with funds from a project. (IL3)

On the other hand, some students cited the excessive number of resources available and the lack of criteria to decide on their use. Additionally, they acknowledge being unaware of certain applications that have been recommended to them or that appear to be suitable for their needs. In such cases, students consider that it would take too long to learn to use the resource on their own and that the investment is not justified in terms of the tasks they would need to carry out.

> I don't use a reference manager to organize references, and it's wrong, but I always feel overwhelmed to take the first step and start using one because, at first, it's obviously rather time-consuming. (IL4)

With regard to the knowledge required for using digital technologies, two interviewees expressed a common concern about AI applications, which had only recently become widespread in Argentina at the time of the interviews. One of the students notes that having sufficient knowledge about research work is a prerequisite for using an AI application to generate texts (or parts of texts, such as the aims section) that effectively convey research and are of high quality.

> A month ago, I used artificial intelligence. I noticed that to make the most of the great potential of these tools, one needs to have a background to understand how research is structured because one needs to pose specific questions and give very specific guidelines. (IE2)

Another interviewee, while acknowledging that AI might be very useful in furthering textual production, questioned the likelihood that these tools would enable the generation of the knowledge involved in writing (epistemic function).

> Some guys created a software and preloaded millions of papers. It's artificial intelligence, the machine writes papers on its own. There's the limit, the epistemic power of writing can never be replaced by a machine. You can take pictures of ice cream, but you'll only know what ice cream is after you taste it. To me, writing is done with your body, with your hands, with your eyes, with your back… The interface, technology, can help. It's wonderful to have databases, libraries, but they'll never replace writing. (IE1)

Faced with other challenges posed by a lack of knowledge about how to use technology, students not only look for solutions in the digital technologies themselves but also seek institutional support either from supervisors or from the university, as we will discuss in the next section.

Learning about digital technologies for dissertation writing

Interviewees generally provide very positive evaluations of different instances of systematic training in digital technologies, particularly those related to the dissertation writing process. This form of training includes courses beyond the required graduate curriculum, organized either by the participant's university, by another university or even by non-governmental organizations. Regarding training provided within the same university beyond the graduate curriculum, students highlight courses or lectures offered by the university library staff, as well as the training and orientation received from their supervisors.

> I once took a very good course during the Linguistics conference; it was taught by the librarian of the Institute of Linguistics. She presented a number of tools, suggestions, stuff that to her was common sense and super obvious, but no one else knew about… In the final part, she presented tools such as Zotero and Mendeley. (IL4)

Based on the slides from this presentation, provided by the thesis student, the topics covered included: the steps for bibliographic searching; operators and parameters such as Boolean operators; tools (or sites) for searching, including digital repositories, open-access databases, and data repositories subscribed by the university; reference managers; and journal categorization.

The interviewees also refer to the training and orientation received from their supervisors.

> My supervisor suggested some stuff for me to incorporate... I started using Mendeley because of him, and I'm slowly getting to know it. (IL2)

Training in digital technologies took place to a lesser extent in seminars of the graduate program, even if this was not their primary focus.

> We had a workshop called "Research Tools Workshop" or "Research Essentials Workshop"–it wasn't specifically about technologies. They took us to the library and told us: "this is a search engine, this is a repository, this is how you search…" Then, if you are crafty enough, you'll keep looking for information, but in that workshop, which was very short, I learnt the basics about citations, applications to create citations or how to include an APA citation in Word. (IE1)

None of the students reported having taken a specific course on DTs as part of the graduate program, although some of them commented on the importance that such training would have. All students believe that this kind of systematic training is essential to begin using a resource, although it is not enough to fully adopt it. Students explain that contents stemming from systematic training only become significant when they are brought into play in specific situations of the dissertation writing process. In such contexts, students often rely on various digital resources to support their work practices, such as YouTube tutorials.

> Once I had a small part of my dissertation written, my supervisor taught me about tables of contents, crossed references, and bibliographic references. We met at the office with our laptops, and she explained to me in very practical terms: "This is how you do this and that". It was like a lot of information that day when I learnt how to use the tools, so later what I did was to search on YouTube for "how to create a table of contents", "how to create cross references", and that is how I started to use the Word tools. Her explanation was like an overview, but I didn't remember everything. After that initial training, I used tutorials and became quite self-taught using YouTube. (IL3)

As suggested by the example above, alongside more systematic teaching paths, students often deploy less formal mechanisms to learn about digital technologies. They turn to colleagues or researchers, in many cases using online resources where they can find information to begin their explorations.

> I also recall reading in the literature about blog recommendations and in those blogs certain resources or podcasts were also recommended. There's one called "On the Reg", hosted by Inger Mewburn; she's always offering recommendations for different tools. I remember she recommended one that automatically checks grammar in your emails. (IE4)

In the podcast mentioned by the interviewee (Mewburn & Downs, 2020-present), two renowned scholars engage in dialogue about various aspects related to writing.

According to the evidence discussed above, in both formal and non-formal training contexts, students underscore the need for expert knowledge as the basis for initiating a learning process that will lead them to adopt the technologies fully. In fact, several students find that digital resources led by experts in the field would be interesting support.

> Perhaps we need to have a more specific resource to promote the use of technology, a more reliable source of reference. There are a lot, but none of them are specific enough. I don't even know if something like that exists, but I think it would be better than going blindly around finding out what's useful and what's not because it's a waste of time. (IL1)

Discussion

We explored dissertation writing practices in the digital age from the perspective of doctoral students in social sciences and humanities. The study focused on the DTs employed by students, their modes of use, the resulting benefits and challenges, and the ways of learning about these technologies.

The findings show that digital technologies for the selected group of doctoral students largely mediate dissertation writing practices. While transformations in research practices, including writing activities, have been suggested by previous studies (e.g., Gouseti, 2017; Andrews et al., 2012), this research provides novel insights into the digital technologies with which students engage during the dissertation writing process and how they use them. Students interviewed employ Word or Google Docs, along with a large and diverse range of digital resources (reference managers, Google's search engine, synonym dictionaries, digital or digitized books, etc.). Although interviewees share certain common patterns of use, writing activities involve different approaches in terms of both the digital technologies used and the individual actions and routines deployed with the technological mediation.

On the other hand, the students interviewed reported benefits and challenges resulting from the use of technologies in research writing practices. Benefits include possible solutions to problems related to the dissertation writing process, such as time management (Gardner & Gopaul, 2012), negative feelings (Ciampa & Wolfe, 2020; Nori & Vanttaja, 2022), or lack of knowledge about the dissertation conventions (Castelló, 2020; Yuvayapan & Bilginer, 2020). This study suggests that doctoral students are finding in DTs new solutions to "old"

problems, as becomes evident from the use of, for example, time optimization applications (e.g., "Study with me" videos), social media and WhatsApp for interacting with peers and overcoming feelings of loneliness, and digital documents to develop awareness of the features of the dissertation. Additionally, in this research, we identified the challenges posed by using DTs, including financial constraints to accessing paid digital resources and a lack of knowledge about software and applications that could be helpful in the dissertation writing process. Furthermore, we showed that interviewees frequently attempt to address these issues with technologies themselves.

With regard to AI, which has already shown potential for writing in other contexts (Barrot, 2023; Su et al., 2023), this study documents more concerns and fears than actual uses to make progress in the dissertation manuscript. This may be explained by the fact that at the time of the interviews, AI applications had just become widespread in Argentina.

In relation to learning practices about digital technology during the dissertation process, the data appears to indicate that the doctoral students included in the sample combine skills acquired in systematic training situations occurring either in institutions or in non-governmental organizations, with queries in less formal situations, such as digital environments (e.g., YouTube videos), as suggested by previous studies (Carpenter, 2012; Gouseti, 2017; Guerin et al., 2019). At the same time, in line with prior research, we showed that skills acquired in either of those situations are not inherently useful, but become so when technologies are used for specific practices (Beetham et al., 2012), which, in the context of our study, would mean for dissertation writing practices. Building on the findings of the existing literature, the current study further shows that, regardless of the context (formal or informal) in which training takes place, expert knowledge in the use of DTs for literate practices appears to be a necessary requirement for current graduate students.

Conclusion

DTs have evolved and become massively widespread as part of everyday social practices (van Dijk, 2013). However, little is yet known about their use in the reading and writing practices of graduate students during the dissertation process. With the purpose of gaining insight into this question, this small-scale qualitative study examined dissertation writing in the digital age, considering not only the DTs employed and their modes of use but also their benefits and challenges, as well as learning practices.

The analysis showed that dissertation writing practices are currently mediated by digital technologies. The ubiquity of technology, which has entailed a shift from paper to screens, began in the past few years and, for most people, has significantly intensified with the pandemic. However, the adoption of technology for written communication of research is still an ongoing process. Some of the students interviewed observed that changes in the use of technologies are also conditioned by the types of tasks associated with graduate studies. Indeed, the social practices involving writing at this level of education require not only new technologies but also specific and sometimes complex uses of technologies that were already in use. In fact, AI applications, which have shown benefits in writing at other levels, represent an emerging field that has not yet been studied at the graduate level. Additionally, the collected reports confirm that DTs provide solutions to a number of "old problems", while also confronting students with new challenges, which they often address by using technologies themselves. Students interviewed value both formal and informal DT training for dissertation writing and emphasize the need for expert, systematized knowledge on the subject, regardless of the context in which this knowledge is conveyed.

In summary, the findings of this study would confirm that in order to transform information into knowledge – one of the most important challenges of 21st century societies (Paré, 2019) – not only access to DTs is required, but also knowledge about the uses of these technologies in the dissertation writing process.

Although this is a qualitative study, and its results cannot be generalized, they contribute to a growing area of research that has not yet been developed in the Latin American region. However, it is our understanding that the trends observed and the conclusions drawn from this small sample need to be challenged and subjected to further scrutiny based on a larger data set and new studies exploring what is happening with the use of DTs in postgraduate dissertation writing and how it is evolving after the pandemic. We believe that the general expansion of new technologies due to the pandemic may have impacted the level of penetration and immersion of DTs in the research and training practices of graduate students. In terms of training, it is increasingly critical to find a way to include learning about research and writing practices mediated by digital technologies in institutions. In this context, based on the findings of this study, further research on the uses of AI in postgraduate education appears to be particularly necessary. It will also be very important to explore in depth the constraints that the digital platforms used by graduate students establish from a social, technical and economic point of view, an issue that has hardly been addressed in the present study.

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