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Articles

Pre-service language teachers' technobiographies: understanding digital practices

Tecnobiografias de professores de línguas pré-serviço: compreendendo práticas digitais

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RESUMO

A tecnologia digital (TD) está presente em muitos campos da sociedade do século XXI, incluindo a educação. Contudo, ainda existem poucos trabalhos que tratam da história de vida dos professores de línguas em relação à tecnologia - as suas tecnobiografias. Foi realizado um estudo de caso com professores de línguas pré-serviço, analisando como eles escolhem ferramentas digitais para aprender uma língua estrangeira e as suas impressões sobre o que está disponível online para tal finalidade – suas práticas digitais. Um dos objetivos deste artigo é expandir a literatura disponível no campo da tecnologia educacional, centrando-se nas experiências desses professores com a TD. A investigação qualitativa na área de CALL utilizou as tecnobiografias como dados. A análise mostra que os participantes se preocuparam com questões que envolvem o conteúdo do site ou do app selecionado para a aprendizagem da língua escolhida. As características de acesso e os testes de nivelamento disponíveis também foram mencionados. Os resultados sugerem que a compreensão das práticas digitais e experiências de aprendizagem online podem vir a beneficiar a construção de um currículo de formação significativo, que vise ao desenvolvimento profissional e práticas futuras.

Palavras-chave: *aprendizagem de línguas mediada pelo computador; tecnologia educacional; pesquisa narrativa; formação de professor de línguas; tecnobiografias.*

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ABSTRACT

Digital technology is present in many areas of 21st century society, including education. However, not enough attention has been paid to pre-service language teachers' life history in relation to technology — their technobiographies. To identify these digital practices, a case study was carried out with pre-service language teachers, analyzing how they choose digital tools to learn a foreign language and their impressions about what is available online. The aim of this study is to add to the available literature in the field of Educational Technology, concentrating on pre-service language teachers' experiences with digital technology. As a qualitative piece of research on Computer Assisted Language Learning, this study used technobiographies as data. The analysis shows that participants were concerned about the contents of the selected website or the app to learn the chosen language. Access features and available placement tests were also investigated. The findings suggest that understanding digital practices and online learning experiences could benefit the construction of a meaningful training curriculum aimed at professional development and future practice.

Keywords: *computer assisted language learning; educational technology; narrative inquiry; language teacher training; technobiographies.*

1. Introduction

Digital technology is ubiquitous in today's world. Given the embarrassment of riches of online educational materials, their influence and application in schools attract a lot of interest. With regard to foreign language learning and teaching, a number of academic studies worldwide have focused on Computer Assisted Language Learning (CALL). These studies examine how digital artifacts[2] are used to learn and teach foreign languages. Examples include a survey of technology use in language teaching (Stockwell, 2012), CALL materials within the Comarts Syllabus (Eslit, 2017), and teacher professional development with the Smithsonian Learning Lab (Zinger et al., 2017).

This study adds to the literature on educational technology by investigating the digital practices of pre-service language teachers via their technobiographies. Such technobiographies consist of audio recordings of

2. Here, digital artifacts are understood as social-historical-cultural technology which is suitable to users' context.

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pre-service language teachers relating their experience of learning a foreign language online, and their written reflections on using digital technology over the course of their lives.

Given the steady uptake in digital technology over the past thirty years, Barton and Lee (2015) describe technobiographies as a useful way of understanding the background, the needs, and the digital literacy of users. This is so because they are composed of people's experiences with digital technology acting as tools for stimulating reflexive thoughts on the use of technology in language teacher education. According to a number of studies dealing with teacher training (Brookfield, 2017; Ramos, 2002) and Narrative Inquiry (NI) (Polkinghorne, 1995; Clandinin & Connelly, 2011; Barkhuizen, Benson, & Chik, 2014), people who recount their own experiences are simultaneously reflecting on these experiences. These studies underscore the need for understanding how digital technology is employed in online language learning, while affording future teachers the opportunity to reflect on their practices.

The goal of this paper is to examine pre-service language teachers' digital practices, via their technobiographies, to shed light on how they choose a digital tool to learn a foreign language and explore their impressions about what is available online. Hence, this study aims to address the following question: How can the experience of learning a foreign language online inform pre-service language teachers' digital practices? The qualitative data contained in the technobiographies is analyzed within the NI paradigm, providing a comprehensible way to categorize the elements they contain.

2. Literature Review

The theoretical background to this study begins with an overview of CALL based on Stockwell (2012). To help understand pre-service language teacher's digital practices, we also outline ideas from radical constructivism, as explained by von Glaserfeld (1995). We discuss the importance of technobiographies within CALL studies, following Kennedy (2003) and Barton and Lee (2015). And finally, we describe how technobiographies are analyzed within the NI paradigm.

CALL: theories and approaches

Given the ever-broadening remit of CALL with the advent of new technology, it is useful to briefly survey some relevant strands. Table 1 lists a number of themes within CALL, compiled by Hubbard (2004), which differ in context, research goals and theoretical concepts.

Table 1 — Themes within CALL, according to Hubbard (2004)

CALI – *Computer-Assisted Language Instruction*
CBLT – *Computer-Based Language Training*
CELL – *Computer-Enhanced Language Learning*
TELL – *Technology-Enhanced Language Learning*
ICTinLT – *Information and Communication Technologies in Language Teaching*
NBLT – *Network-Based Language Teaching*

Hubbard (2008) notes that CALL has also grown by incorporating ideas from linguistics, language acquisition, and other fields, mostly related to education or second language acquisition. According to Stockwell (2012), all theories within CALL should consider at least two components: language learning, and learners' interaction with language-learning technology.

As this study looks at pre-service language teachers learning language with digital technology, it sits firmly within CALL. The participants of the study recounted their experiences of choosing and using the technology in their technobiographies, which featured two recurrent theoretical themes: ICTinLT (Information and Communication Technologies in Language Teaching) and NBLT (Network-Based Language Teaching). Thus, such themes were identified as key to this investigation.

ICTinLT is concerned with digital artifacts resources. Ammanni and Aparanjani (2016) list digital artifacts that are commonplace in today's teaching environments and explain how ICT improves the scope of teaching and the understanding of digital practices. NBLT deals with communication through digital technologies, which, according to Kern et al. (2008), refers to the pedagogical use of computers connected in either local or global networks, providing computer mediated interaction that focuses on understanding the effects of technology on language use. Both themes permeate this research through *context* — online language learning, *subjects*, pre-service language teachers, and *goal* —, which allows for the

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identification of how pre-service language teachers choose digital tools to learn a foreign language.

With respect to the affordances of digital tools, Paiva (2011) highlights the physical and social worlds, while Van Lier (2004, p.91) considers "relations, possibility, opportunity, immediacy, and interaction." On linking this to ICTinLT and NBLT, this investigation aims to elucidate: (1) how pre-service language teachers understand their *relationship* with technology (digital practices), (2) what technology offers pre-service language teachers in terms of online learning *possibilities* and *opportunities*, and (3) how digital technology can can facilitate *immediacy* and *interaction* to such teachers.

Given that experience plays a central role in this study, we adopt a radical constructivist epistemology. As explained by von Glasersfeld (1995, p. 1):

> (…) It is an unconventional approach to the problems of knowledge and knowing. It starts from the assumption that knowledge, no matter how it may be defined, is in people's heads, and that the thinking subject has no alternative but to construct what he or she knows on the basis of his or her own experience. What we make of experience constitutes the only world we consciously live in. It can be sorted into many kinds, such as things, self, others, and so on. But all kinds of experience are essentially subjective, and though I may find reasons to believe that my experience may not be unlike yours, I have no way of knowing that it is the same.

As seen in the citation above, radical constructivism seems to provide and ideal pragmatic framework for understanding how the pre-service teachers build up their knowledge as a result of their experiences using technology — experiences that the pre-service teachers are invited to reflect on in this study. The knowledge acquired by the pre-service teachers includes that of affordances. In the context of CALL, Stockwell (2012, p.7) explains that

> [D]iscussions of affordances in CALL contexts most commonly center around the enabling or restricting capabilities of technology in language learning, and the term is used to refer to how technology may help or hinder the learning process.

The affordances of digital tools will be specific to individual pre-service teachers, and depend on their experience, digital literacy, and language skills. When coming to choose a tool, pre-service teachers will naturally give strong weight to its affordances.

In summary, radical constructivism privileges knowledge acquisition via experience. As such, this study is rooted in pre-service language teachers' experiences of learning a foreign language with technologies, the reflections on digital practices derived from these experiences, and the affordances of digital tools discovered thereby.

Technobiographies in CALL

The history of language learning using artifacts, digital or otherwise, has been extensively discussed in CALL (Hubbard, 2004). Technobiographies have been inspired by developments in CALL research. Henwood et al. (2001) argued for the merging of theoretical studies with autobiographical accounts of experiences with technology. Indeed, the term "technobiography" served to highlight the central role of human relations with technology in a "playful exploration of technological experiences" (p.11). As stated by Kennedy (2003, p.123), technobiographies are "reflexive processes, reflecting on experiences themselves and on the act of constructing those experiences through writing." Kennedy notes the use of biography in social sciences, where it is underpinned by the epistemology of radical constructivism. Barton and Lee (2015), too, recognized the research methodology of technobiography as detailing life histories and narratives of the personal relationship between people and technologies (p.14).

To the best of our knowledge, technobiographies have not yet been used within the specific context of the present study, although Barton and Lee do make the connection to narrative inquiry. If a narrative is understood as an oral history, the use of (auto)biographies follows naturally as a method of exploring personal experiences and human relationships with technology. Thus, technobiographies are helpful for investigating the use of technology for language learning and for making sense of participants' experiences. In this research, technobiographies consist of oral histories and scripts: oral histories are audio recorded diaries of activities performed online, while scripts are participants' histories of interaction with technology. Oral histories and scripts constitute the collected data in this study, to be interpreted within the narrative inquiry paradigm.

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Narrative Inquiry

Narrative Inquiry (NI) is an analytical methodology applied across many fields (Barkhuizen, Benson, & Chik, 2014). Due to its interdisciplinary focus on the conditions in which things take place, this methodology is well suited for generating and analyzing stories of life experiences in language teaching and learning research contexts. Barkhuizen, Benson, and Chik (2014) further argue that NI can help researchers in applied linguistics understand how language teachers and learners organize their experiences and identities and represent them to themselves and others. This point of view is also found in Clandinin and Connelly's (2004; 2011) studies when the authors hold the idea that self-study movement empower the knowledge of educational field.

An advantage of the NI paradigm is the ability to track experiences, reflections, and histories within a CALL context, as the pre-service teachers learn online, record their impressions, and share their technobiographies. Since technobiographies are essentially narratives, NI seems to be all the more adequate paradigm to investigate them. Indeed, NI informs methods of data collection and their subsequent analysis and organization within categories, following Sefton-Green and Brown (2014), as explained in Section 3.

Technobiographies are resources for collecting life histories with technologies. For Clandinin, Pushor, and Murray Orr (2007, p.22) NI is not only for relating histories it is also a methodology that helps thinking about the experience. NI is considered by the authors as "a particular narrative view of experience as phenomena under study." (p.22)

Put differently, NI is a study of experience lived by people in an individual or social manner, considering temporality, sociality, and place. As for the biographical content of technobiographies, Barkhuizen, Benson, and Chik's (2014, p. 4) note that:

> In biographical approaches, the researchers analyze or tell participants' stories; in autobiographical research, they analyze or tell their own stories. These terms also delineate more specialized approaches within the broad field of narrative inquiry; (…) Recognizing that the distinction between biography and autobiography is often blurred in research, (…) the term "(auto)biographical" describe research that involves either, or both, third-person and first-person data and methods.

At this point it is worth mentioning that according to Polkinghorne (1995), the objective of a research project determines the linguistic form in which human activity is reported. In other words, according to the author, the narrative is configured as a discourse that brings together events and actions of human beings in situations that deal with the same theme.

Thus, the format of the data in this study, namely the audio recordings and technobiographies of "purposefully engaged" pre-service teachers, goes hand in hand with its analysis via NI. To better identify patterns in the technobiographies, we follow Sefton-Green and Brown (2014) to categorize and subcategorize the data. In this way, the relation to digital practices is highlighted and tied to the research question of this study.

3. Methodology

The study context

This case study was conducted at a federal university in the southern region of the state of Minas Gerais, Brazil, in 2018, during a class in the final year of the teacher training course *Information and Communication Technology in English Language Teaching*. The course exposed pre-service language teachers to the theory and practice of CALL. It lasted four months, with two meetings of one hour and forty minutes each, per week, in an Information and Communication Technology Laboratory. Data was collected twice. At the beginning of the course the pre-service teachers made audio recordings over a period of five weeks, and in the last month (after finishing the course content) they wrote their scripts.

During the first month, the pre-service teachers were asked to choose one digital technology tool with which to learn a foreign language. Up to this point their exposure to CALL was introductory, so as not to unduly influence their decisions or reflections on their experiences. The pre-service teachers were encouraged to search online via computers or mobile phones, and recount these experiences in their audio recordings. The audio recordings followed the guidelines presented in Appendix 1, which were previously approved by the university's ethics committee[3]. In their audio recordings participants were instructed to talk about CALL from a foreign language

3. Universidade Federal de Lavras committee. Process number 87073018.4.0000.5148

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student perspective, and how they might use what they learned as future language teachers. They were asked to report on the availability of online foreign language tools, and how they went about deciding upon the most appropriate tool for themselves.

In the last week of the course, participants were asked to write scripts answering questions on their history with technology (Barton and Lee, 2015, p.254, *adapted*), as presented in Appendix 2. The scripts were written in Portuguese and reproduced here in English, respecting original grammar and vocabulary choices.

Participants

The course was attended by eighteen students. Fourteen accepted the invitation to participate in the study according to the rules of the university's ethics committee. The group was heterogeneous in terms of CALL background, language skills, gender, and age, as summarized in Table 2.

Table 2 — Participants' information

		Number of participants
Pre-service language teachers	who accepted to participate	14
	whose data were selected for analysis	03
CALL experience	no prior experience	05
	little experience	07
	significant experience	02
CEFR language skill level	A2	05
	B1	06
	B2	01
	C1	02
Gender	female	08
	male	06
Age	early 20s	08
	early 30s	04
	late 30s	02

Most of the participants had no prior experience of teaching a foreign language, but had attended at least three semesters of the supervised internship required by the language course program. This exposed them to a foreign language classroom environment. Because of space limitations, data from only three participants will be used in this article. The selection was based on the number of tasks completed by each participant. Participants A, B, and C completed all tasks.

Data collection and analysis

Before the study began, procedures were approved by the university ethics committee and presented to the pre-service language teachers who agreed to participate in the study. Written informed consent was sought ahead of data collection. An overview of the collected data from the fourteen pre-service teachers who participated is given in Table 3.

Table 3 — Data collection overview

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Audio 1	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Audio 2	√	√	√		√		√	√	√	√	√	√	√	
Audio 3	√	√	√	√	√	√		√	√		√			
Audio 4	√	√	√		√		√							
Audio 5	√	√	√			√								
Script	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Total	6	6	6	3	5	4	4	4	4	3	4	3	3	2

All eighteen pre-service teachers attended the same introductory course on CALL, whether or not they participated in the study. The teacher in charge of the class, who was not the researcher, led the discussions and stressed the importance of evaluating experiences as users, students, and future teachers. The Moodle platform was used to illustrate CALL in practice. Theoretical discussions were held concurrently throughout the study, as the participants learned a foreign language online and recorded their oral diaries. The participants uploaded their audio recordings onto Moodle. The researcher used the "Speechlogger" software[4] to transcribe the recordings, and double-checked the output by hand.

4. https://speechlogger.appspot.com/

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After analyzing the transcriptions, the researcher then downloaded the scripts containing the technobiographies, which the participants had also uploaded to Moodle. The entire data of all fourteen participants was analyzed, before concentrating on the three participants that had completed all tasks. The NI framework was used to collect and organize the data. As argued by Polkinghorne (1995), NI offers a paradigmatic view of the data. Elements in the technobiographies were identified according to Sefton-Green and Brown's (2014) categories and subcategories namely, (1) People: family, peers, teachers, (2) Place: school, university, extra-curricular, (3) Identity: interests, inspiration, expertise, self-directed learning, gender, perceptions, and (4) Future: decision-making, careers.

4. Digital practices and technobiographies in focus

To investigate how the experience of learning a foreign language online can modify the way pre-service language teachers perceive their digital practices, data was collected with two different research tools, as explained in Section 3. The next two subsections describe the audio recordings and scripts, respectively.

First tool — audio recordings — How perspectives shift between learners and teachers regarding the use of online tools and their affordances.

In describing experiences of learning a foreign language online, while relating them to digital practices, participants A, B, and C focused on tasks and tools. As recounted by participant A in Excerpt 1:

> Excerpt (1)
> A: "it is an English app, it offers placement test, grammar focus. *After doing the test* you choose a goal, I chose the theme travel, *very funny and cool* and interactive, *it encourages you* to watch videos in English and do tests after them. *It provides you* a dictionary, a glossary and different types of content."

If we relate the categorization in Excerpt (1) to Stockwell's (2012) views on technological affordances, participant A seems to be concerned with the enabling and restricting capabilities of technology in language learning.

Also, by using expressions such as *funny* and *cool,* the participant shows how learning with an online tool can be enjoyable.

In the same vein, participant B highlights how the learning process unfolds in Excerpt (2):

Excerpt (2)
B: "it is an app, but I am using it in the notebook, it is a learning platform. I chose to learn French. *The content is easy* and *I will learn with practical activities, translation and repetition focus, I was learning by repetition."*

In Excerpt (3) participant C focuses on how language content is presented:

Excerpt (3)
C: "it is an app to learn German. *it is clean, colorful, has images, we have the opportunity to listen to pronunciation, write words.*"

Excerpts (1), (2) and (3) highlight affordances from the perspective of a learner. In terms of the participants' digital practices in online learning, almost all of the five audio recordings of each participant emphasize learning contexts.

In Excerpts (4) and (5), participant A goes through some of their activities while considering possible approaches, learning contextualization, and the autonomy they gained via their digital practices and chosen artifact.

Excerpt (4)
A: "the app has activities that *help us to make communicative use of the language*, it shows words in their context of use and *you learn their meaning related to the context*, you know in which context that meaning can be used."

Excerpt (5)
A: "learning using technology is not easy, *the discipline that we have to have in order to use the technology to learn autonomously is very complicated.*"

Occasionally, participants compare their digital practices to previous methods of learning. For example, in Excerpt (6), participant A recounts:

Excerpt (6)
A: "today was cool, there is one part of it called: organize words. This activity is a mixture of literature in English with English language teaching, so I thought it

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was very interesting. I chose Adventures of Tom Sawyer and Huckleberry Finn, a book by Mark Twain *which the literature teacher worked through with us in the literature class.*"

Meanwhile, in Excerpt (7), participant B highlights the convenience of learning online:

Excerpt (7)
B: "that is why I have chosen this app, while studying *I can do the activities while I take care of the baby*."

However, in Excerpt (8) participant C points out that autonomous learning may lack human interaction:

Excerpt (8)
C: "when you are doing it, the way you want, in your own time, in a dynamic and funny way, *but at the same time you do not have anybody to discuss these issues with*. So everything that I want to know I have to take note of and go to Google and research."

Excerpt 8 also seems to show that participant C is likely to be overlooking or to be unaware of the social affordances of online technology, as part of a "relational" process of learning (Stockwell, 2012). Thus, her digital practices could have taken a different path, had she considered sharing her insights, experiences, and skills with others online.

All participants were encouraged to evaluate their online experiences from the perspective of a future teacher, envisaging the affordances of digital tools in a classroom. In Excerpt (9), participant B objects to an artifact's mandatory use:

Excerpt (9)
B:"*I do it because I have to do the task*, so I have a big criticism at this time; the exercises are repetitive and became very boring over time."

In contrast, in Excerpt 10, participant C relates that:

Excerpt (10)
C: "this issue that the teacher evaluates the process is also interesting among all these issues that I present, *it is very interesting for us to work on in a classroom*. This technology is a way *that really helps the student and that is not just one more accessory tool.*"

Thus, while the app is not attractive enough for participant B to continue her studies online (Excerpt 9), participant C (Excerpt 10) envisages how her digital practices could be modified as a future teacher.

In summary, the audio recordings help reveal elements of the participants' digital practices and their opinion of digital tools. The participants were also able to anticipate how their digital practices could change as they transitioned from learners to teachers.

Second tool — scripts — Perspectives of participants' history with technology from their technobiographies

The technobiographies from the scripts written at the end of the semester were analyzed to shed light on the participants' history with technology. The data were allocated according to Sefton-Green and Brown's (2004) categories (people, places, identity, futures) and their respective subcategories (family, peers, teachers; school, university, extra-curricular; interests, inspiration, expertise, self-directed learning, gender, perceptions; and decision-making, careers; see Appendix 3), and are summarized in Tables 4 to 7.

Table 4 — First category - PEOPLE related to the participants' history with technology

	Participant A	**Participant B**	**Participant C**
Family	*Aunt* - "first one to have a computer." *Parents* - "always thought that technology was important."	*Parents* - "important for the learning process."	"*My mother.*"
Peers	X	X	"My first contact with technology came via my *neighbors and friends*."
Teachers	X	X	"Encouraged me to study."

Table 4 shows that all participants were influenced by family, reflecting the importance that family members give to technological literacy. Only participant C was encouraged by the teacher, which suggests that we need to reconsider the importance of technology in education.

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Table 5 — Second category - PLACE where the participants had contact with technology

	Participant A	Participant B	Participant C
School	X	X	"Contact with the technology at school."
University	"I have learned a lot about language teaching using technological tools."	X	"The quantity of things to do related to the course." "I use facebook to keep in touch with people from the university."
Extra-curricular	"My aunt's home."	"At home."	"My neighbors and friends' houses."

All participants mention "home" as the most common location in which digital experiences took place. Two participants mention the university. Probably, prior exposure to technology within their and other people's homes may have helped participants to be prepared for later academic use of technology.

Table 6 — Third category - IDENTITY and its construction as a result of the participants' experiences with technology

	Participant A	Participant B	Participant C
Interests	"It is not limited to social media but I use facebook, twitter, Instagram." "Subjects that I am interested in like feminism."	"Social media, netflix, university pages."	"I use technological resources for my academic life." "I use facebook to keep in touch with people from the university." "I post comments when I need some information." "I take part in votes which I consider important."
Inspiration	X	"My father has a degree in information systems, we used to live with computers and other electronic artifacts."	X
Expertise	"My own blog."	"I am a digital native."	X

	Participant A	Participant B	Participant C
Self-directed learning	"In my blog I develop the site and add elements that I think are relevant." "Today I do routes using the technology and map research."	"Used to play with the computer using those CDs made to *learn English.*"	"Better to use the technological resources."
Gender	X	X	X
Perceptions	"I have learned a lot about language teaching using technological artifacts."	"I did not change my social practices with internet use because I am a *digital native*." "Technology is essential in people's lives, academic and professional."	"I need to prepare more to use the technological resources."

Within the *Identity* category, the three students mentioned experiences related to the subcategories "self-directed learning" and "perceptions". Only one of the participants explicitly connected her experience with language learning. As for participants' perceptions, there was an awareness of the importance of technology and the need to develop digital literacy. Such perception concurs with Stockwell's (2012) observation concerning the empowerment of users to make choices over digital tools based on their affordances. Providing users with the opportunity to exercise such choices helps develop their digital practices and their ability to learn languages online. Interestingly, the participant who described herself as a digital native found no reason to change her digital practices as a result of her experiences during this study.

Table 7 — Last category - FUTURE and how the participants' experiences with technology influence it

	Participant A	Participant B	Participant C
Decision-making and Career	"As a teacher I would use the activities that my classmates presented in the micro-classes." "*All of them were very relevant for my practices as a teacher*."	"I use/would use the technology as a professor, because *I believe that is very beneficial to the learning-teaching processes in many aspects*."	"*As a teacher I would use the computer, the camera, the cell phone, the data show*, depends on the activity and the teaching approach."

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As is clear from Table 7, all the participants claim they would use technology as future teachers. This reinforces still further the need to improve digital practices, and make use of experiences such as learning languages online. By the end of their course, the participants viewed technology not only in the light of their individual learning experiences, but as tools in future classroom practice. We believe that these findings can help teachers design meaningful curricula to enrich the professional development and future practice of pre-service foreign language teachers.

5. Results, limitations, and discussion

The assumption that young people in the 21st century automatically know how to use digital technology, deserves careful scrutiny — particularly when it comes to educational technology. Within the NI paradigm (Polkinghome, 1995), we analyzed three pre-service language teachers' experiences of learning a language online, contextualized by their individual histories with technology. As such, it was possible to examine their digital practices on a case-by-case basis.

However, with such a small sample size one must exercise caution when putting forward a general prescription for digital technology use in teacher training classes. As fundamental as digital technology may be, the success of the process of learning to use digital tools depends on the people involved in it, the environment as well as the participants experiences prior to or during such process. Nevertheless, this study offers researchers a theoretical basis with which to understand the path users take in learning a language with digital technology. Its relevance lies in the fact that the use of digital tools in education is likely to greatly increase in the coming years.

This study also highlights that pre-service teachers will each have their own prior experiences with digital technology, as revealed in their written technobiographies, i.e., their own initial digital practices as they arrive as students in teacher training classes. As such, in the course of learning a language online, pre-service teachers will have opportunities to reflect on their digital practices and envisage the use of digital tools as future teachers. We hope that these findings encourage CALL researchers to consider technobiographies as a potential research tool, enhancing the understanding of digital experiences more generally (Kennedy, 2003).

6. Conclusions and implications for CALL

Learning is not just a question of being exposed to content and doing what one is told to do. It is a complex process of reflection on particular practices and acting upon this reflection in digital technology contexts. We argue that technobiographies are insightful sources of data for those interested in language teachers' professional development because they can be used to better understand pre-service teachers as users, language learners, and future teachers in their language learning and teaching processes mediated by technology.

This study also highlights the importance of reflecting on experiences. In reporting their experiences, the participants came to understand their own language learning processes and the affordances of the digital tools they chose. By doing so, participants could formulate new digital practices as they envisaged the ever-expanding use cases of digital technology in CALL.

Conflict of interest

The corresponding author has no conflict of interest to declare and bears full responsibility for the submission.

Data availability

The data used in this study is available upon request to the corresponding author Patricia Vasconcelos Almeida. The data is not publicly available because it contains information that compromises the privacy of the research participants.

References

Ammanni, S., & Aparanjani, U., (2016) The Role of ICT in English Language Teaching and Learning. *International Journal of Scientific &Engineering Research*, *7*(7),1-7. Disponível em: https://www.ijser.org/researchpaper/THE-ROLE-OF-ICT-IN-ENGLISH-LANGUAGE-TEACHING-AND-LEARNING.pdf (Access 20 June, 2018).

Barkhuizen G., Benson P., & Chik A., (2014). *Narrative inquiry in language teaching and learning research*. Routledge.

Barton, D., & Lee, C. (2015). *Linguagem online: textos e práticas digitais.* Parábola Editorial.

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Brookfield, S.D. (2017). *Becoming a Critically Reflective Teacher.* (2nd ed.) Jossey-Bass. (Original work published 1995)

Clandinin, D. J; & Connelly, F. M. (2011). *Pesquisa Narrativa: experiências e história na pesquisa qualitativa.* (2nd ed. GPNEP- ILEEL- UFU Trans.) EDUFU.

Clandinin, D. J., & Connelly, F. M. (2004). Knowledge, narrative, and self-study. In J. Loughran, M. Hamilton, V. LaBoskey, & T. Russell (Eds.), *International handbook of self-study of teaching and teacher education practices* (1st ed., pp. 575–600). Springer.

Clandinin, D.J., Pushor, D., & Orr, A.M. (2007). Navigating Sites for Narrative Inquiry. *Journal of Teacher Education.58*(1), 21-35. https://doi.org/10.1177/0022487106296218

Eslit, E. (2017). *Computer Assisted Language Teaching: learning without dust*. Disponível em: https://www.researchgate.net/publication/320486566_COMPUTER_ASSISTED_LANGUAGE_TEACHING_LEARNING_WITHOUT_DUST (Access 10 December, 2017)

Glasersfeld, V. E. (1995). *Radical Constructivism: A way of Knowing and Learning.* Falmer.

Glasersfeld, v. E. (1984). An introduction to Radical Constructivism. In Watzlawick, P. (Eds) *The invented* reality (pp.17-40). Norton.

Hafner, C. A, Chik, A. & Jones, R. H. (2015). Digital Literacies and Language Learning. *Language Learning & Technology.19*(3), 1-7. Disponível em: http://llt.msu.edu/issues/october2015 (Access 18 December, 2019).

Henwood, F., Hughes, G., Kennedy, H., Miller, N., & Wyatt, S. (2001). Cyborg lives in context: writing women's technobiographies. In F. Henwood, H. Kennedy, & N. Miller (Eds) *Cyborg lives? Women's technobiographies* (pp. 11-34). Raw Nerve.

Hubbard, P. (2004). Linguistics and the Teaching of English as a Second/Foreign Language. Disponível em: http://www.stanford.edu/class/linguist289/call1.htm, 2004. (Access 10 August, 2006).

Hubbard, P. (2008). Twenty-five years of theory in the CALICO Journal. *CALICO, 25*(3), 387-399. Disponível em: http://www.jstor.org/stable/calicojournal.25.3.387 (Accessed 12 July, 2012)

Kennedy, H. (2003). Technobiography: researching lives, online and off. *Biography*, *26*(1), 120-139. Disponível em: http://www.jstor.org/stable/23540390 (Access 16 March, 2018)

Kern, R., Paige, W. & Warschauer, M. (2008). Network-based language teaching. In P.Broder & W. Martyniuk (Eds.), *Language Education in Europe: The Common European Framework of Reference* (pp.281-292). Disponível em: https://www.researchgate.net/publication/227018800_Network Based_Language_Teaching (Access 22 April, 2018) https://doi.org/10.1007/978-0-387-30424-3_105

Paiva, V. L. M. O. (2011) Affordances for language learning beyond the classroom. In Benson, P.; Reinders, H. (Eds.) *Beyond the language classroom*. (pp. 59-71). Palgrave McMillan. https://doi.org/10.1057/9780230306790_6

Polkinghorne, D. E. (1995) Narrative configuration in qualitative analysis. *Qualitative studies in Education, 8*(1), 5- 23. https://doi.org/10.1080/0951839950080103

Ramos, R. de C. G. (2002). Necessidades e priorização de habilidades: reestruturação e reculturação no processo de mudança. In Celani, M. A. A. (Eds.), *Professores e formadores em mudança: relato de um processo de reflexão e transformação da prática docente* (pp. 55-68). Mercado de Letras.

Sefton-Green, J., & Brown, L. (2014). Mapping learner progression into digital creativity: catalysts & disconnects. *State of the Art Review.* Disponível em: https://socialtechtrust.org/wp-content/uploads/2017/11/Mapping-learner-progression-into-digital-creativity-FINAL.pdf
(Access 01 December, 2017).

Stockwell, G. (2012). *Computer-Assisted Language Learning.* Cambridge University Press.

Van Lier, L. (2004). *The Ecology and Semiotics of Language Learning: a Sociocultural Perspective*. Kluwer Academic.

Zinger, D., Naranjo, A., Naranjo A., Gilbertson, N., & Warschauer, M. (2017). A design-based research approach to improving professional development and teacher knowledge: The case of the Smithsonian Learning Lab. *Contemporary Issues in Technology and Teacher Education*, *17*(3), 388-410.

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Appendix 1

FIRST WEEK AUDIO - Describe the whole process of making choices, what was easy or difficult, where you were satisfied or dissatisfied, and any other aspects you think are important for me to know. Give your impressions on the process of learning a foreign language in an autonomous way through digital technology.

SECOND WEEK AUDIO - Describe your study routine, as well as the challenges faced in accomplishing the task.

THIRD WEEK AUDIO - Give as much detail as possible about what you are doing. I am expecting reports on how this experience is affecting you as a student and as a future teacher. How was the process of choosing the learning tool (platform) you are using? And why did you use this tool?

FOURTH WEEK AUDIO - What are your thoughts on the available online resources you converged on, and describe how you understand your online activities. What are your impressions of this online learning process?

LAST WEEK AUDIO - Describe how you went about choosing your learning tool. You will be asked to reflect on the activity you performed this week, and provide a general and thorough evaluation of what you experienced during these weeks of CALL activities.

Appendix 2

How it all began:
Where was your first contact with digital technology?
How was your first contact with digital technology?
What have you done with technology and what do you not do anymore?
Do you remember when you first used a mouse, sent a message, searched on Wikipedia, logged into Facebook?
Which person/people was/were important in your learning process?

Current Practices:
Which web pages/blogs do you visit the most?
Do you contribute to any of them?
Are there differences in the daily use of technology in your student or professional life, activism, political or religious activity, sport, etc.?
Have you experienced any prohibition regarding the use of some technology?

Participation:
Do you participate in social networks? If yes, describe your participation. If not, why?
Do you post comments on news or product announcements?
Do you participate in web voting? If yes, what type of voting?
Have you uploaded images and videos to receive comments? If yes, where?

A day in your life:
Thinking about yesterday, what technology did you use upon waking up?
What technology did you use throughout the day.

Transitions:
What social practices have you changed as a result of technology? E.g. recording addresses of people, making appointments, using maps, etc.
What have you not done that you want to do?

Comparisons:
What differences do you perceive in how technology is used by older generations (parents, grandparents, acquaintances) and younger generations (children, students).
Can you identify differences among cultures, foreign friends and genders?

Evaluation:
What are your feelings about technology?
What were the most positive and negative experiences?
What do you use or would use as a teacher? Justify.
Write a little bit about the class (how could it be improved) and its content.

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Appendix 3

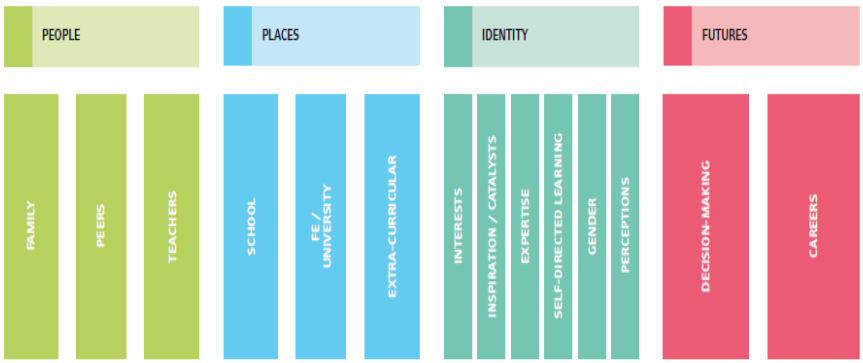
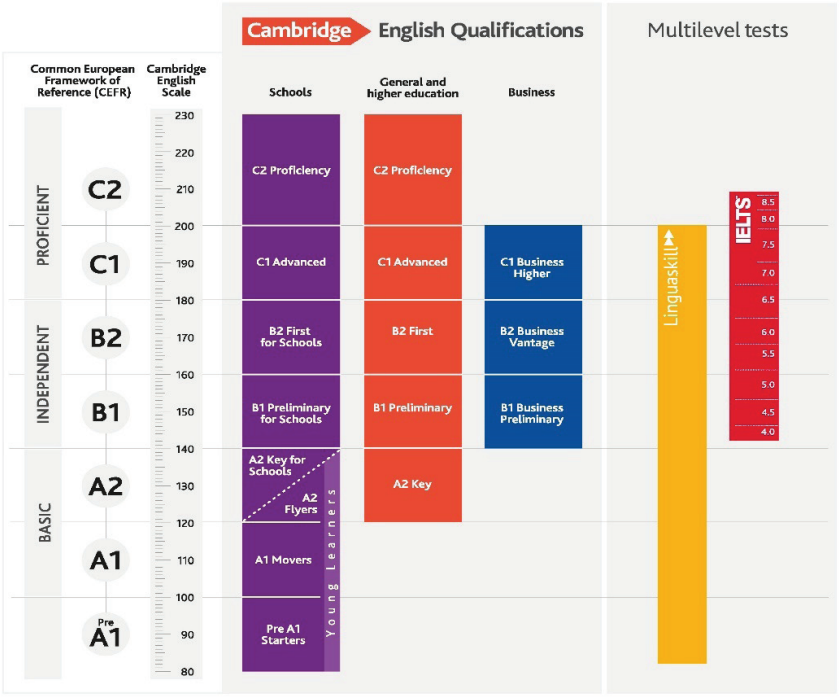


Fig 2 - Category axis of creative career maps

Appendix 4

The Common European Framework of Reference for Languages (CEFR)



https://www.cambridgeenglish.org/exams-and-tests/cefr/