

PhD by LMS: Using a learning management system to facilitate self-directed learning in a doctoral study

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Doctoral studies can be daunting unless candidates are able to implement effective self-directed strategies and motivational tools to ensure success, which is reflected in the high attrition rates of doctoral candidates globally. This paper explores the use of a learning management system (LMS) to support the completion of a PhD for a doctoral candidate in a regional university enrolled in the online offering. The LMS was used throughout the PhD journey by the candidate to manage and organise documents related to the PhD study and reflect on progress. Using a digital ethnographic methodology, we analyse artefacts from the LMS through the lens of self-directed learning including cognitive, metacognitive, affective and social strategies. Findings showed that the LMS proved to be a useful way to organise, access and store information and had tools to enable motivation, both by the doctoral candidate and the supervisor. They also showed that the relationship between the candidate and supervisor was critical in this success. Implications from this digital ethnography highlight important self-directed strategies enabled through the use of the LMS. In addition, the LMS allowed deep reflection on PhD progress and provided the necessary motivation to complete the study. Therefore, LMS use could potentially increase doctoral candidate retention.

Implications for practice or policy

- Supervisors within universities could consider facilitating an LMS as an effective learning environment to organise, access and store information for a doctoral student's studies.
- Doctoral students may benefit from the pedagogical tools in an LMS to enhance self-directed study and facilitate communication with supervisors during their doctoral studies.

Keywords: doctoral studies, learning management system, self-directed learning, digital ethnography, supervision

Introduction

With an increasing number of doctoral candidates studying entirely online (Mirick & Wladkowski, 2020), particularly throughout COVID-19 (Adedoyin & Soykan, 2020), it is important to identify strategies that support completion. Despite a plethora of research of effective strategies to promote online learning, there are limited studies related to postgraduate studies such as those at the doctoral level (Berry, 2017).

This qualitative study explores the experience of a PhD candidate in using a learning management system (LMS) to facilitate self-directed learning to successfully complete their studies by the earliest due date. The study is important to identify barriers to studying a doctorate in an online learning environment and effective strategies that were implemented in order to complete.

Using a digital ethnographic approach, this study examined data from an LMS used to enhance self-direct learning. The research question was: What are the successful elements required within an LMS to facilitate self-directed learning in a doctoral study? Our reflections – from my perspective as candidate and that of my principal supervisor – assisted in making meaning of the artefacts from the LMS and analysing the effectiveness of the strategies in completion of the doctorate.

Literature overview

Online learning has been increasingly recognised as a convenient way for candidates to study for the past few decades (Burke et al., 2022), along with a sharp increase in online offerings during COVID-19 to enable continuation of study with the absence of face-to-face interactions throughout the pandemic (Sim et al., 2021). Similarly, there has been an increasing number of doctoral candidates enrolled online (Mirick & Wladkowski, 2020) to meet the needs of students from diverse geographical locations (Lee et al., 2022) and mid-career adult learners (Williams et al., 2019) who have established work and social responsibilities that benefit from studying online at their own pace.

High attrition rates for doctoral candidates are the highest of all study, surpassing undergraduate and master's programmes (Cockrell & Shelley, 2010; Spaulding & Rockinson-Szapkiw, 2012). Lehan et al. (2021) stated that "attrition rates can be as high as 70% for Doctor of Education (EdD) programs compared to 40% to 60% for other doctoral programs, with online programs having a 10% to 20% higher attrition rate than traditional face-to-face programs" (p. 9).

Reasons for attrition have been associated with time, access to resources and support from others. Online doctoral candidates were found by Williams et al. (2019) to be time pressured, with many working long hours, trying to balance work, life and study (Sharabani et al., 2023). Lee et al. (2022) suggested that online doctoral candidates were also overwhelmed by the number of resources online and the complexity of technology. Difficulty in negotiating access to resources within learning was supported by Al-Adwan et al. (2022), who found that learning content and design were fundamental for academic success and students who experienced success in online learning were self-directed in accessing resources.

The relationship between the doctoral candidate and supervisor has also been noted to impact the success for the online study experience (Baguley et al., 2018). Recent research (Sharabani et al., 2023) found that the support provided within the learning environment influenced the candidate's ability to persevere in their studies. Lundgren-Resenterra and Crosta (2019) found that the success of the online doctoral candidate went beyond their own efforts, and the relationship between supervisor and the doctoral candidate could impact the success of the online study experience. However, for online doctoral candidates, the relationship with the supervisor is not as easy to build, without the ability to informally drop in on their supervisors in person (Lee et al., 2022); and as a result, online students had a higher utilisation of librarians and advisers than on-campus doctoral candidates.

Communication between students and supervisors was identified as important in a study by Al-Adwan et al. (2022), who looked at 590 undergraduate and postgraduate students in Jordan. They found that to be successful in online learning environments, the student must be supported by communication (both synchronous and asynchronous) between student and instructor. Focused on relationships between doctoral candidates and supervisors, Khan and Mikuska (2023) concluded that negative relationships can impact well-being of the candidate and impact completion. Al-Adwan et al. (2022) recommended doctoral students enrolled in the online learning environment could enable the use of pedagogical tools to facilitate effective interactions between candidates and supervisors.

Personal attributes of the candidate have also been found to influence doctoral completion. Nguyen and Robertson (2020) found that to be successful in completion, candidates need to have agency in learning by taking control of their thesis and direction for study and showing initiative in their studies. In the online learning space, self-directed learning has been seen as an essential strategy for completion of studies (Amini & Kruger, 2022). Bosch et al. (2019) defined self-directed learning as when "students determine their own learning goals, select resources to achieve these goals, choose their preferred learning strategies and reflect on the outcome of the learning process" (p. 2). Self-directed learning has been shown to be important for students to take responsibility to manage their learning resources (Lee et al., 2022) and motivation to meet learning goals (Al-Adwan et al., 2022; Sun et al., 2022). Therefore, we were interested in how an LMS was utilised by a doctoral candidate to both self-direct and maintain motivation to complete their studies.

Conceptual framing

To conceptualise the data, we used the lens of self-directed study, based on four effective strategies for learning in digital environments (Hsiao & Oxford, 2002, as explained in Lai et al., 2022, pp. 7752–7753):

- Cognitive strategies mean mentally processing learning materials, such as auditory representation, imagery, repetition, grouping, inferencing, translation, resourcing, deduction, summarising, recombination and note taking.
- Metacognitive strategies are associated with analysing planning, monitoring, and evaluating the learning process, such as *selective attention, advance organisers, directed attention, self-management and self-evaluation*.
- Affective strategies involve managing the emotions, such as *self-encouragement, self-reinforcement and self-talk*.
- Social strategies concern interacting with people for the purpose of increasing the opportunities to practice foreign languages and get feedbacks, such as *cooperation and questioning for clarification*.

Additionally, we used reflective practice to underpin this ethnographic study. Reflective practice in professional contexts has been explored extensively in the literature. Early work by Dewey (1910/1933) noted that reflection is important for both personal and intellectual growth. Similarly, Schön (1983) explored the concept of the reflective practitioner. He discussed the importance for professionals to practise reflection-in-action and reflection-on-action to improve the conditions in which they work. Many models of reflective practice have been offered in the literature, particularly within the higher education context. One such model is the 4Rs model (Ryan & Ryan, 2013). The 4Rs model involves four levels of reflection that can help practitioners reflect more deeply than by just reporting on an incident or situation they face. The 4Rs are reporting, relating, reasoning and reconstructing. Table 1 shares a description of each level of reflection (Ryan & Ryan, 2013, p. 254).

Table 1
The 4Rs model – level descriptions

Level of reflection	Description
Reporting	Describe an incident or experience in as much detail as possible.
Relating	Draw a relationship between the incident with past experiences and/or conceptualisations or theorisations in a similar or different profession.
Reasoning	Consider how this theory or concept may link with or be influenced by ethical, social or political factors.
Reconstructing	Develop a plan of action for the future that creates positive change.

In reporting, the person reflecting describes a situation where they may also offer opinions, observations and further questioning. With relating, the person thinks about their own skills and professional experience to date and how the situation might be similar or dissimilar. When reflecting, it is important to recognise any other research or another's experience that has highlighted similar issues. Being able to find the evidence for such occurrences is critical to deep reflection. And finally, considering ways in which things could be improved next time is important for growth to occur. It is important to note that the model is not linear. For example, people could start reflecting on an issue by first reasoning why it happened and then reporting on what happened. Or students could be addressed with a hypothetical scenario and asked how they would have dealt with it and then the other levels of reflection would occur so that more meaning and information are gained.

In this paper, we used Ryan and Ryan's (2013) 4Rs model to identify which level of reflection we were using when considering our experiences in working together throughout the PhD journey. It was important to know whether or not we had considered all angles and were able to acknowledge our growth along the way, both as PhD candidate and supervisor.

Methodology

This qualitative study used a digital ethnographic approach (Jensen et al., 2022) to explore how I used an LMS as a doctoral student to self-direct and reflect on my PhD journey and to communicate to my supervisor. I used a Moodle application to upload the study materials, organise due dates and regularly update personal blogs to reflect on my progress and communicate to my supervisor. By doing so, I was able to successfully complete my thesis, from confirmation of candidature, within 2 years.

In relation to higher education, ethnography has been used to examine cultural aspects of teaching and learning (Wieser & Ortega, 2020). As such, an ethnographic approach to exploring phenomena in context allows the researcher to examine both factual data and information about teaching and learning as well as reflect and interpret various artefacts (Hammersley, 2018). Adaptations to ethnography have emerged over time (Hine, 2015), including ethnography within online environments, which Jensen et al. (2022) termed *digital ethnography*. Differing from a focus on analysis of the learning analytics within the LMS, a digital ethnography focuses on the interactions within the LMS, to enable a “rich contextual knowledge of online experiences” (Jensen et al., p. 1143). This was important for this study as the LMS provided a space to reflect on both the challenges and successes of undertaking my doctoral studies, while using the rigour and ethics of an ethnographic approach over a period of approximately 2 years (Jensen et al., 2022).

Participants

This paper examines my experience completing a PhD as a doctoral candidate at a regional university in Queensland, Australia. I was enrolled full-time in an online offering of a Doctor of Philosophy in the field of education. During my studies, I worked full-time, while juggling caring responsibilities for my four children. Already employed as an academic in the role of senior lecturer (mathematics), I was confident in enacting pedagogical tools within the LMS and had received teaching awards for use of technology to support students' learning.

My co-author, Georgina, was my principal supervisor and also a colleague, working as a professor of arts and literacy in the same faculty of the university. Although known to each other, we did not have any work interaction that would cause a conflict to the supervisory process. Georgina had supervised approximately 10 doctoral and master's students to completion.

The university used the Moodle application to facilitate online and blended learning. The idea to use the LMS to manage my doctoral studies originated from finding the research part of academia difficult to navigate. I constantly felt overwhelmed and disorganised and pondered that if housing my doctoral readings, research and study schedules in an LMS (such as in the courses I teach) might create a better learning environment for my own study. The LMS was a Moodle sandpit available for staff members of the university to trial technologies that could be embedded in their courses.

Methods and analytical method

Several methods were used for the purpose of this study. Aside from the uploaded reflections or blogs, literature summaries, completed PhD chapters, presentations and artefacts such as photos and other images were all employed to gather perceptions about the PhD journey. The analysis was undertaken in three parts. First, we jointly looked through the LMS, to identify elements that were used to structure and complete my doctorate. Once these elements were identified, we then individually reflected on our understanding of these elements as well as the impact they had on completing my doctoral studies. Finally, we jointly analysed our reflections to identify the level of reflection for each element. This three-part process elicited a shared understanding of the artefacts and their role in facilitating self-directed study in the successful completion of my doctoral studies.

Findings and analysis

The four strategies from the conceptual framework of effective learning strategies for self-directed study in an online learning environment (Lai et al., 2022) are used to present the findings. Data from the LMS are described as to how they relate to each strategy, along with reflections from both myself as the student and from my supervisor to interpret how these artefacts were used to support self-directed study on the LMS, in line with the intent of ethnographic research (Hammersley, 2018).

This section shares the findings of my use of the LMS through the lens of self-directed learning. This first of many blogs explains how the PhD by LMS began (Figure 2).

Blogs

Thesis by LMS

Time for confirmation ▶

Display replies in nested form ⌵ Settings ▾

Thesis by LMS
by Melissa Fanshawe - Friday, 26 July 2019, 3:02 PM

Although only in higher education for the past three years, I have been a teacher for twenty years. It is not surprising that I thrive in the teaching element of academia; I love teaching content, I love the pedagogy and I love the practical elements.

However my PhD has been a totally different story. I have wandered through different topics, feel overwhelmed by the theoretical elements, readings, information and organisation, that I just don't think I can do this.

Then one day I was chatting with a colleague and expressed my desire to do my PHD on my Learning Management System (LMS). For me it gives me great satisfaction in designing fabulous learning environments for my students, why couldn't I create one of my own?

So here I am, a few days later after waiting (not so) patiently for the professional learning space to be created for me, now ready.

I look forward to taking you on the journey, where I hope to organise my thesis by LMS.

Permalink Edit

Figure 1. Initial forum blog describing how the LMS originated

Cognitive strategies

The organisation of what would typically be considered learning materials was uploaded to the LMS (Table 2) in five sections: (1) PhD Current Readings, (2) Read and added to EndNote, (3) Methodology readings, (4) Other PhDs and (5) Curriculum scope and sequence. After finding an article in the university library or other source, it was uploaded to the LMS. After reading, it would be moved by dragging the file from PhD Current Readings to the relevant section and the citation added to the EndNote gallery. If the article was determined to be not suitable to be used, the file was deleted from the LMS.

Table 2

Artefact 1: Organisation of readings

Description: A place to keep readings	<div style="border: 1px solid #ccc; padding: 5px;"> <p style="text-align: right; margin: 0;">Topic</p> <p>▼ PhD Current Reading</p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> <p> FILE ERIC search for VI and EXPANDED CORE CURRICULUM since 2002</p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> <p> FILE Pacheco et al. (2018). Transition 2.0. Digital technologies, higher education, and vision impairment</p> </div> <div style="border: 1px solid #ccc; padding: 5px;"> <p> FILE Rosa et al-2013-Journal of Family Theory Review</p> </div> </div>
Reflection (candidate):	<p>Being able to drag downloaded files onto the LMS was very quick and easy and enabled me to store everything in one place. Once I had read and summarised an article I could file it in the relevant section (reporting). Keeping all the files in one place was really useful as I could always find the original article if I wanted to clarify something when doing the literature review and the discussion. It was important to label the files so that I could search file names (reasoning). I didn't initially do this well, but I ended up using first name and title (reconstructing).</p>
Reflection (supervisor):	<p>I remember when I did my PhD that I had to organise my readings on small index cards and place them into an index card file box (reporting). I wish I had a system like this when I did my doctoral studies – it would have made it much easier to find specific articles (relating). I also had to print everything off and file them into subject-related folders as not many of the papers I found were available online (reporting). This whole process points to the fact that a filing system from the very beginning is critical in doctoral studies – whether online or hard copies (reasoning).</p>

When analysing our reflections, we can see that all levels of reflection were used although reasoning was most prevalent. This was because it was important to find the best way possible to organise the amount of information needed when doing a PhD. It was interesting to see how the approaches to saving materials changed over time too.

A file summarising key readings (Table 3) was also uploaded within the PhD Current Readings to have quick and easy access to key points about the research. The document was over 60 pages, summarising the research on different topics found within the literature. The document was used to compile the literature review and to reference key articles throughout the thesis.

Table 3
Artefact 2: Literature summary

<p>Description: Literature summary to collate points from the literature</p>	<p style="text-align: center;"><i>Barriers and enablers to 'participation in learning' and 'future employability' for students with blindness and low vision in Australian mainstream secondary schools: a bioecological systems perspective</i></p> <p>Vision Impairment</p> <ul style="list-style-type: none"> ☐ Vision is a motivator (Cho & Palmer?) ☐ Unique challenges to learning (McLinden, Ravenscroft, Douglas, Hewett, & Cobb, 2017) ☐ Educated alongside sighted classmates (Ajuwon, Sarraj, Griffin-Shirley, Lechtenberger, & Zhou, 2015) ☐ Severity of vision contributing factor to differences in ECC skills (Wolffe & Kelly, 2011) ☐ Time to rewrite notes, investigate technology (Opie, 2018b) ☐ Vision impairment is significant barrier to learning and development and can fall behind peers every year they do not access AT (Opie, 2018b) ☐ "low incidence disability" (Holbrook, 2015, p. 159) ☐ Individual, medical model of disability verses social model (Byrne, 2014) ☐ Unique needs of students with vision impairment (Allman & Lewis, 2014) ☐ 3,500 students with vision impairment 1,500 high school (Jessup, Bundy, Hancock, & Broom, 2018) ☐ 4,000 students (Opie, 2018b) (Media Access) ☐ Vision Australia 3383 children under 25 (Vision Australia, 2019) ☐ Overwhelmed by workload (Reed & Curtis, 2011) ☐ Unaware of expectations (Reed & Curtis, 2011) ☐ Preparation increases outcomes (Reed & Curtis, 2011) ☐ 46% difficulty accessing materials in timely manner (Reed & Curtis, 2011) ☐ Poor transcriptions (Reed & Curtis, 2011) ☐ Heavy workloads, lack of funding, knowledge and accommodations (Reed & Curtis, 2011) ☐ Singled out as different by equipment and modifications (Reed & Curtis, 2011) ☐ Limited access to visual information, developmental delay & less than adequate schooling puts students with VI in risk (C. Brown, Packer, & Passmore, 2013) ☐ How do students with VU experience education (Thurston, 2014)
<p>Reflection (candidate):</p>	<p>The summary document being housed on the LMS, enabled me to access this wherever I was (reasoning). Sometimes I was at my children's sporting events, and I could read a paper and add pertinent points to the summary document. The LMS could be accessed on my laptop, tablet or phone (reporting).</p>
<p>Reflection (supervisor):</p>	<p>Again, I would have loved to be able to do this during my studies (relating). I was often seen carrying around large wads of paper and highlighters. I do remember once sitting watching my children at swimming busily highlighting papers (reporting). In some ways, maybe it isn't good to have access to your thesis all the time? (reasoning).</p>

Although these reflections were short, it is interesting to note that both of us undertook reasoning – considering the reasons why we do what we do. We also were able to explain how we each accessed information, which was an important element of reporting.

As I completed thesis chapters, I uploaded them to the LMS where the entire thesis was organised and housed safely in the cloud (Table 4). Additionally, Georgina could upload reviewed documents and send me back a link for feedback.

Table 4

Artefact 3: Chapters

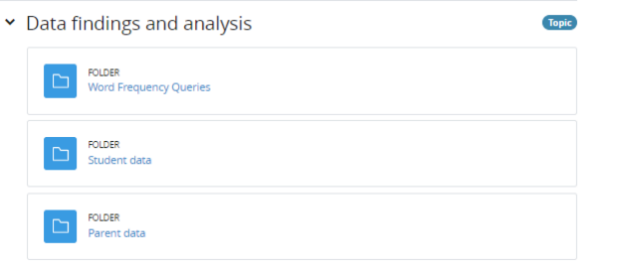
<p>Description: Chapter section to organise sections to be included in the thesis</p>	<div style="border: 1px solid #ccc; padding: 5px;"> <p style="text-align: right; color: #007bff; font-weight: bold; margin: 0;">Topic</p> <p style="margin: 5px 0;"> ▼ Chapters </p> <div style="border: 1px solid #eee; padding: 2px; margin-bottom: 2px;"> <p style="font-size: 0.8em; margin: 0;"> FILE 20210909 Melissa Fanshawe PhD FULL DRAFT with EndNote </p> </div> <div style="border: 1px solid #eee; padding: 2px; margin-bottom: 2px;"> <p style="font-size: 0.8em; margin: 0;"> FILE participants table </p> </div> <div style="border: 1px solid #eee; padding: 2px; margin-bottom: 2px;"> <p style="font-size: 0.8em; margin: 0;"> FILE 20210810 Table of Contents </p> </div> <div style="border: 1px solid #eee; padding: 2px; margin-bottom: 2px;"> <p style="font-size: 0.8em; margin: 0;"> FILE Contents </p> </div> <div style="border: 1px solid #eee; padding: 2px; margin-bottom: 2px;"> <p style="font-size: 0.8em; margin: 0;"> FILE Contents gb comments 161220 </p> </div> <div style="border: 1px solid #eee; padding: 2px;"> <p style="font-size: 0.8em; margin: 0;"> FILE Chapter 01 Introduction gb comments 300121 </p> </div> </div>
<p>Reflection (candidate):</p>	<p>It was always a feeling of accomplishment as I uploaded a chapter to the LMS and wrote a blog to celebrate the achievement (reporting). While some chapters were easier than others, as this section became larger and larger, I knew I was closer and closer to the end (relating, reasoning). It was also good to be able to have Georgina’s comments in here, so that I could work on them and have a record of all of the variations of the chapters. This was useful one time, when I cut a whole section of a chapter, which autosaved on my computer. Thankfully it was backed up on the LMS! (reporting, reasoning).</p>
<p>Reflection (supervisor):</p>	<p>Every time Melissa uploaded a chapter for review, I felt incredibly proud of her. I knew this journey wasn’t always pleasant (what PhD is?) but she just kept on going and producing (reporting, relating). I was honestly amazed as to how she completed the actual writing up so quickly! (reporting). My goal was to provide feedback to her as quickly as possible and then also pass it onto her co-supervisor for comment. In terms of the LMS, I felt it was just such a great way to organise everything (reporting, reasoning).</p>

It seems clear that describing the processes used to organise and work on the thesis is important in terms of using an LMS. This makes sense as the use of technology enabled the process to be smoother and easier for both of us. It was also important for us to clarify why these approaches were used so that we could reason if we would continue to use the same process.

The LMS enabled me to store research data and findings (Table 5) to comply with ethical data access and security measures agreed to in the ethics application. I stored audio files of interviews on the LMS until I was able to transcribe and deidentify the data, at which time I uploaded the transcription and deleted the audio. Although I used NVivo to analyse data, I uploaded Nvivo reports, summaries and word clouds into the LMS, so all my data was in one place. This enabled me to follow ethical obligations to retain research data for the minimum retention period of 5 years and 15 years for consent forms.

Table 5

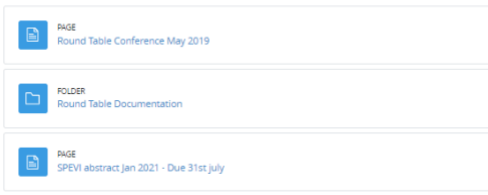
Artefact 4: Data collation

<p>Description: Place to house data findings and analysis</p>	
<p>Reflection (candidate):</p>	<p>I created folders to store each participant groups deidentified transcripts, data analysis and any other important information, in line with ethical approval (reporting, reasoning). This was easy to access and enabled me to easily find what I needed (reasoning). I also think the LMS provided an excellent means to meet my ethical obligations for data storage, for example, when uploading audio files before transcribing, I was able to set the access restricted to myself, as per ethical approval (relating, reasoning).</p>
<p>Reflection (supervisor):</p>	<p>I did not supervise Melissa from the very beginning. Her other Principal supervisor had moved to another university and she therefore asked me to come on board (reporting). I do remember it took us a while to get our heads around what data she already had and how to report on it. After a few months of going back and forth we came up with a plan. This involved not including some data she had already collected but that was okay (reasoning, reconstructing). Even during the writing up, though, things were still being shaped and it honestly came down to Melissa leading the decisions as a researcher (reconstructing). I always believe this is important for all doctoral candidates – by the end of their journey they are making the decisions as a quality researcher (relating, reasoning).</p>

As I began to disseminate my results at conferences and in journal papers, I uploaded submitted conference abstracts and PowerPoint slides into the Presentations section on the LMS (Table 6). Similarly, I used this section of the LMS to manage publications, which enabled me to keep a record of drafts and submitted and accepted papers.

Table 6

Artefact 5: Presentation and publications

<p>Description: Presentations and publications that were based on the thesis were uploaded</p>	
<p>Reflection (candidate):</p>	<p>These were exciting folders to have, especially as they filled up with more and more. This showed that my research was being disseminated and people were enjoying hearing about it. I am really proud of these sections of the LMS. I still use them post PhD to collate and collect my work (reporting, relating, reasoning).</p>
<p>Reflection (supervisor):</p>	<p>I can't believe how much Melissa was able to get completed in a relatively short amount of time. She was such a trooper. There was a lot of pressure from the workplace to get completed but also to have publications, so Melissa took this on board and published it during her studies. It is a testament to what she is capable of (reporting, reasoning).</p>

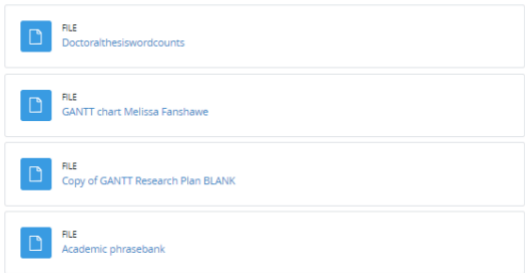
The LMS proved to be a convenient place for me to group information, upload articles and organise my research. Being able to access the LMS remotely meant that I could easily work on documents wherever I was and at the time that suited me best. The security of the LMS meant that ethical procedures were being upheld. The LMS was a useful place to collect information during and post my PhD.

Metacognitive strategies

An administration section (Table 7) was created to keep files that related to the administration of the thesis, such as communication with the Graduate Research School, confirmation documents, ethics applications and approvals. I uploaded documents that helped me to plan the learning process such as information about developing a thesis, doctoral word counts and a Gantt chart (a project plan with timelines) to enable us both to have access at any time.

Table 7

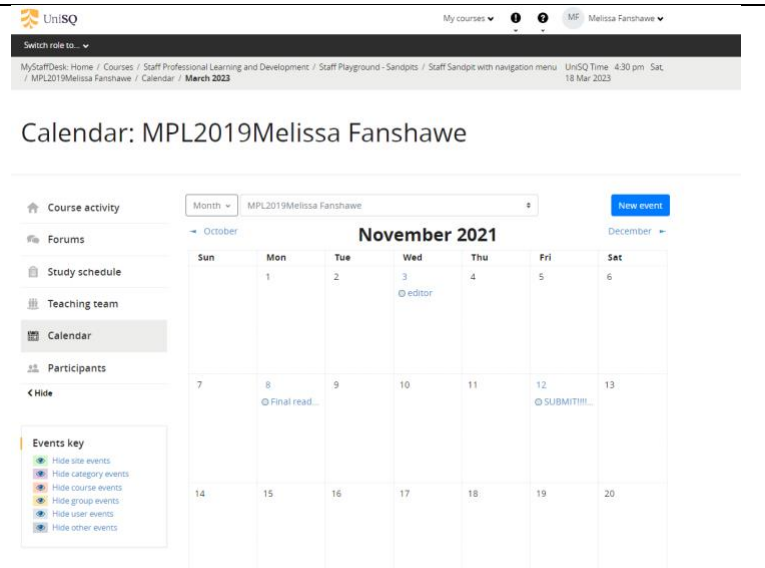
Artefact 6: Administration items

<p>Description: Files related to administration of thesis</p>	
<p>Reflection (candidate):</p>	<p>Collating everything about my thesis in one spot meant I had access to anything I needed, at work, at home, while waiting to collect my children from sporting events. I could access and download documents on my work computer, laptop, tablet or iPhone. Having such a hectic life, I need to feel organised and know where to find something, so this was useful.</p>
<p>Reflection (supervisor):</p>	<p>In terms of metacognitive strategies, Melissa was able to reflect on her journey all along the way. With many challenges, including COVID-19, it was really important for her to feel completely organised. It did also make it easier in terms of finding drafts and feedback. This allowed me to know about her progress, how she made decisions, and how she conceptualised the whole study.</p>

The calendar function (Table 8) was useful to mark timelines that were in my research plan to enable me to meet self-directed deadlines. The timelines would appear on the side of the LMS when I opened the page.

Table 8
Artefact 7: Calendar

Description:
 Calendar showing projected dates



Reflection (candidate): Using the dates on the calendar helped me to plan what was the next task I was working toward and the date they should be completed by (reporting). While these dates were on the research plan, they were much better in the calendar as they were obvious every time I opened the LMS (reasoning). The dates kept me accountable, and I submitted my PhD on time, on the earliest date possible. The calendar kept me motivated to make the dates (reasoning).

Reflection (supervisor): Every doctoral candidate is different. I have some students who spend a lot of time thinking before they write in comparison to some who regularly send me drafts (reporting). As a supervisor, I have to be mindful of these different approaches because not everyone worked the same way (reasoning). Personally, I do prefer to have set deadlines that are then met by the student as this helps me provide feedback in a timely manner (relating). Using the LMS just made things so much easier for all of us in Melissa’s team so I would use this approach again if possible (reporting, reconstructing).

The descriptive reflections here were largely about the process being used as well as its benefits. We both reasoned that this approach worked well to be aware of upcoming tasks to complete the thesis on time. As I completed tasks, I used General forum blogs (Table 9) to upload information about my progress which were directly emailed to my supervisor, which helped her to monitor my learning process. In total, I uploaded 50 forum blogs to the LMS. Of these, 45 of these were about the progress of the thesis. This consisted of 14 notifications of when the chapter or Gantt task was completed as well as 31 which indicated the completion of an interview with a participant. A further 5 posts were about my thoughts or feelings during some of the difficult parts of the process. Some of the titles of my blogs included “Time for confirmation”, “Chapter one is done”, “Methodology aha moment”, “Chapter 04 submitted” and “Homeward stretch”.

Table 9

Artefact 8: Forum blog

Description:
A place to
blog about
progress

General forums

Forum	Description	Discussions	Subscribed	Email digest type	RSS
Blogs	General news and announcements	50	Yes	Default (No digest) ▾	

Blogs

Chapter one is done

← First unit finished writing TAFE Digital →

Display replies in nested form ▾
Settings ▾

Chapter one is done
by [Melissa Fanshawe](#) - Wednesday, 3 February 2021, 3:23 PM

01/02/2021

Chapter one is done - for now!

Wahoo! there were some amendments to be made and cohesion to work on, but I have moved on to the next chapter.

Pretty amazing considering everything going on in the other baskets of life.

I must say that I didn't think I could get it done, and felt like I was flying through fog, until a ten minute conversation with my supervisor made it all fit together.

#PhDgoals

[Permalink](#) [Edit](#)

Blogs

Homeward stretch

← Back on the track

Display replies in nested form ▾
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Homeward stretch
by [Melissa Fanshawe](#) - Monday, 8 November 2021, 7:48 AM

Well, it seems I have gone on a few detours on the way to the end.

I meandered to look at the Spring flowers, coming up on the side of another path. I detoured to say hello to the family of cows who inhabit the lower levels of the track. Then I stopped to catch my breath because it all became too much. I was trying to work out if it was worth it to my health to finish.

I was encouraged by my family and friends cheering me on, calling me home.

Not much further. One step in front of the other.

[Permalink](#) [Edit](#)

<p>Reflection (candidate):</p>	<p>As I completed each milestone from my GANTT plan, I would upload a blog about the progress. This could include completion of chapters or revisions, or data collection, such as completion of interviews. The blogs helped me feel that I had ticked off a task, but also reported completion to my supervisor. A copy of the blog would be emailed Georgina and alerted her that a task was done. Creating a completion blog was like ticking off a task. One step closer to the end!</p>
<p>Reflection (supervisor):</p>	<p>Being an organised person, I loved this part of the LMS – being updated by Melissa when we had finished something. It just made me feel so proud of her progress. I felt honoured to be included in Melissa’s Sandpit. It was always so great to see her tick off tasks along the way.</p>

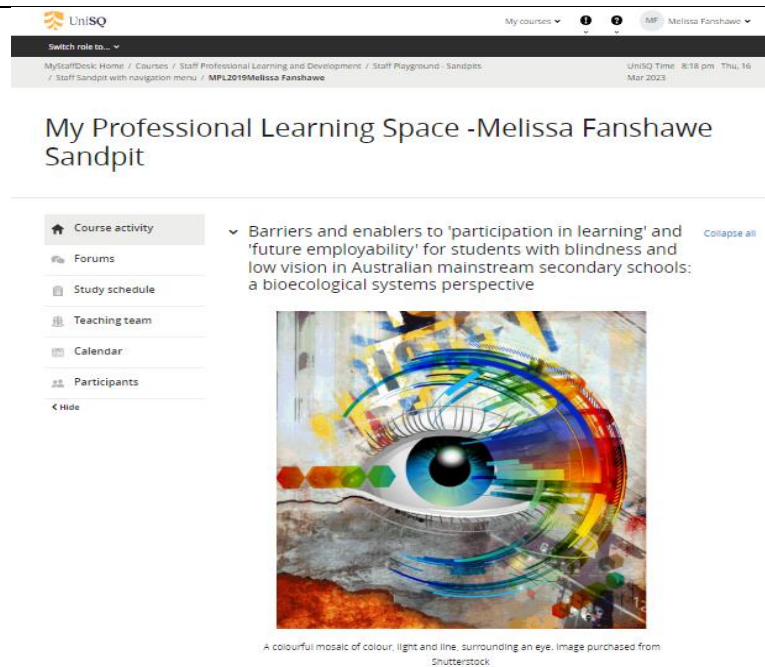
Metacognitive strategies assisted me to organise the learning process through planning out priorities and uploading them to a timeline to try to meet deadlines. Using forum posts as I completed a task notified my supervisor and enabled her to monitor my progress.

Affective strategies

At the top of the LMS, I uploaded a beautiful image (Table 10) that would be viewed each time the LMS was opened. The image, a colourful mosaic of colour, light and line surrounding an eye, was central to the focus of the study.

Table 10
 Artefact 9: Front page image

Description: A colourful mosaic of colour, light and line surrounding an eye, which sat at the top of the LMS to be viewed each time the LMS was opened



Reflection (candidate):	This picture is incredibly powerful for me (reporting). The image is of an eye – what my thesis centres on, it is imperfect but beautiful (relating). Every time I opened the LMS, it made me remember what I was doing and inspired me to keep going (reasoning).
Reflection (supervisor):	It is really interesting that Melissa chose an 'imperfect eye' for her metaphor for her thesis given that her focus was on supporting blind and low-vision students (reporting). Images are such a powerful way to reflect on life and we often do this in a writing group that we both participate in (relating). It was important Melissa complete her PhD. Despite having an incredible background in leadership in education, in the higher education context, not having a doctorate can be debilitating (reasoning).

When writing up the thesis, I used the analogy of a mountain walk to represent the different stages of the process. This was represented in 9 of the 14 progress blogs which related to the analogy, such as “Nearly at the top of the mountain”, “I’ve planted the flag!”, “The long way down”, and “That’s it – I’m done, (but my car is back at the beginning)”. I also uploaded images to describe the analogy of the mountain climb, including three different images of the mountain used to describe the thesis, steep incline, burnt ground and at the top (Table 11).

Table 11

Artefact 10: Forum blogs

Description: A forum blog titled “Nearly at the top of the mountain”, describing the analogy and three different images of the mountain

I've planted the flag! ▶

← Attitude and ability

Display replies in nested form ▾
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Nearly at the top of the mountain.
by [Melissa Fanshawe](#) - Sunday, 25 July 2021, 10:03 AM

At the beginning of the year, I was challenged to find an image that represented my journey through a PhD. I took a photo from a hike that I do approximately 3 times a week, with my friend Sarah. The photo was going up Devil's Break - a tough 218m incline of 45 degrees that is within the first kilometre of a 6km trail. We don't love walking up this mountain, but once we run along the crest and walk back to the bottom, we always feel a sense of achievement.

Today, I have finished chapter 08. I feel the same sense of determination I do, when we are nearly at the top of this break. There is still such a long way to go, but the end of the challenging incline is in sight. I have written four of five data chapters, I still have a discussion, conclusion, many re-writes to make a conclusive document, but at this point, I can no longer stop. I have to keep going, because I am nearly there.

I will continue, like I continue our hike. One foot after the other, sometimes running, sometimes slow, always supported with someone beside me, until I get to the end; submission. I just wish I had a flying fox and could be done already!

[Permalink](#) [Edit](#)

I've planted the flag! ▶

← Attitude and ability



Reflection (candidate):

Staying fit was an important part of self-care for me while writing up my thesis in 2021 as I was juggling a large work/study load with many family commitments (reporting, relating). I walked at 5:30am three times a week up a mountain, with a friend who had a doctorate and understood the difficult phase I was in (and was home before my children woke up). I began making analogies to the forest and mountain climb for each section of the thesis as we walked (relating). I ended up using these analogies in my progress updates – such as “Nearly at the top of the mountain” when all the writing was on the page. The thought in my mind of my thesis like the walk helped me to know I could do it. It was going to be hard, but I am tough (relating, reasoning).

Reflection (supervisor):

I have to admit that when Melissa posted these reflections and I received them through my email it did, at times, make me feel sad but also incredibly proud of her (reporting, relating). She was just so honest about the challenges she faced undertaking a PhD. It just wasn't easy a lot of the time, but her persistence got her over the line. I do remember my supervisor saying to me that tenacity gets you over the line (not necessarily your intelligence) (relating). She would often say to me just forget about the housework and do the writing. This really helped me in my journey so I hope that I could be that rock for Melissa too (reconstructing).

My strong self-talk was also evident in the forum blogs (Table 12). One tenth of the blogs (n = 5) related to my feelings about the difficult PhD journey, I think with an attempt to use self-talk to into a positive state. For example, I uploaded a forum blog stating that I felt was stumbling back down the mountain and trying to use humour to build my own resilience to keep going. This self-talk was also evidenced in an image I uploaded of the mountain that had been burnt by fire, accompanied by a blog about resprouting.


Table 12
 Artefact 11: Forum blogs

Blogs

The descent has been gruelling

← That's it - I'm done (but my car is back at the beginning) Back on the track →

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 **The descent has been gruelling**
 by Melissa Fanshawe - Sunday, 17 October 2021, 10:59 AM

The down hill climb has been much more demanding than expected.

I had thought it would be the easy part, but I have had to find new paths and have had a lot of stumbles.

And I am really, really tired. There have been a lot of moments in the last ten days that I didn't think I could keep going (and believe me most of my moments have been trying to get down the mountain). In fact I have thought about giving up most days. It wouldnt be that bad going back into a school. Or working at Bunnings.

But (and I think I am starting my sentences with conjunctions - just because I can!) I have had a huge support team cheering me on...

They have helped me to see that I just need to put one foot in front of the other until I make it over the line.

Because (hahhah) they believe I can, even when I don't

I undulate as to whether I can or I can't finish.

Right now I think I can....

[Permalink](#) [Edit](#)



I had feedback where I had to remove things, these were likened to the fire in the forest that everything was destroyed. I am gutted. However, in the photos, there are tiny shoots, and resprouting. I hope my chapter can also.

<p>Reflection (candidate):</p>	<p>On days when things were difficult at home, my kids were sick and I didn't get much done, or I had negative feedback I would get down (reporting). I would hate the thesis and wonder if I could finish, or "work at Bunnings" (relating). It was important that I had the mindset to complete it. When I uploaded these images, I used the blogs to try to talk to myself and tell myself I could do tasks (reconstructing). I would often forget these would be emailed to Georgina through the LMS. Then Georgina would reach out with something inspirational, and seemingly knowing just what I needed – of course she did – she just read my blog. This made her seem very responsive and caring (reporting, relating).</p>
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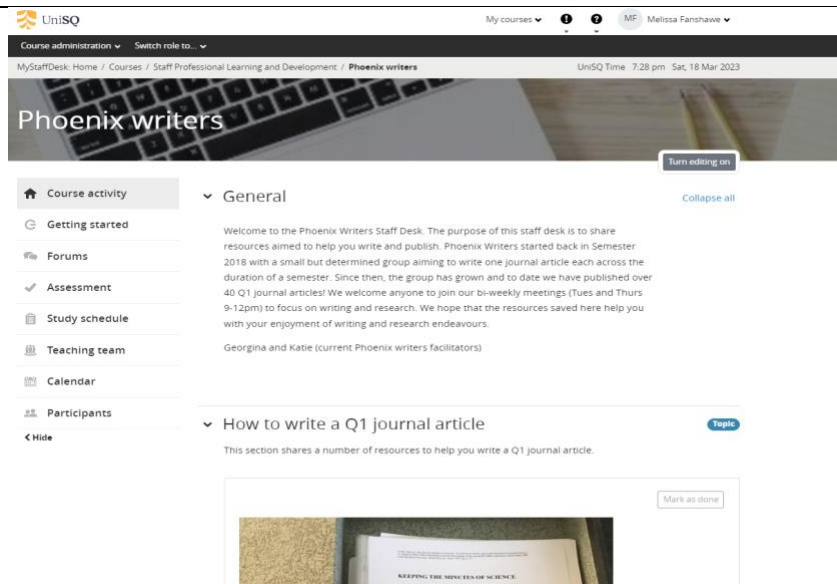
Reflection (supervisor):	While a PhD can be broken down into certain phases this may not always work out. It is a very personal journey and one that is often challenging (reporting, relating). I remember having many ‘down’ points throughout my PhD journey, but I think this experience has made me become a very empathetic supervisor (relating). I have always known I am good at the pastoral care, but I was always worried about whether I had the technical knowledge of how to write a ‘good thesis’. Melissa’s journey has helped me reflect on my role as a supervisor and particularly in knowing that I do have the skills to help (relating). When Melissa posted these blogs I know she had forgotten I would see them but it was just such a lovely process for us to be there for each other (reporting, relating).
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Many affective strategies such as self-talk and self-encouragement are evident in the forum blogs and images I embedded into the design of my LMS. There is evidence that I was trying to manage my emotions through self-care throughout the PhD process.

Social strategies

To encourage social participation, there was a link to the Phoenix Writers LMS (Table 13). The Phoenix Writers are a group of academics who met twice a week online via Zoom to focus on writing and research. During my PhD studies, I attended these meetings regularly, which provided me a place to ask questions of peers and get feedback on ideas.

Table 13
 Artefact 12: Phoenix writers



Reflection (candidate):	Phoenix writers was great for me to get social contact, particularly in 2021 when I was not at work and all I was doing was writing up my thesis. I had limited contact with friends due to Covid. So, meeting with a group of people twice a week was important for my health. In this time, I could ask questions if I got stuck. Also, as Georgina was the facilitator, I could ask direct questions if needed. This group became the people who I could ask anything, and the meetings brought me joy.
Reflection (supervisor):	Phoenix writers has been such an inspiration for a lot of us at our university. It did begin as a humble writing group with the aim of submitting one paper per semester for publication, but it has become so much more! I am really happy that Melissa was able to find social connection through this group through her PhD journey.

Reflecting on the process of our candidate and supervisor relationship, there were images on the LMS (Table 14) that demonstrated a move from a professional relationship to social interactions. For example, I would upload pictures of myself not coping with writing up all the data, trying to convey that I was tired using humour.

Table 14

Artefact 13: Social – humour

Description:

Photos of me sent to my supervisor



Reflection (candidate):

Within the last few months of the PhD, the supervisory relationship added a social element. I began adding photos of me asleep at my desk, or after submitting, lying flat on the floor. Georgina had given so much of herself to help me succeed, in a quick time frame and it was enough to keep me going. I actually believe she encouraged me more than she gave feedback on my papers!

Reflection (supervisor):

As highlighted above, by the end of the doctoral journey Melissa was making and leading many of the decisions needing to be made to complete. To me, this meant she had reached a point where she could call herself a researcher. At the beginning Melissa often talked about how she was much more confident as a teacher BUT by the end of this journey her skills in research grew. It was important to inject a bit of humour given the challenges faced and I just loved receiving these photos from Melissa. I did make me think about different ways to provide her support as even though they were funny there was an underlying sub-text that the process was grinding her down.

The very last artefact on the LMS is a completion photo (Table 15). At the very bottom of the LMS, I uploaded an image of both of us in our doctoral gowns smiling proudly at my graduation.

Table 15

Artefact 14: Graduation photo



Reflection (candidate):	In this situation the PhD was successful. I went from confirmation to completion in less than 2 years, finishing on the earliest date possible. I believe completing my PhD on the LMS gave Georgina greater insight into where I was up to, what I was thinking and how I was feeling, and as such she was incredibly responsive to my needs. I am grateful in particular to my Principal supervisor. I think these experiences have led me to see what a caring person she is, and now someone who I love to work with on other projects and papers.
Reflection (supervisor):	Celebrating Melissa’s success was so wonderful. Many of her other colleagues attended her graduation which is testament to how great a colleague she is. The LMS has taught me that a PhD journey is so much more than just collecting data and analysing it. It also made me reflect back on my journey and how these experiences have shaped me as a supervisor. I would definitely recommend this process to others, if it would be beneficial for them.

I elicited social strategies by attending a writing group which enabled me to ask colleagues within this group for feedback about the doctoral processes. During the process of completing the PhD, we developed a good relationship. I believe elements of the LMS enabled my supervisor to know where I was up to during the doctoral journey. Her responses showed me she also cared about my progress.

Discussion

Data from my doctoral studies showed it is possible for a PhD candidate to use an LMS to successfully facilitate self-directed learning ensuring a timely completion. This is important as student attrition for PhD students has been reported to be as high as 70% (Lehan et al., 2021, p. 9). The use of the LMS supported my study through cognitive strategies such as grouping information and summarising literature. It also supported metacognitive strategies with my supervisor being able to monitor and evaluate the learning process. In relation to affective strategies, I was able to engage in positive self-talk to manage my emotions, especially through challenging times. Finally, I implemented social strategies such as engaging in a supportive writing group to seek feedback and ask questions of my peers for clarification. From my experience, I believe the LMS could be considered as a suitable environment to manage and communicate throughout the PhD process and complete doctoral studies.

Three key features were identified in this study as being important contributors to the completion: resources on the LMS, strategies I employed to manage the process and support from my supervisors and peers to motivate me to complete the doctoral studies.

Resources

In relation to resources, I used the LMS as a place to store and organise materials that were required to complete my doctoral studies. Especially, being able to organise the readings required to complete the study was critical for the completion of my PhD. In this context, we both used very different approaches due to the era in which we completed our studies. For example, at the time of my supervisor's doctorate, online LMSs were not necessarily easily available, so a paper-based approach was used. However, for me, using an LMS was smooth given my prior skills and knowledge in using Moodle for undergraduate students. This suggests that for those intending to use an LMS, the candidate should know how to use and design an LMS effectively before attempting to organise their resources to impact the experience (Aldiab et al., 2019).

Similar to the findings of Kem (2022), I was motivated by the ability to personalise the LMS and did so through the navigation, presentation and content. Further, by using the LMS, I was easily able to access resources on multiple devices wherever I was located and additionally so could my supervisor. Although this could be a hindrance in relation to self-care, it was also convenient in situations where I needed to access files quickly. The collation of resources in a secure online location also met my ethical storage obligations as they could be accessed only through password-protected devices.

Finally, my selection of learning resources to include in the PhD aligned with the self-directed learning strategies as outlined by Lai et al. (2022). This is particularly important for doctoral candidates, as Lee et al. (2022) noted that students are often underprepared and under-resourced in terms of studying online. In addition, Al-Adwan et al. (2022, p. 257) noted that "this approach to learning encourages students to acquire self-regulatory skills and be accountable for their learning. This environment must be supported by pedagogical tools (e.g., synchronous/asynchronous communication channels and multimedia tools) to enable effective interaction between instructors and students". It is therefore important that universities do not just assume that postgraduate students such as doctoral candidates already have the required skills and knowledge of online LMS and resources to help them in their PhD journeys.

Strategies

While using the LMS throughout the PhD study, I devised several approaches to maintain momentum towards completion. These aligned directly with Lai et al.'s (2022) cognitive, metacognitive, affective and social strategies that learners can use in self-directed learning. In relation to the cognitive strategies, organising readings related to the study was paramount; I reflected on which were relevant, but it was also important that I was able to access the resources on multiple devices at any time. In a way, this type of organisation ensured that cognitive overload did not occur as there was safety in knowing where all the work was saved and met ethical requirements.

For metacognitive strategies, a general forum was kept on the progress being made. This enabled me to reflect throughout the study. Such metacognition is critical in a PhD so that the qualities of a researcher are developed. In a sense, reflection played an important role in the metacognition as it allowed me to think deeply about the challenges being faced and enact strategies to work through these. It was consequently important to build affective supports to ensure completion.

Several affective strategies were implemented through the use of the LMS. These included keeping a blog with humoristic elements as well as keeping fit. In addition, while keeping fit through walking with a friend, I was able to reflect on my progress and liken my PhD journey to climbing a mountain. The analogy continued where my goal was the top of the mountain but ended up being more, needing to walk back down again. Humour has been found as a communicative tool to express vulnerability throughout the PhD (Papapicco & Mininni, 2020). Similarly, exercise has been identified as an important way to maintain

mental health in doctoral process (Driscoll et al., 2020). Although only uploading the blogs for my own account, Georgina did receive these via email. It was then that she could check in to ensure my mental health and well-being. Her relationship was therefore often responsive to my images and blogs, which then linked to my motivation. The blog became a way of reflecting deeply about the journey but also self-care.

The social strategies related directly to the supports built around my doctoral journey. These included the supervisory team and a professional writing group that had been established at the university. Given that I worked at the university and was a candidate as well, I had access to these supports but also had the agency to make them work for me in the best ways possible. Lee et al. (2022) noted that social isolation for doctoral candidates can be extremely high due to having to work long hours and PhDs being solitary journeys. However, by utilising networks such as the Phoenix Writers, I was able to find the necessary support for social connectedness, which has been found to benefit completion (Nguyen & Robertson, 2020).

Motivation

Motivation is one of the most important key factors in completing doctoral studies (Al-Mamary, 2022). Song and Bonk (2016) found that motivation to use online learning resources in self-directed study increased when the student had freedom and choice, control and interest and engagement. As I created the LMS to suit my study needs, these elements were all involved. I likened chapters being completed to reaching the top of a mountain; as I uploaded each chapter, I felt like I was one step closer to my goal. This aligns with the work of Al-Shaikhli et al. (2022), who found visualising goals (such as completing chapters) on an LMS can increase self-direction and in turn motivate positive behaviours to engage in study (Mpungose & Khoza, 2020).

Another motivating factor was through the social strategies I used, including the Phoenix Writers group. Nguyen and Robertson (2020) noted how postgraduate research can be socially isolating, and without a strong social connection, doctoral studies can be made even more difficult (Lee et al., 2022). The role of the supervisor is also important in terms of motivation. Georgina was aware of my progress through blogs on the LMS. When difficulties or frustrations occurred, she gave stronger encouragement, which enabled me to push forward.

Reflective practice

It is interesting to note that we both largely used reporting ($n = 25$), relating ($n = 21$) and reasoning ($n = 20$) throughout the process of reflection, compared to reconstructing ($n = 6$). This highlights the LMS was both a technological and organisational tool but also provided a space for the us to report on the PhD journey and explain why the LMS was beneficial in many ways. We both used relating as a way to reflect on our past experiences as students but also as parents and carers.

Reasoning was a level of reflection used a great deal, which indicates that we both wanted to explain why using LMS was beneficial and to what extent it assisted us throughout the PhD journey. Finally, we did not reflect on reconstructing very much, which could indicate the need for reflecting on the journey while still completing the studies, to discuss what worked well and what we could do differently if a new challenge was faced. Perhaps it is important to share how things might be done differently for us, for future students to ensure success.

Conclusion

Digital ethnography was used to examine the experience of my doctoral studies, which involved the use of an online LMS to support my successful completion. Through the conceptual lens of the effective learning strategies for self-directed study (Lai et al., 2022; O'Malley & Chamot, 1990), the findings identified cognitive, metacognitive, affective and social strategies that had been embedded in my LMS to

facilitate self-directed learning to complete my doctorate. A reflective framework was used to analyse elements of the LMS that were considered important to engage in self-directed learning. In my studies, the LMS provided an effective learning environment to organise, access, and store resources required for doctoral study. Use of the pedagogical tools within the LMS, such as use of blogs, images and analogies, provided effective strategies for self-motivation and communicating progress with my supervisor. The reflective process identified that social interactions within the LMS may be limited for self-directed doctoral candidates and additional measures, such as inclusion in a writing group, may be required for motivation and asking questions throughout the doctoral journey.

Although this digital ethnography examined just one doctoral student, supervisor and LMS, the research is important to show successful doctoral completion can be achieved through the LMS. With consideration and planning and partnerships between the candidate and supervisor, this paper shows the LMS could potentially support other doctoral students to successfully engage in self-directed study. Further research of other doctoral students using LMS would be beneficial to explore the potential of the LMS as a useful environment for self-directed learning.

Author contributions

Author 1: Conceptualisation, Data curation, Investigation, Formal analysis, Writing – original draft, Writing – review and editing; **Author 2:** Data curation, Investigation, Formal analysis, Writing – review and editing.

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